

**System-Level Approaches to Identify Children with  
Health Complexity and Develop Models for Complex Care Management**  
**Oregon Pediatric Improvement Partnership Project**  
**Supported by the Lucile Packard Foundation for Children's Health**  
**August 2017-March 2019**

## **1. Executive Summary**

The Oregon Pediatric Improvement Partnership (OPIP) will inform health systems on novel and generalizable approaches to identify, and design complex care management programs for, children with health complexity. This will be done via distillation and dissemination of learnings from work with three health systems: Kaiser Permanente Northwest (KPNW), Oregon Health Authority (OHA), and Coordinated Care Organizations (CCOs).

OPIP will facilitate KPNW on the development of a pediatric team-based care (TBC) program in order to summarize learnings related to: 1) use of KPNW-level medical and social complexity data to identify children with health complexity for TBC; and 2) tools for administering a pediatric TBC program.

OPIP will facilitate OHA on novel methods for using state-level medical and social complexity data for identifying children with health complexity. Additionally, OPIP will facilitate OHA on using this population-level information to inform state-level policies and contracting. OPIP will then facilitate OHA on how to share child-level data about health complexity with the CCOs it contracts with for publicly insured children, in order to inform their pediatric complex care management programs.

OPIP will facilitate conversations with CCOs around how to use the OHA data for identifying children with health complexity, and around care management methods, tools, and strategies from KP that can be applied. Regional variations used by CCOs given differing internal resources, community resources, and patient demographics, will be examined.

Informed by these efforts, OPIP will develop summary briefs distilling the generalizable models gathered for: 1) Health Systems and 2) Medicaid agencies. Interactive webinars, utilizing flipped classroom methodologies, will then be conducted.

## **2. Background**

### ***Importance of Identifying Children with Health Complexity for Complex Care Management***

A 2014 report from the Lucile Packard Foundation for Children's Health indicates that approximately 20% of the childhood population and 23% of the Medicaid population are Children and Youth with Special Health Care Needs (CYSHCN), and the majority of these children experience medical complexity. Studies using Medicaid data have shown that a very small proportion of children (about 5%) account for a significant proportion of health care costs (about 50%)<sup>ii-iii</sup>. Moreover, around half of Medicaid spending on children with medical complexity is on hospital care, while only around 2% is on primary care<sup>i</sup>. Equally important are the unquantifiable costs to families of CYSHCN. Recent studies show that children and families with social complexity are more likely to use high-cost health care (e.g. emergency rooms), and could benefit from support for their unmet social needs, as these risk factors significantly impact the child's health and functioning<sup>iv</sup>. Aside from the direct effect these social determinants have on children's health and development, they can also lead to an increase in high risk behaviors in the youth, adding to the magnitude of their medical complexity.

A key component of health care reform efforts is the Triple Aim: lower costs, improved health, and improvement in patient experience<sup>v</sup>. To address costs, there has been an increase in payment methods that utilize a global budget for an assigned population. Within this context of fixed resources, health systems are exploring models to identify the right patients for intervention. Given limited resources for care management, it is essential to develop methods to accurately and comprehensively identify people with health complexity who would most benefit from complex care management. Then, it is essential to develop complex care management that meets the needs of the patient and the risks for increased health care costs. Many systems have endeavored this for adults, but few have operationalized system-level approaches specific to children.

The proposed partners on this project, Kaiser Permanente Northwest (KPNW), Oregon Health Authority (OHA), and Coordinated Care Organizations (CCOs), represent a unique group of health systems that are ideally positioned to pilot strategies which could then inform efforts across health systems (serving both privately and publicly insured children) and Medicaid agencies. KPNW is a closed health system serving over 100,000 pediatric members from Eugene Oregon, to Southwest Washington, both publicly- and privately-insured. The Oregon Health Authority provides public insurance for 680,882 children, roughly 1 in 3 children in the state. Coordinated Care Organizations are networks of all types of health care providers (physical health care, addictions and mental health care, and sometimes dental care providers) who have agreed to work together in their communities to serve people who receive health care coverage under the Oregon Health Plan (Medicaid), based on a global budget. CCOs have one budget that grows at a fixed rate for mental, physical and ultimately dental care. The global budget for CCOs is determined by the OHA, which includes adjustment for risk and complexity needs of patients.

### ***Previous Efforts Led by the OPIP with KPNW, OHA, and CCOs***

OPIP's vision is to create a meaningful, long term collaboration of stakeholders invested in child health care quality, with the common purpose of improving the health of the children and youth of Oregon. OPIP's mission is to support and implement projects dedicated to building health and improving outcomes for children and youth. A key area of focus within OPIP's efforts has been specific to CYSHCN.

OPIP has significant experience working with front-line practices on enhancing their level of medical home for CYSHCN. OPIP has supported over 42 practices in multiple states by developing curriculum, implementation methods, and practice-facilitation support in the following relevant topic areas: 1) identifying CYSHCN; 2) pre-visit planning; 3) shared plans of care; 4) referral tracking and care coordination with community based systems, and 5) engaging patients and families.

OPIP also has significant experience working with health systems to focus on CYSHCN. OPIP has received contracts from CCOs to support improvement projects, many of which have included a focus on CYSHCN. Over the last year and half, OPIP has worked with KPNW on one such project. Through a subcontract from the state's Title V agency (the Oregon Center for Children and Youth with Special Health Needs) Systems of Services for CYSHCN grant, OPIP led a learning collaborative focused on improving care for CYSHCN. As part of this project, OPIP worked with KPNW to develop a pilot for pediatric complex care in one of the KPNW primary care sites. This included providing monthly consultation and facilitation, a learning curriculum, and implementation support.

Through this work, the pilot KPNW pediatric team-base care (TBC) team (*comprised of a nurse, social worker, patient navigator, and pediatrician*) was created. TBC for adults had already existed at KPNW, but it was clear that this program for children would have to look much different. OPIP provided consultation on the development and implementation of pilot tools including intake assessments and shared plans of care. Children chosen to participate in the TBC pilot were identified using a labor-intensive chart review process, as the pre-existing models for identifying adults for TBC were not useful or accurate for children. A key component of the identification process was the recognition that both medical and social complexity factors needed to be considered. The evidence in the literature and front-line experience of the TBC team had shown that for many children, the high cost utilization was due to multiple factors, not all of which were purely medical in nature. The KPNW team identified the opportunity, through inclusion of a social worker and navigator, to address the social factors impacting high cost utilization OR lack of health care utilization that was resulting in negative health exacerbations that could have been better addressed in primary care.

The primary care providers of children served by the KPNW pilot pediatric TBC program, and the members enrolled in TBC (approximately 140 children served to date), have expressed high satisfaction with the program. Given this success, KPNW has committed to spreading pediatric TBC to two additional sites in 2017. Furthermore, KPNW is part of a national learning collaborative of KP regions across the country for which pediatric complex care management was identified as a priority across all regions for 2016-2018. KPNW is the first region to implement a pilot of pediatric TBC, and the standardized model they develop based on the

initial pilots will be shared with other KP regions- with KP Northern California and KP Colorado agreeing to implement pediatric TBC pilots as well.

In order for KPNW and the other KP regions to spread the pilot TBC model, the following is needed:

- 1) Specific methodologies that utilize system-level data to identify children that would benefit from TBC;
- 2) A standardized TBC program that includes intake assessment tools, TBC resource assignment tools, and shared plans of care within the EPIC electronic medical record used across KP regions; and 3) Evaluation metrics to track and quantify the impact of TBC.

OPIP has been consulting with KPNW leadership on developing standardized, less time-intensive models to identify eligible children for TBC by using system-level data - which would allow for more generalizable and sustainable application. This consultation has included developing a conceptual model for KPNW (**See Figure 1**), approved by KPNW Leadership, prioritizing TBC for children that have both medical AND social complexity, which will be defined as children with health complexity. Through this previous effort, KPNW has identified existing system-level data elements and priority new data elements that would need to be collected to identify these medically and socially complex children for TBC spread. This proposal supports operationalizing this model to guide the spread of the program.

One barrier to KPNW efforts to use their internal system-level data, is that for publicly insured children they are only assigned to provide physical health services for the child. Therefore, they do not have information about behavioral health services provided to these children outside of their network. Behavioral health services are clearly predictive of health care utilization and need for TBC, making these data critical to have.

To address this barrier and to spread learnings from the practice-level and KPNW-level work to other systems, OPIP has been leading state-level conversations about system-level approaches to identify and classify children with health complexity in order to identify children for complex care management. Stakeholders are extremely engaged in the conversation, given the shared need that Medicaid and the CCO's have to manage their populations under global budgets. While there have been efforts focused on high-cost adults with chronic conditions, there is a need for a different approach to identify children who should receive care management models that could impact costs and/or improve child health.

In August 2016 OPIP convened key policymakers within OHA and leaders within Coordinated Care Organizations to share and discuss findings from the practice-level and KPNW-level work. (See [http://oregon-pip.org/projects/CareCoordination\\_healthcomplex\\_v1.html](http://oregon-pip.org/projects/CareCoordination_healthcomplex_v1.html)). Dr. Rita Mangione-Smith shared the findings she presented at the 2015 Lucile Packard Foundation for Child Health's 2015 Symposium: "Designing Systems that Work for Children with Complex Health Needs," specifically focusing on how system-level data could be used to better identify the children who might benefit most from the limited complex care resources available, and on models for analyzing and using medical and social complexity risk factors. The meeting ended with a facilitated conversation about opportunities to enhance the focus on CYSHCN, with a consensus that the specific focus should be on methods for using system-level data to identify children with health complexity based on medical and social factors. Leaders within OHA and the CCO's identified the opportunity to leverage the data that OHA already has access to that could be better utilized internally and shared with CCOs to inform their system-level efforts. CCOs expressed strong support for this data sharing, and also expressed commitment to use this information to develop pediatric complex care management. CCOs also noted a strong interest in learning about specific parts of the KPNW TBC model, in order to identify applicable components that could be implemented with their systems.

As a result of this meeting, the OHA Office of Health Analytics has begun two tracks of work to classify children with health complexity using data available at the state-level: 1) Children with Medical Complexity: OHA has run the Pediatric Medical Complexity Algorithm<sup>ii</sup> (PMCA) which identifies children with medical complexity and assigns them into one of three categories: a) Complex with chronic conditions; b) Non-Complex, with chronic conditions; or c) Healthy. 2) Children with Social Complexity: Leveraging the state's Integrated Client Service Data Warehouse, OHA has established memorandum of agreements with departments across the state (and outside of health care) to obtain system-level data currently available related to social complexity that could be matched with Medicaid enrollment and claims data. Nine of the 12

social complexity factors identified by Dr. Mangione-Smith’s team to be associated with poor health outcomes are able to be identified and linked to Medicaid-level data.

## 2. Methodology

### Specific Population of CYSHCN

The unique population of CYSHCN for this project are **children with health complexity** that could be impacted by a complex care management program meant to improve health outcomes and address health care costs. Children with health complexity will be defined as those that:

- a. **Are medically complex** as defined by the Pediatric Medical Complexity Algorithm<sup>iii</sup> (PMCA) , with a priority focus on children identified with “complex chronic disease” OR children with “non-complex chronic disease” AND
- b. **Are socially complex** as defined by The Center of Excellence on Quality of Care Measures for Children with Complex Needs (COE4CCN)<sup>iv</sup> as “A set of co-occurring individual, family or community characteristics that can have a direct impact on health outcomes or an indirect impact by affecting a child’s access to care and/or a family’s ability to engage in recommended medical and mental health treatments”. Specifically, KPNW will be defining children as socially complex if the system-level data they have indicates the presence of one or more of the 14 factors identified by **COE4CCN** as predictive of a high cost health care event (e.g. emergency room use).

### Key Project Activities and Timeline

The proposed 20-month project has **four main activities** that intentionally overlap and feed into each other. A project work plan can be found on page 8.

**Activity #1** focuses on the facilitation of **KPNW on development of a standardized pediatric team-based care (TBC) program** that will be spread to two other sites, and **distillation of methods and key learnings** applicable to other systems. (System #1 – Health System for Public and Privately Insured)

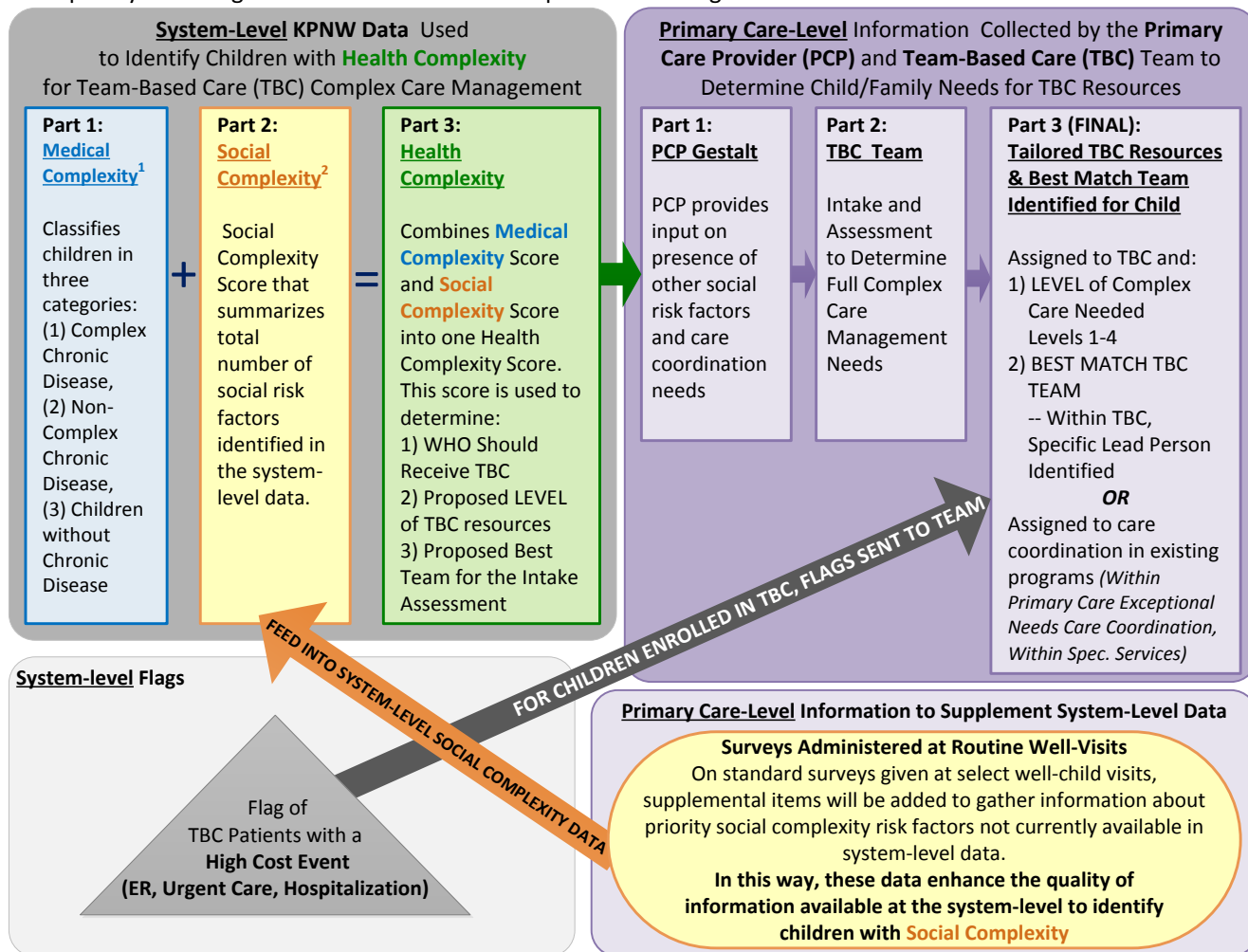
- **Activity #2** is facilitation and consultation support to the **Oregon Health Authority (OHA)** on methods to **identify children with health complexity**, based on medical and social complexity factors, and implementation of **child-level data sharing of this information to the CCOs** they contract with to serve young children. (System #2 - Medicaid)
- **Activity #3** supports **learning sessions with CCOs** on how to use the data provided by OHA for identifying children with health complexity and the pediatric complex care management models. (System #3 - Health Systems for Publicly Insured)
- **Activity #4** **distills the tools and summarizes learnings** from Activities #1-3 into **products** that can be disseminated through **summary briefs** and **interactive webinars**. Tailored dissemination materials will be developed for: 1) Health systems and 2) Medicaid agencies.

What follows is an overview of each activity.

**Activity #1: Facilitation of KPNW on development of standardized pediatric team-based care (TBC) and distillation of methods and key learnings applicable to other systems.** KPNW is now focused on spreading the model to two additional primary care sites, and sharing the methods and tools to other KP sites through the national collaborative. In order to do this, the following is needed: 1) Specific methodologies that utilize system-level data to identify children with health complexity that would benefit from TBC; 2) A standardized TBC program that includes intake assessment tools, TBC resource assignment tools, and shared plans of care; 3) Evaluation metrics to quantify the impact of TBC. OPIP will facilitate the development of these three components (1A-C) and gather qualitative data to inform the dissemination described in Activity #4 (1D-E). Due to the benefit of this consultation, KP has agreed to then share the methods and tools developed in the dissemination products described in Activity 4. Letters of support and commitment from the KPNW are included.

**Figure 1.0** provides a detailed overview of the KPNW system-level data that will be used to identify children with health complexity eligible for TBC and the specific methods that will be used at the primary care and TBC level to assign TBC resources that are the best match for the child.

**Figure 1:** Overview of **System-Level** and **Primary Care-Level** Methods Within KPNW to Identify Children with Health Complexity and Assign Pediatric Team-Based Complex Care Management Resources



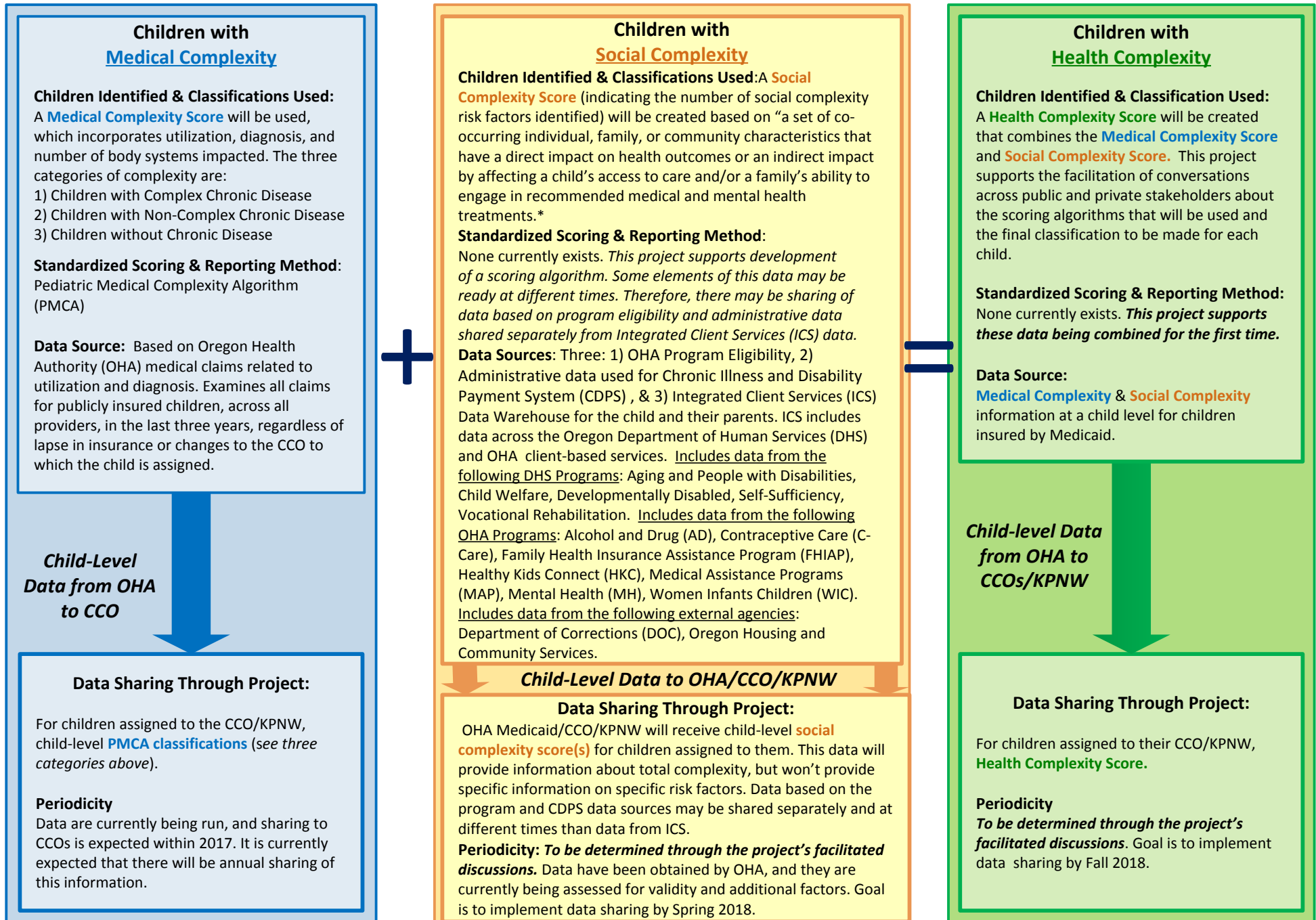
<sup>1</sup>Based on the Pediatric Medical Complexity Algorithm (PMCA), which assesses the types of services received, diagnosis, and number of body systems impacted. Claims and utilization available within the KPNW system used. Service provided outside of KPNW or in the past for children when they were not covered by KPNW is not included.

<sup>2</sup>Based on system-level data KPNW is able to assess about the child and family that relate to social risk factors. Data sources include program eligibility (Medicaid, Subsidized Exchange) and fields within the electronic medical record highlighting patient need (e.g. Translation) or results of parental/youth screening (Depression screening, Substance abuse screening).

**Activity #2: Facilitation and consultation support to the Oregon Health Authority (OHA) on methods to identify children with health complexity, based on medical and social complexity factors, and implementation of child-level data sharing of this information to CCOs and KPNW.** OPIP will provide facilitation and support to OHA, which administers the Medicaid/CHIP programs, to **achieve the goal of developing and implementing novel methods for identifying children with health complexity, based on medical and social risk factors.** This facilitation will include a focus on using this population-level information to inform state-level policies and contracting. OPIP will provide consulting to OHA in sharing child-level data about health complexity with KPNW and the CCOs in order to inform their pediatric complex care management programs. OPIP will then work with OHA to distill and summarize the methods, models and learnings for other State Medicaid agencies in Activity 4. A letter of support and commitment from OHA’s Health Policy & Analytics Director is included. OHA Health Analytics has already established the memorandum of agreements with the Integrated Client Services Data Warehouse to obtain the social complexity data described below.



**Figure 2.0:** Overview of System-Level Data used to Identify Children with **Medical** and **Social** Complexity, with the goal of Classifying Children with **Health** Complexity Who Would Benefit from Complex Care Management and Novel Data Sharing to CCOs/Health Systems



\* Social Complexity as defined by The Center of Excellence on Quality of Care Measures for Children with Complex Needs (COE4CCN)

**Activity #3: Learning sessions with CCOs on how to use the data provided by OHA for identifying children with health complexity & KPNW pediatric complex care management models.**

CCOs are invested in identifying children with health complexity whose costs can be impacted through complex care management given they are given a global budget. At the August 2016 meeting described earlier, CCOs are eager for the data sharing from OHA, to learn about the KPNW model in order to identify components that can be implemented in their system including centralized complex care management or contracting/payment models with primary care medical homes that incorporated complex care management. OPIP will facilitate learning sessions of CCOs and KPNW. OPIP will provide targeted support to CCOs on applying and using the information presented. OPIP will then distill the learnings about implementation in varied settings to inform the dissemination products described in Activity 4 for health systems nationally. A Letter of Support and Commitment from Health Share, the largest CCO in Oregon, serving over 200,000 publicly insured children, is included in this proposal.

**3A. Facilitate Learning Sessions of CCOs and KPNW.** At these meetings, models for health system-level complex care management will be shared, including the KPNW TBC resources. Learning sessions will be held after stakeholder meetings described in Activity 2. The following topic areas will be addressed: 1) Using child-level data provided by OHA related to medical complexity, social complexity and health complexity within each CCO to understand population estimates and needs for complex care management; 2) The KPNW model of using system-level data to identify children with health complexity. This will include how the OHA-level information can be used to enhance internal system-level data; 3) Models for sharing this information with medical homes to which children are assigned to within the CCO; 4) KPNW Pediatric Team Based Care tools; and 5) Evaluation metrics to gauge impact of pediatric complex care management programs.

**3B. Individual Interviews With CCOs Implementing One Or More Of The Models Presented.** OPIP will conduct interviews with CCOs that implement at least one or more of the methods shared at the Learning Sessions. The purpose of the interviews will be to learn which data, tools and methods the CCOs are using, modifications they have made, and successes and barriers experienced. The interviews will include information about regional variations observed given the CCO's location and infrastructure, patient panel, internal resources, and community-level resources.

**Activity #4: Develop Products Based on Activities #1-3 and Disseminate**

**Figure 3.0** on the following page provides a detailed summary of the products to be developed for targeted dissemination to Medicaid agencies, health systems, and organizations that work with them. All products developed will be made publicly available on OPIP's website ([www.oregon-pip.org](http://www.oregon-pip.org)).

**4A. Develop Summary Briefs:** In collaboration with health system partners, OPIP will develop two summary briefs distilling the models implemented through this project to be tailored to the following audiences 1) Health Systems and 2) Medicaid agencies. The summary briefs developed will provide an **array of applied and vetted approaches that health systems and Medicaid agencies** can use in their own settings. Appendices for each brief will provide the specific methods and tools.

**4B. Disseminate Summary Briefs through Interactive Webinars:** Interactive webinars, utilizing flipped classroom methodologies, will be conducted, and will require pre-reading. The **interactive webinars** will provide an opportunity for Medicaid agencies (and organizations contracted to work with them) and health systems to have an **engaged conversation with KPNW, OHA, and a CCO, in order to inform implementation.** OPIP will leverage existing relationships with the National Academy of State Health Policy (NASHP), National Improvement Partnership Network (NIPN), and Association of Maternal & Child Health Programs (AMCHP) to disseminate, and advertise the interactive webinars.

**4C. Presentation at the 2018 Annual Meeting of the National Improvement Partnership Network.** OPIP will develop a presentation summarizing the work with Medicaid and health systems and opportunities for Improvement Partnerships to support this work in their own states.

**Project Timeline:** Table 1 below provides a summary of the key tasks within each of the four activities and proposed timing over the 20-month project.

Table 1.0 Project Work Plan: Timeline for Key Activities within the Project	2017					2018												2019		
	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
<b>Activity #1: Facilitation of KPNW, Distillation of Learnings</b>																				
1A. Standardized methods to use system-level data to identify children with health complexity for TBC	X	X	X	X	X															
1B. Standardized Team-Based Care (TBC) Program Tools	X	X	X	X	X															
1C. Evaluation Metrics to Track/ Quantify Impact of TBC			X	X	X	X	X	X	X											
1D. Support Spread of TBC to Other Sites. Sharing with KP Regions	X	X	X	X	X					X	X	X	X	X						
1E. Conduct Qualitative Interviews of KP staff													X	X	X					
<b>Activity #2: Facilitation and Consultation to OHA, Sharing of Child-Level Data to CCOs and KPNW</b>																				
2A. Facilitation of OHA	X		X		X		X		X		X		X		X		X			
2B. Engagement of public and private stakeholders in-person meetings					X			X				X					X			
2C. Conduct Qualitative Interviews of OHA Individual engagement of stakeholders														X	X	X	X	X		
<b>Activity #3: Learning Sessions of CCOs and KPNW</b>																				
3A. Facilitate Learning Sessions with CCOs and KPNW					X			X				X					X			
3B. Interviews with CCOs Implementing Methods													X	X	X	X	X	X		
<b>Activity #4: Development and Dissemination of Products: Summary Briefs and Interactive Webinars</b>																				
4A. Development Two Summary of Brief on Approaches to Address Children with Health Complexity: From Identification to Complex Care Management.														X	X	X	X	X	X	
4B. Two Interactive Webinars Conducted																	X	X	X	X
4C. Presentation at NIPN Annual Meeting																			X	



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<sup>i</sup>Lucile Packard Foundation for Children’s Health. 2014. Children with medical complexity and Medicaid: spending and cost savings. *Health Affairs* 33(12):2199-2206.

<sup>ii</sup>Berry JG, Hall M, Neff J, et al. *Children with medical complexity and Medicaid: spending and cost savings. Health Affairs (Millwood)*. 2014;33(12):2199–2206pmid:25489039.

<sup>iii</sup>Kuo DZ, Hall M, Agrawal R, et al. *Comparison of health care spending and utilization among children with Medicaid insurance. Pediatrics*. 2015;136(6).

<sup>iv</sup>Simon TD, Cawthon ML, Stanford S, et al. Pediatric Medical Complexity Algorithm: A new method to stratify children by medical complexity. *Pediatrics*. 2014; 133(6): e1647-54. Doi: 10.1542/peds.2013-3875.

<sup>v</sup>Berwick DM, Nolan TW, Wittington J. The Triple Aim: care, health and cost. *Health Affairs*. 2008; 27 (3): 759-769.

<sup>vi</sup>Tamara D. Simon, Mary Lawrence Cawthon, Susan Stanford, Jean Popalisky, Dorothy Lyons, Peter Woodcox, Margaret Hood, Alex Y. Chen, Rita Mangione-Smith, for the Center of Excellence on Quality of Care Measures for Children with Complex Needs (COE4CCN) Medical Complexity Working Group.

<sup>vii</sup>Jeanne W. McAllister, BSN, MS, MHA Achieving a Shared Plan of Care with Children and Youth with Special Health Care Needs. May 2014.