Deliverable 3.4
Summary of Improvement Project Impact on Follow-up for Young Children
Based on Practice-Level Data

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Overview of Data Collected by the Primary Care Practice Sites

- The goal of the project was to improve the proportion of children identified at-risk who received best match follow-up.
- At the end of the project OPIP conducted **interviews with the quality improvement team** to gather their qualitative feedback about the tools provided. (Page 1)
- Given that follow-up entails providing developmental promotion and either rescreening the child or referring the child for additional services, the most reliable and valid source of data for the quantitative data to assess whether follow-up rates improved is the **electronic health record (EHR)**. (Pages 2-13)

Summary of Qualitative Feedback from the Primary Care Sites

- Each site noted the value, relevance and utility of the tools provided. When asked if these tools should be shared with other primary care sites, all four sites agreed they should.
- When asked about barriers to achieving higher-levels of follow-up, the sites reported the following:

- They are hesitant to refer to a Developmental Behavioral Pediatrician if no services are available locally to carry out the service plan outlined to best support the child.
- There is a lack of medical and therapy services for non-English speaking patients.
- There are barriers to services or access of services to address social-emotional delays.
- Parents are reluctant to access services if they are not available locally or in the language of preference.
- Providers personally felt that their follow-up rates for children who should receive a rescreen and developmental promotion (which is a large percentage of moderately delayed children) were higher than what they documented in the chart, and therefore not able to be counted. They noted barriers to existing standing fields to indicate these steps and the reliance of them having to document these steps in the chart note, which they may not consistently do.
- There is a lack of documentation and structured searchable fields in most of the EHR templates that align with best match follow up as outlined in OPIP's Medical Decision Tree.
- There are competing demands for quality improvement – two of the sites that participated in this pilot project are Family Medicine sites who are required to work on a number of quality initiatives at one time. Since children account for a small portion of their overall patient population, it can be hard to remember and prioritize this quality initiative, which is another reason that aligning EHR templates is critical.

Summary of Quantitative Evaluation Findings

This section focuses on the findings from the medical chart reviews. Before reviewing the findings, it is important to consider the following:

Background Information on the Medical Chart Review Findings

- Data reported in this report is limited to what providers documented in the chart, and as noted in Deliverable 3.3, there are significant barriers to some of the pilot site's EMR templates aligned with best match follow up for developmental screening.
- Overall improvement may be larger than we are able to measure in the medical chart reviews due to lack of documentation for factors that count as follow-up, such as provision of developmental promotion and rescreening.
- Tillamook County Community Health Center's (TCCHC) data at baseline included a provider who saw a lot of children, who in the course of our project moved to practice at Adventist Women's and Family. In this transition, a number of children followed that provider to

Adventist Women's and Family, so while it may look like TCCHC's referral counts dropped, it is in part due to a significant change in the panel that is served by the clinic.

- OHSU changed EHRs in the middle of the project and introduced new forms related to developmental screening. Therefore, the clinical teams have concerns about comparing their baseline and Quarter 1 findings that are based on EHR #1, with the subsequent data findings that are based on EHR #2.
- As has been noted in previous reports, each practice had different levels of ability to: a) Identify children at-risk for delays (the denominator of the metric) and b) Whether those children identified at-risk received best match follow-up. Some practices were able to pull a majority of the quality information by running reports (Adventist), while other practices had to use a manual data collection and chart review process (TCCHC and OHSU Scappoose), and finally one practice had to manually review all charts for ASQ data (CMH-Pediatrics).

The findings are presented in the following section.

Executive Summary of the Medical Chart Review Findings Related to Follow-up to Developmental Screening

- Overall, improvement in follow-up to developmental screening was achieved.
- The **level and amount of improvement** varied by site and there are remaining opportunities for improvement.
    - Adventist Women's and Family made notable improvements for follow up aligned with OPIP's medical decision tree as seen on Pages 8 and 9.
        - ✓ **Figure 1** shows a **22% improvement for Adventist Women's and Family** follow-up to development screening rates**.**
            - OPIP feels that Adventist achieved this success because: 1) The providers were intrinsically motivated to improve the care that they provided, and 2) The providers leveraged their EMR templates to align with best match follow up.
        - ✓ **OHSU Scappoose saw a slight improvement** despite changing EHR's, change in clinic staff, and competing clinical demands**.**
    - CMH's follow up to developmental screening declined over time.
        - **CMH's follow up that was aligned** with the medical decision tree **declined by 20%.**
        - In the course of our project, CMH had significant staffing issues and no EHR supports which hindered their ability to improve.
- Improvements were **higher for screens with higher-levels of risk**, although the follow-up rates for the higher risk screens still have opportunities for improvement.
    - Overall we observed improvement rates were higher for children with higher levels of risk.
    - Again, this may partially due to the fact that best match follow-up for children with lower levels of risk is often to provide developmental promotion and to rescreen the child, which providers noted was a barrier to consistently document in the chart.
- **Figure 3** shows the improvement rates across all four primary care sites, for children with high levels of delay. This is defined as 2 or more domains in the black. The last quarter of data collection included a targeted focus on improving care and conducting gap analysis for this population. As a result, we saw high levels of improvement.
- Overall, referrals increased to a **Developmental Behavioral Pediatrician** for an evaluation, **Early Intervention** and Occupational Therapy and Physical Therapy.
    - While it is encouraging to see improvements in the referrals made, there were still a large number of should who SHOULD have been referred to these services who were not.

PART 1: OVERVIEW OF EVALUATION DATA COLLECTION

Table 1.0 provides an overview of the data collected within each of the four pilot sites during this reporting period. It is important to note that Adventist Women's and Family was recruited as a pilot site after work had already begun in the other three pilot sites. Because of this, their baseline data collection time period does not directly map to the other sites. In an effort to create synergy, Adventist's first data collection was aligned with the other sites second data collection.

Table 1.0 Overview of Data Collection Periods within the Primary Care Sites

CPCCO Project Data Collection County color key: **Clatsop**, **Columbia**, **Tillamook**	**Timeline**						
	July-Dec	**Jan-Mar**	**Apr-June**	**July-Sept**	**Oct- Dec**	**Jan-Mar**	**Apr-June 15th**
	2017	**2018**	**2018**	**2018**	**2018**	**2019**	**2019**
PRIMARY CARE Data: Medical Chart Review							
Tillamook County Community							
Data Collection Periodicity	**7/1/16-6/30/17**		**Q1**	**Q2**	**Q3**	**Q4**	**Q5**
Adventist – Women's and Family							
Data Collection Periodicity	**6/1/17 - 5/31/18**			**Q2**	**Q3**	**Q4**	**Q5**
CMH-Peds							
Data Collection Periodicity	**7/1/16-6/30/2017**		**Q1**	**Q2**	**Q3**	**Q4**	**Q5**
OHSU Scappoose							
Data Collection Periodicity	**7/1/16-6/30/2017**		**Q1**	**Q2**	**Q3**	**Q4**	**Q5**

PART 2: DATA ON SCREENING AND THE PROPORTION OF SCREENS THAT IDENTIFIED A CHILD AT RISK (DENOMINATOR FOR THE FOLLOW-UP METRIC)

Table 2.0 provides a descriptive overview of the characteristics of the children and screens during the data collection period. "Pre-training" is based on a year of data from July 1, 2016-June 30, 2017. **Post Training** for TCCHC, OHSU Scappoose and CMH-Pediatrics is based on 1 year and 3 months of data **following the April 2018 training** and 1 year of data for Adventist Women's and Family who started later.

Table 2.0. Pre-Training and Post Training Data Collection: Descriptive Information about Developmental Screens

	Metric	Descriptive Information about Medical Chart Review Data Collected by Pilot Primary Care Sites							
		Primary Care Practice Data: Medical Chart Review Findings							
		Columbia Memorial Hospital- Pediatrics		OHSU Scappoose		Tillamook County Community Health Center		Adventist - Women & Family	
		Pre Training	Post Training	Pre Training	Post Training	Pre Training	Post Training	Pre Training	Post Training
1) Develop-mental Screening Completed	**Screens conducted**	321[1]	2434	630	745	202	124	545	785
	Proportion of screens with 96110 claim	93%[1]	92%	54%	53%	Not Collected	98%	47%	85%
2B) Proportion of **Screens** Identifying Risk	**Overall At-Risk**	**12%** (n=31)	**11%** (n=258)	**17%** (n=107)	**21%** (n=153)	**21%** (n=43)	**23%** (n=29)	**12%** (n=63)	**11%** (n=89)
	3-5 domains in black	1% (n=3)	1.3% (n=31)	1.7% (n=11)	4% (n=28)	10% (n=11)	3.2% (n=4)	3% (n=8)	1% (n=11)
	2 domains in black	1% (n=3)	1.1% (n=27)	2.4% (n=15)	3% (n=22)	6% (n=7)	2.4% (n=3)	2% (n=5)	1% (n=9)
	1 domain in black	6% (n=15)	4.3% (n=105)	8.1% (n=51)	8% (n=58)	13% (n=15)	11.3% (n=14)	9% (n=26)	5% (n=36)
	2 or more in gray	4% (n=10)	3.9% (n=95)	4.8% (n=30)	6% (n=45)	9% (n=10)	6.5% (n=8)	8% (n=24)	4% (n=33)

[1] Within CMH Astoria, this percentage is based on the sample of charts reviewed * Due to CMH's data collection process, we cannot differentiate between screens and children **Data Collection Time Periods**: Pre Training – 1 year of data; Post Training 5 Quarters of Data (1 year and 3 months)

Important notes about screenings:

- The transition of staff between TCCHC and Adventist Women and Family is evident in the screens conducted in the respective practices post training, with more of them being conducted in Adventist once the provider transitioned.
    - Adventist Women's and Family conducted almost double the amount of screens in the same time period. There was also significant improvement in billing for screens conducted.
- OHSU Scappoose identified more screens at risk post training than compared to the baseline data collection period and has significant areas for improvement for billing developmental screening. This was not a measure that OPIP was using to drive quality improvement, but had been identified as a priority interest by their new Office Manager. Despite investigation, staff could not identify what triggered the 96110 bill in their new EMR template yet lead to no improvement over the course of the project.

PART 3: FOLLOW-UP TO DEVELOPMENTAL SCREENING RATES

Scoring Follow-up to Developmental Screening

- OPIP developed a set of metrics that would identify whether the child received "best match follow-up" that are aligned with the medical decision tree.
- Anchored to the medical decision tree, the **scoring is dependent on the levels of risk identified**. Secondly, best match follow-up for some risk groups (2 in the black, 1 in the black) is **based on whether or not the parent or provider had concerns**.
- Given that this information is NOT documented in the chart, **OPIP created two versions of the follow-up metric**, one that assumes that the parent or provider are concerned and the second version that assumes no parent or provider were concerned.

  Lastly, within each of these versions, **OPIP also calculated the score in two ways:**
  - Option A requires that the best match follow up happened at the time of the visit and
  - Option B allows for credit to be given if the chart documentation indicated a best match follow up happened at the visit, previously happened, OR if the provider attempted a referral but the parent declined.

Table 3 provides an overview of the scoring used and how it relates to the figures shown in this section.

Table 3. Scoring Methodology for Follow-Up to Developmental Screening

Follow-up aligned with medical decision tree	What "counts" as appropriate follow up	Scoring Options
Figure 1– Assuming parental/ provider concern	**3+ in the black** Referral to EI **AND** DB Peds (only EI if < 1 yr)	**Version 1 -** Best match follow up done at time of visit **Version 2 –** Best match follow up done at time of visit, referred parent decline, referred previously
	1 or 2 in the black Referral to EI	
	2+ in the grey Documentation of rescreen within 3 months	
Figure 2 – Assuming NO parental/ provider concern	**3+ in the black** Referral to EI AND DB Peds (only EI if < 1 yr)	
	1 or 2 in the black Referral to EI or rescreen within 3 months	
	2+ in the grey Documentation of rescreen within 3 months	

Figure 1: Percent Change Post Training in Follow Up Aligned with OPIP's Medical Decision Tree: Uses the Scoring Version that Assumes All Parents or Providers **were Concerned** at the Time of Visit

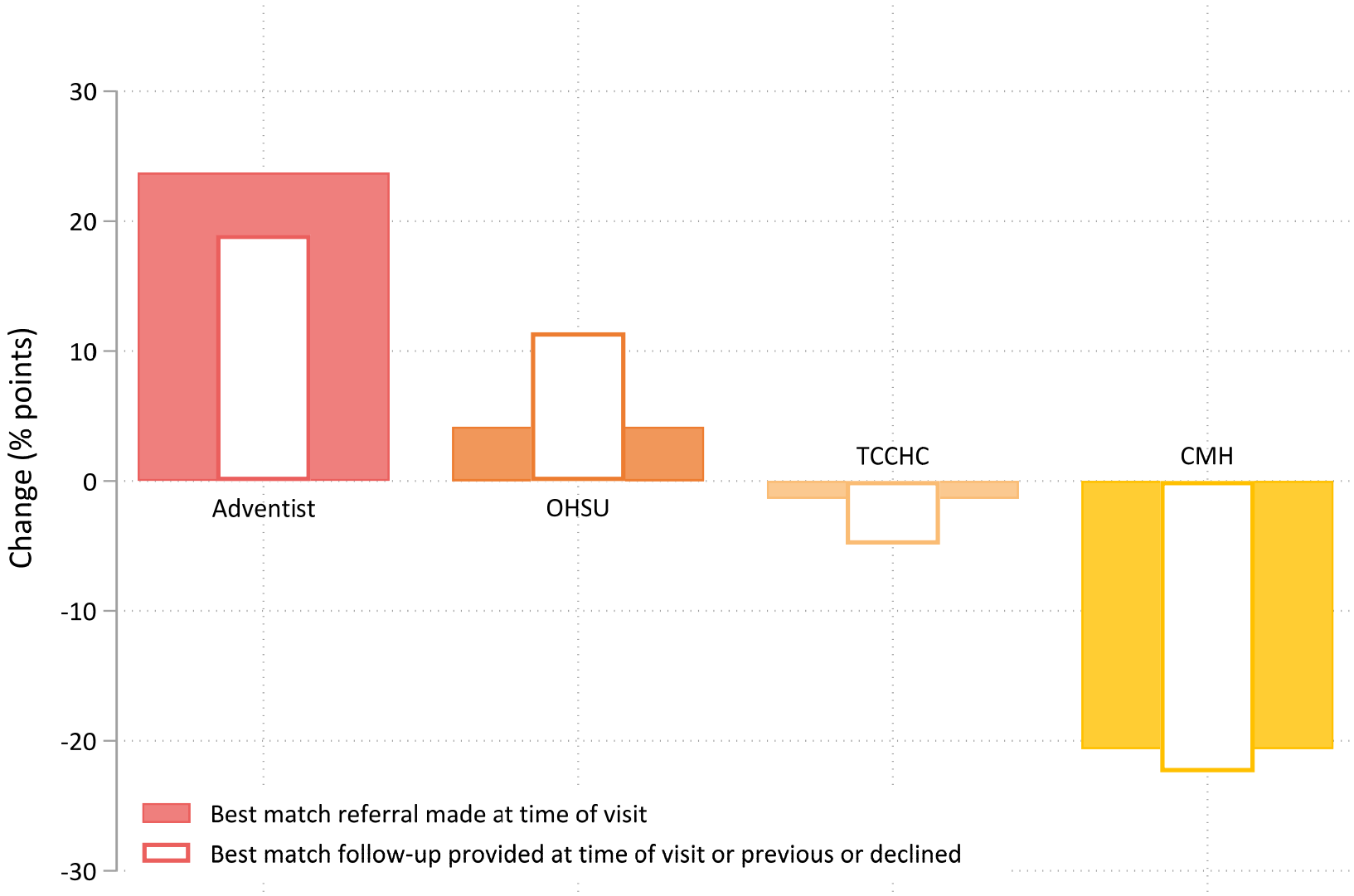
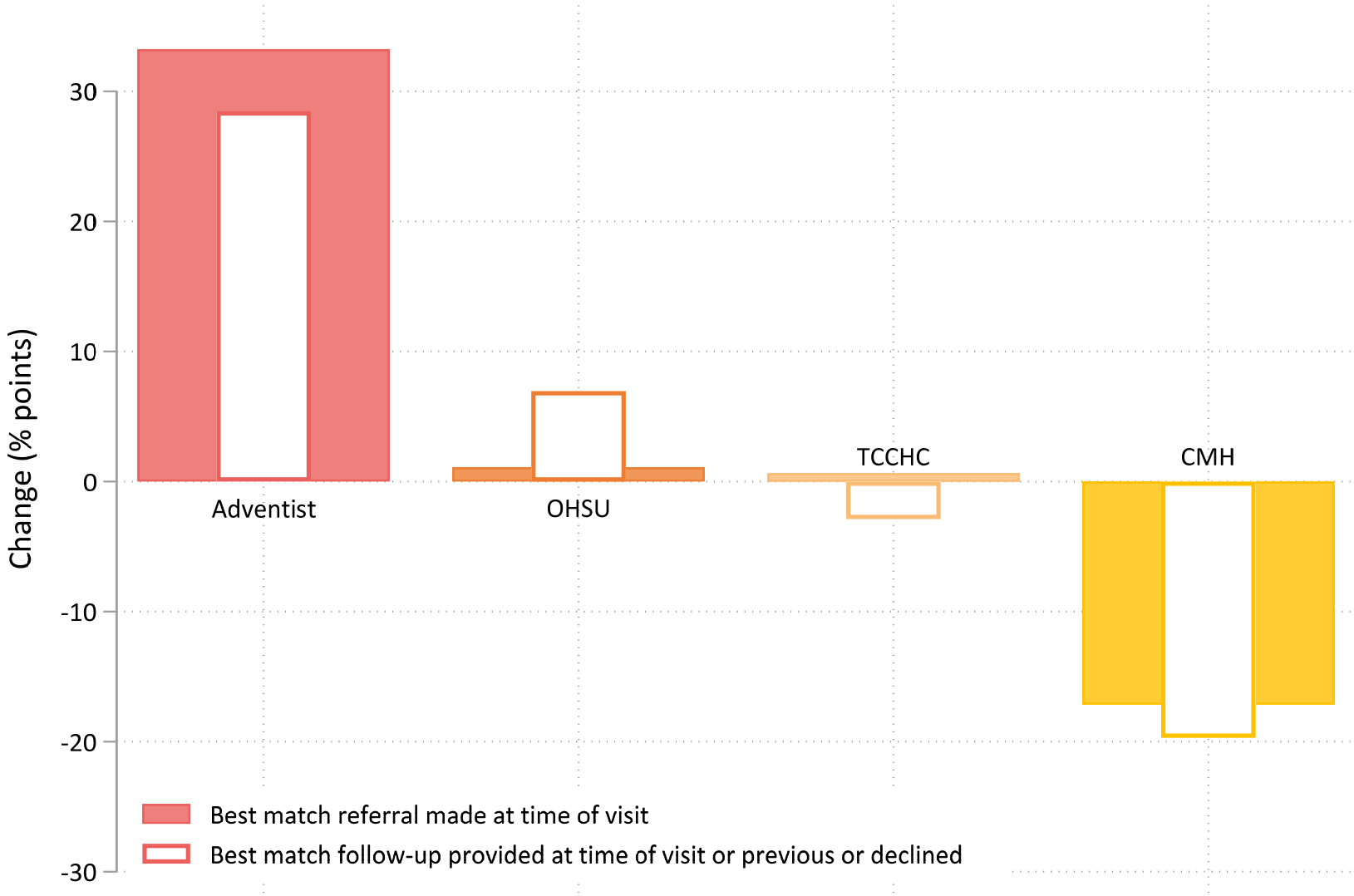


Figure 2: Percent Change Post Training in Follow Up Aligned with OPIP's Medical Decision Tree: Uses the Scoring Version that Assumes NO Parents or Providers were Concerned at the Time of Visit



PART 4: FOLLOW-UP RATES BY LEVEL OF RISK

OPIP analyzed the follow-up rates by risk groups to assess if higher rates were observed for children with higher levels of risk. This was a specific area of focus for facilitation as it felt imperative to ensure that children with the most delays received follow-up. Overall we observed improvement rates were higher for children with higher levels of risk. Again, this may be partially due to the fact that best match follow-up for children with lower levels of risk is often to provide developmental promotion and to rescreen the child; providers noted it was a barrier to consistently document in the chart.

Figure 3 shows the follow-up rates across all four of the pilot sites over the course of the project, specific to children with higher levels of delay. This is defined as 2 or more domains in the black. The last quarter of data collection included a targeted gap analysis focus on practice facilitation. As a result, greater levels of improvement were observed.

Figure 3:

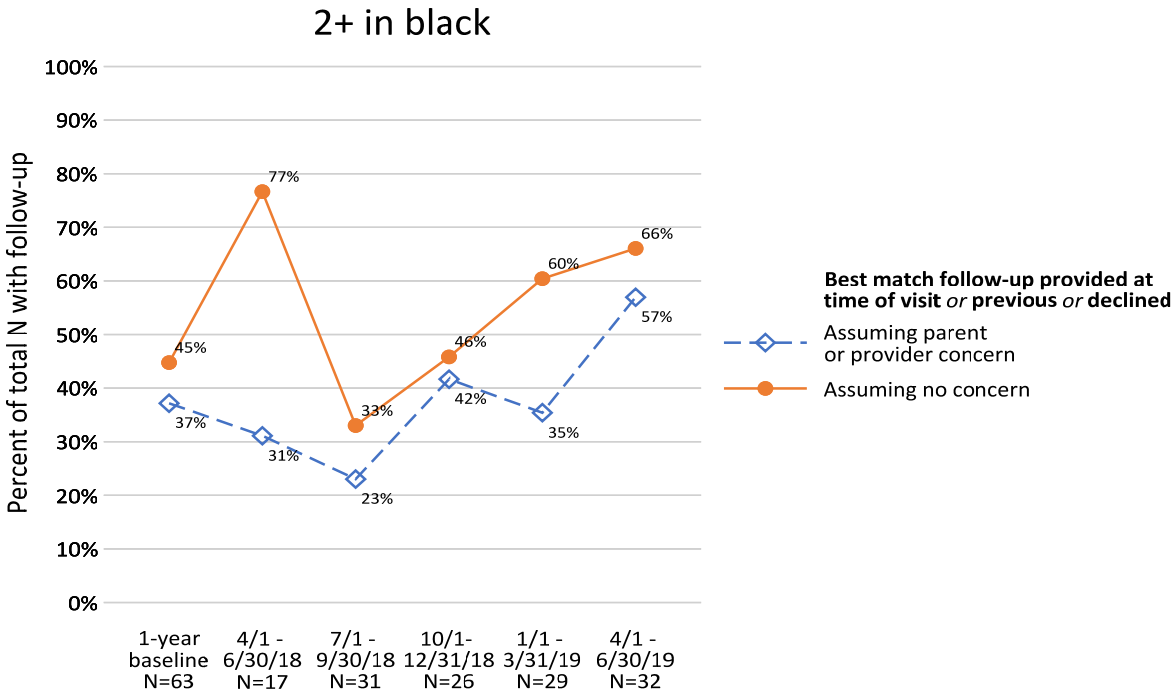
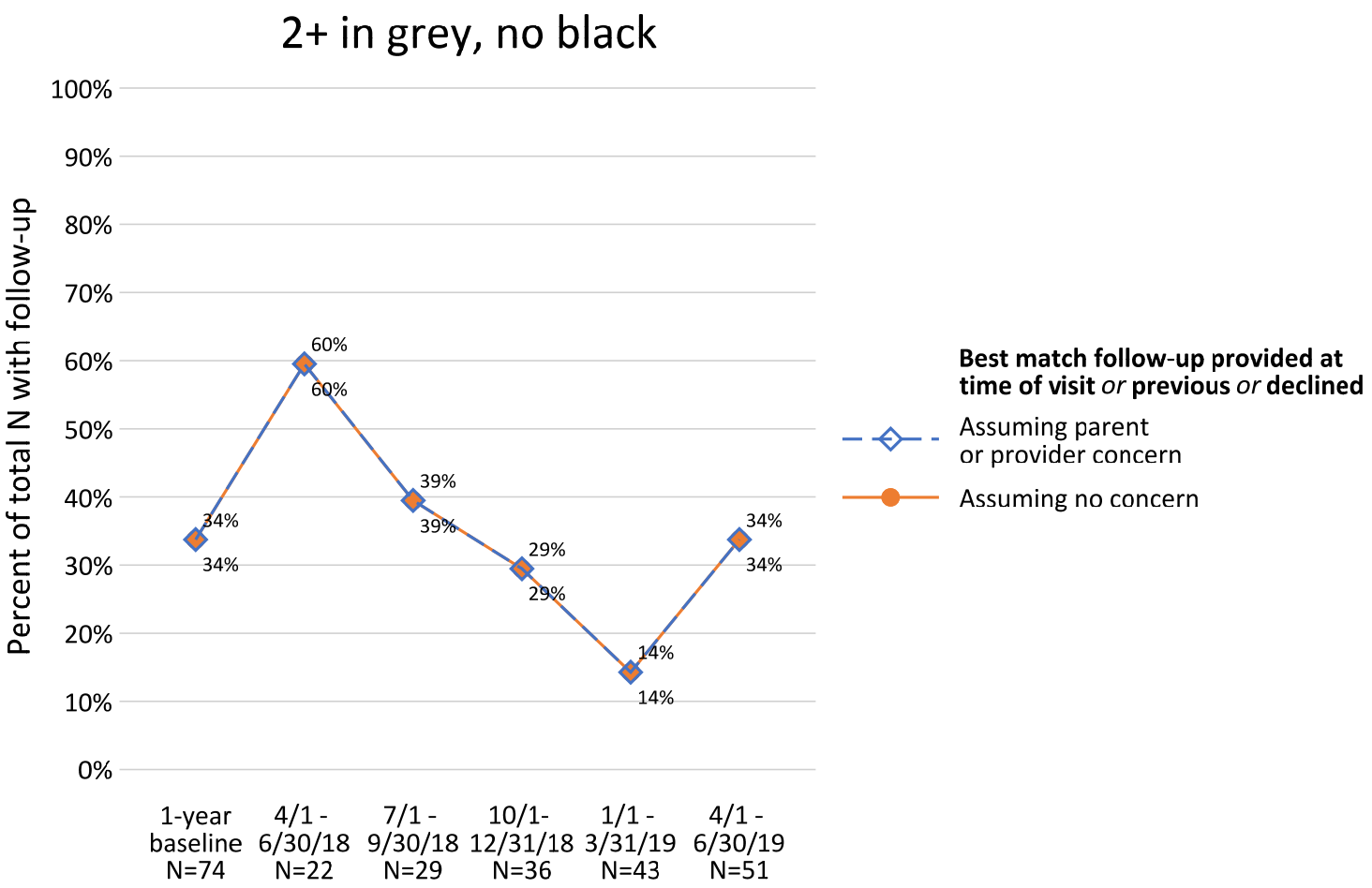


Figure 4 shows the lack of documented follow up for screens that identified a mild risk. This is defined as 2 or more domains in the grey. The best match follow-up that is required for this risk level in OPIP's scoring alorythm was documentation of 'rescreen/monitoring within 3-6 months', which has been noted as a major barrier by practices trying to leverage their EMR based reporting.

Figure 4



PART 5: ASSESSMENT OF WHETHER SPECIFIC FOLLOW-UP REFERRALS SAW IMPROVEMENT

In addition to assessing whether the child received best-match levels of follow-up, individual referrals were also examined. Table 4.0 shows the referrals made to each of the applicable providers and the change in referrals to these providers post training as compared to the previous year.

Table 4: Number of Referrals Made to Follow Up Services within Medical Decision Tree at Before and After Training and Changes Observed

Referral to:	Quantitative Baseline and Follow-up Data: States of Data Collection and Analysis												
	Primary Care Practice Data: Medical Chart Review Findings												
	Columbia Memorial Hospital- Pediatrics			OHSU Scappoose			Tillamook County Community Health Center			Adventist - Women & Children			TOTAL Referrals Made After The Training
	Baseline* (1 year)	Post Training (1 yr 3 months)	Δ	Baseline (1 year)	Post Training (1 yr 3 months)	Δ	Baseline (1 year)	Post Training (1 yr 3 months)	Δ	Baseline (1 year)	Post Training (1 year)	Δ	
DB/Peds	4	4		2	13	↑	0	1		0	0		18
EI	44	49	↑	11	38	↑	7	4	↓	2	17	↑	108
OT/PT	4	14	↑	0	2	↑	0	2	↑	1	0		17
Speech Therapy	4	14	↑	4	4		4	4		3	0	↓	22
CaCoon/Babies First	0	1		0	1		0	1		0	0		3
Internal Behv. Health	0	0		0	2		0	NA		0	NA		2
External mental health	0	0		0	1		0	NA		0	NA		1

Δ Is whether there was an increase (↑) in the number of referrals after the training.

** Due to data barriers, CMH's baseline data is based on a SAMPLE of children in a year and not based on the total number of children. Therefore, OPIP imputed an estimate of the referrals based on the sample.*

Observations about the referral data:

- Overall, referrals increased to a **Developmental Behavioral Pediatrician**, **Early Intervention and Occupational Therapy** and **Physical Therapy**. While it is encouraging to see improvements, there were still a large number of should who SHOULD have been referred to these services who were not.
- While facilitation focused on improving the pathway between TCCHC and Adventist Women's and Family to Adventist Rehabilitation Center, we did not see a meaningful increase in children being referred. TCCHC staff theorized that referrals did not increase to this service because Adventist Rehabilitation does not have services for children and families whose language of preference is Spanish – particularly Speech Therapy.