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# PHLC Immunization CIS Combo 10 Measure

## User Story - Mia Taylor



- Age: 16 months (born June 2024)
- Health Concerns: Reactive airway disease, history of hospitalization with pneumonia
- Social Needs: Adopted aged 6 months by foster parents
- Location: San Benito County
- Occupation: Baby
- Insurance: Managed Care Plan
- Pronouns: she/her

### Introduction

This user story provides a narrative walkthrough of Mia Taylor’s journey through the California health and social care ecosystem, with a focus on how her immunization data is created, transmitted, and reconciled across multiple systems and organizations. The introduction walks through the “current state”, highlighting the fragmented and often manual processes that occur today when an infant experiences a name change, provider transitions, or county-to-county moves. By tracing Mia’s path from birth to her hospitalization at 16 months, the user story demonstrates how small workflow gaps or delays can compound over time, and how streamlined immunization data exchange and workflows can benefit patient care and improve performance on the CIS Combo 10 EPT measure.

**Current Workflows & Suggested Workflow Improvements:** In the use cases in the document, certain **current state workflows** are ~~struck through~~ and the suggested improvements to replace these current workflows are **shown in blue text**. The suggested improvements illustrate potential future-state workflows that streamline processes, strengthen data quality and completeness, and reduce administrative burden, all with the goal of improving performance on the CIS Combo 10 EPT measure. Some organizations and practices already perform certain future state workflow steps, while others have the capability but have not yet implemented the necessary technology or workflows to do so.

To support future implementation work, the **blue arrows** in the use case diagrams illustrate specific opportunities for workflow modernization. These diagrams reflect early thinking around cross-system data flow, identity resolution, and immunization registry integration, with more detailed, step-by-step workflows to be delivered later as implementation artifacts.



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### **About Mia:**

- Mia is a 16 month old baby living in San Benito County with her adoptive parents, Laura and Matt Taylor. She was born in June 2024.
- Laura (38) and Matt (39) adopted Mia in December 2024, following several unsuccessful IVF attempts and a prolonged and stressful adoption process
- The adoption took place in Glendale where Laura and Matt lived at the time. They moved back to San Benito County in May 2025 to be closer to Laura's family
- Laura works as a per diem Certified Nursing Assistant (CNA) at a SNF in Hollister. Matt works as a contractor for a large company's IT helpdesk, and normally works from home
- Mia's birth name is Luna Ramirez. Her birth mother Ana Ramirez (24) has a history of substance use and mental health issues leading up to the adoption
- Mia was born prematurely at 34 weeks at a Los Angeles Hospital. She was evaluated for fetal alcohol syndrome and withdrawal symptoms at birth. She showed only mild withdrawal symptoms, although ongoing developmental issues are a source of worry for Laura and Matt
- Mia was placed in foster care when she was 3 weeks old. She was fostered by Laura and Matt Taylor until she was 6 months old, and her adoption by them was finalized in December 2024
- Mia has Reactive Airway Disease. In October 2025, she was hospitalized for 4 days with pneumonia after contracting flu at her daycare
- Normally she attends a home daycare in San Benito County 5 days a week while Laura and Matt work

### **Mia's Challenges and Goals:**

- Mia is a fun-loving toddler and loves spending time with her parents and grandparents and her friends at day care
- She has been slow to talk and this worries Laura and Matt in terms of ongoing developmental issues
- Her Reactive Airway Disease is also a source of worry, especially with this year's flu season approaching.
- She has an inhaler and spacer that she is meant to use when she is sick or starts wheezing, but it's difficult for her parents and daycare staff to get her to take it as directed
- Her hospital stay in October of this year was very expensive and stressful for Laura and Matt
- Some of the information about Mia's birth mother and the information that came from her foster family was incomplete and it's been a challenge for new providers to figure out some of the details of what vaccinations and other medical treatment she has had.

### **Mia's Pain Points:**

- Laura and Matt worry about her Reactive Airway Disease and it getting worse as she gets older



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- They worry about the risk of her picking up infections at daycare, but feel that there's no alternative as they both need to work
- Laura's mother Sue has become increasingly skeptical of vaccines, and has suggested that vaccines may be causing Mia's developmental issues
- Laura and Matt feel under pressure about this. They recently expressed concerns to their pediatrician, but the pediatrician encouraged them to go ahead with the regular vaccination schedule, especially given Mia's respiratory issues

#### **Mia's Typical Routine and Interactions:**

- Mia goes to home daycare 5 days a week - 8am - 5:30pm
- There are 10 children in the daycare ranging from 3 months to 4 years old
- At day care her favorite activity is the sandbox
- Her favorite food is ice cream
- On weekends she loves going to the playground with her parents
- Her favorite TV shows are Ms Rachel and Daniel Tiger
- She sees her pediatrician every 6 weeks to check on the Reactive Airway Disease, and for bimonthly well visits
- Her pediatrician recently referred her for early intervention speech and language therapy and she is currently on a waitlist
- Her parents are still in contact with the social worker and agency that facilitated her adoption in Glendale

#### **What Mia wants from the CA Health and Social Care System:**

- She wants her health care providers to have good, accurate information, despite the adoption and change of name and county
- She wants to be protected from flu, Covid and other infections that might exacerbate her RAD
- She wants the other kids in her daycare (and future preschool etc) to be vaccinated too to make it safer for her to learn and play

### **Use Case Scene Breakdown**

Each use case represents a major stage in Mia's journey and is composed of one or more scenes that detail the interactions between actors, records, and data pipelines.

The breakdown illustrates both the **current-state realities** (e.g., reliance on paper documents, manual CAIR entry, fragmented identity management) and the **pain points** that emerge as various stakeholders — hospitals, pediatricians, social workers, public health departments, and Medi-Cal managed care plans work to maintain an accurate immunization history. These scenes collectively highlight the structural



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challenges the PHLC Immunization CIS Combo 10 measure must overcome to ensure high-quality, complete immunization data in California.

Overall, the use case follows Mia through:

- **Birth and immediate postnatal period**, when her initial identity and first vaccines are recorded under “Baby Ramirez” and later “Luna Ramirez.”
- **Hospital discharge and transfer to foster care**, where paper records begin to play a role and early immunization information must be manually re-entered.
- **Post-adoption outpatient care**, where pediatric practices attempt to reconstruct her immunization history and manually update CAIR.
- **Name change, adoption finalization, and county-to-county move**, where mismatches between current and prior identities lead to incomplete CAIR queries and require manual searches and merging.
- **Ongoing vaccine administration across multiple settings**, including pediatric offices and public health events, each of which contributes new data entered either manually or via HL7 VXU messages.
- **Hospitalization at 16 months**, where timely access to complete immunization history becomes clinically important, and where additional updates must be shared back to CAIR and downstream systems.

## Use Cases

### Use Case 1: Luna’s Birth, Medi-Cal Registration and Immunization Record Creation

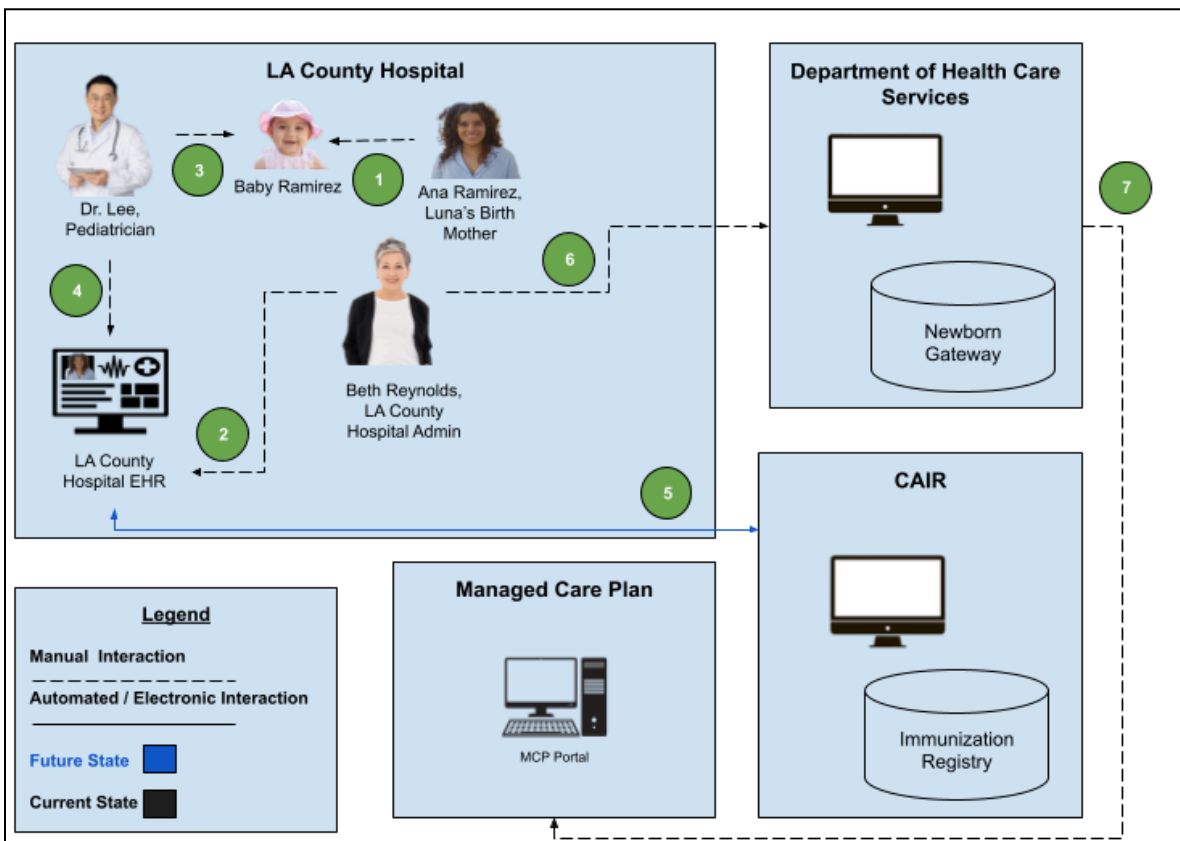
#### Use Case Scene 1A: Birth and Medi-Cal Registration

1. **Baby Ramirez** is born at 34 weeks gestational age to **Ana Ramirez** in a Los Angeles Hospital in June 2024.
2. **Beth Reynolds, the hospital administrator**, documents the birth in Ana’s chart.
  - a. The birth is covered under Ana’s Medi-Cal Managed Care Plan (MCP).
3. **Dr. Lee, a pediatrician at the hospital**, administers Baby Ramirez’s first Hep B vaccination dose at the hospital.
4. The dose is recorded in Ana’s record in the hospital EHR.
  - a. ~~The first Hep B dose is listed as being administered to “Baby Ramirez”.~~
  - b. **The hospital waits until Baby Ramirez is named Luna, or upon her discharge, to submit this birth dose of Hep B to CAIR.**
5. ~~Beth manually inputs Baby Ramirez’s vaccination data into CAIR through the CAIR portal.~~
  - a. The vaccination record includes: newborn name, address, vaccine information



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- i. Ideally also includes: mother's first name, maiden name, and date of birth  
The hospital EHR automatically sends vaccination records, including Baby Ramirez’s, as an HL7 V2 VXU message to CAIR via CAIR’s [Bidirectional Data Exchange \(BiDX\)](#).
6. Beth reports the birth to the state via the Newborn Gateway Portal (DHCS), and a new record is then created.
  - a. Beth submits: Ana’s full name, date of birth, Medi-Cal ID (BIC), CIN, or SSN.
  - b. She also submits Baby Ramirez’s date of birth, name (Baby Ramirez), gender, address, and facility info.
7. DHCS assigns Baby Ramirez a Medi-Cal CIN in a 3 day timeframe and automatically assigns her to Ana’s Medi-Cal plan.



Use Case Scene 1A: Birth and Medi-Cal Registration

### Use Case Scene 1B: Hep B Vaccination Dose

1. Ana decides to name her baby **Luna Ramirez**. She relinquishes custody of Luna so that she may be adopted.

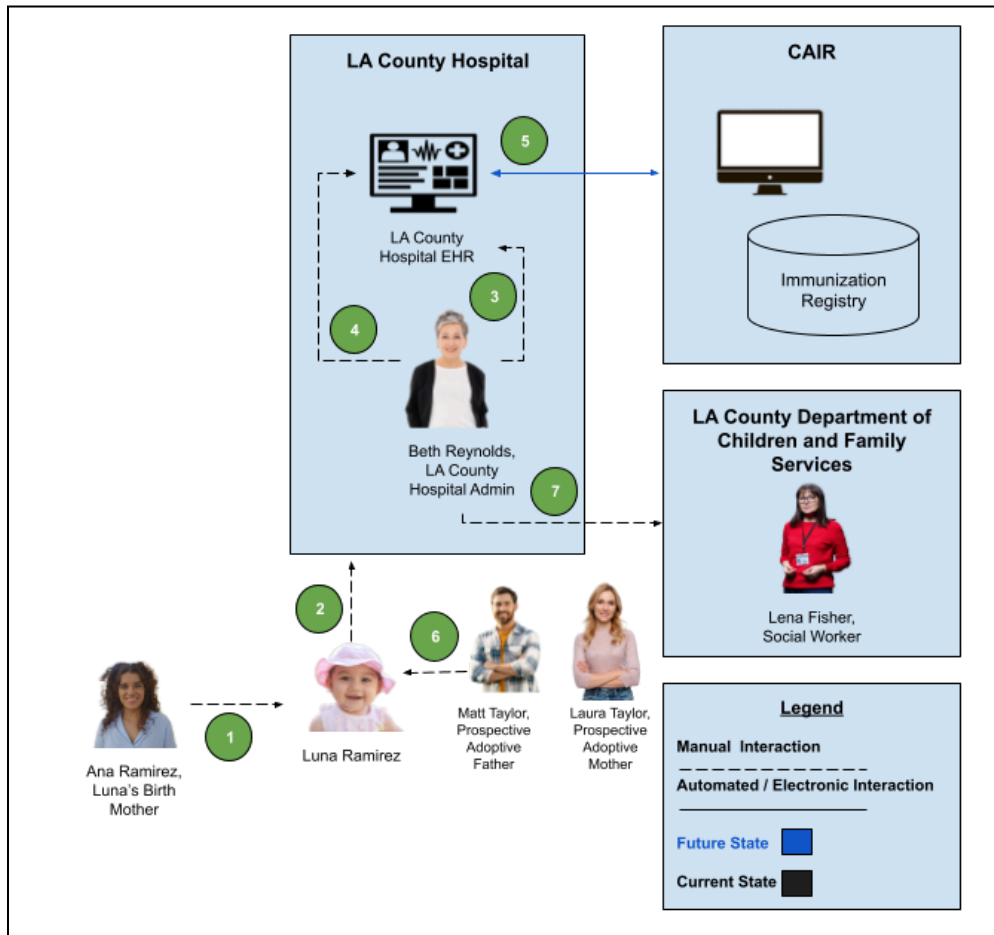


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2. Luna is admitted to a special care unit where she is monitored and evaluated for fetal alcohol syndrome and withdrawal symptoms.
3. Luna's admittance to the special care unit triggers the creation of an independent record in the LA County Hospital EHR.
  - a. Luna is her own patient independently of her birth mother
4. Beth reviews Ana's record, and pulls all of the data including Luna's Hep B. vaccination and enters that data into Luna's record.
5. ~~Beth logs into the CAIR portal and sends Luna's updated vaccination records to CAIR.~~  
That evening, the hospital EHR automatically sends vaccination records, including Luna's, as an HL7 V2 VXU message to CAIR via CAIR's [Bidirectional Data Exchange \(BiDX\)](#).
6. The vaccination record includes: newborn name, address, vaccine information
  - a. Ideally also includes: mother's first name, maiden name, and date of birth
7. The Department of Human Services in LA arranges foster care on a pathway to adoption. While in the hospital, Luna is fostered by **Laura and Matt Taylor, her prospective adoptive parents**. After **3 weeks**, Luna is discharged. Luna's records are printed and transferred to **Lena Fisher, the social worker** assigned to Luna by the LA Department of Children and Family Services.



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Use Case Scene 1B: Hep B Vaccination Dose

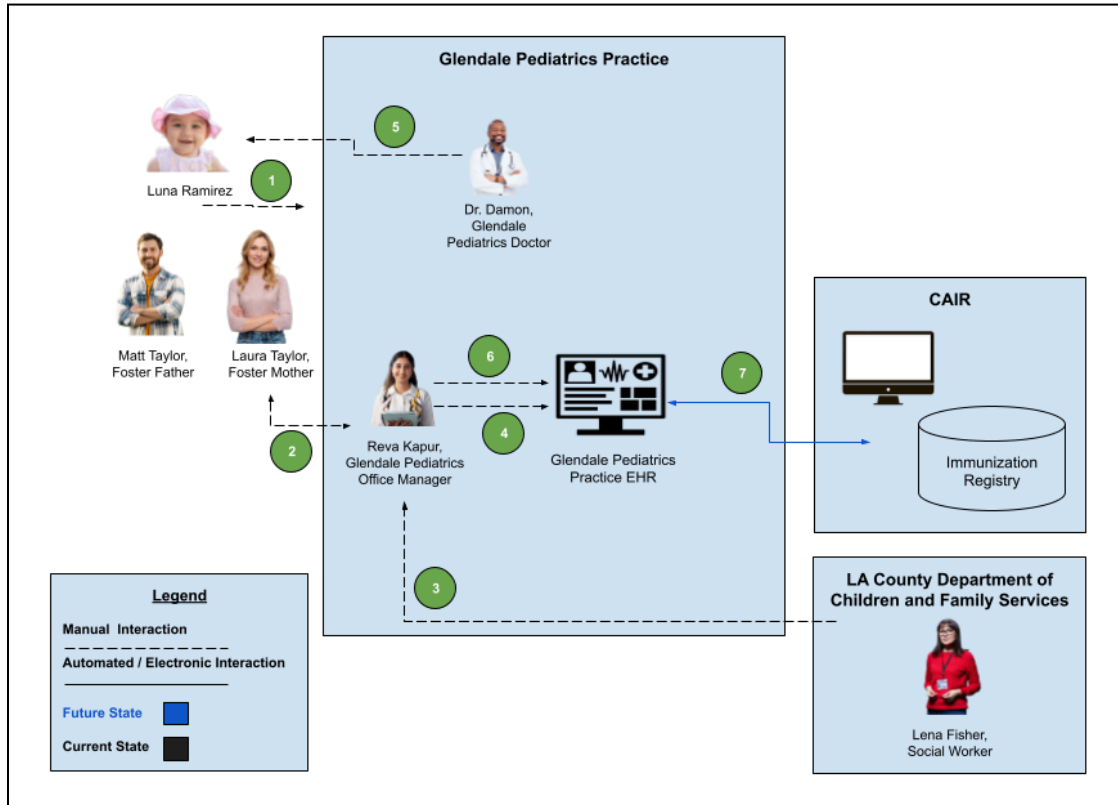
## Use Case Scene 2: Post-Discharge Transfer and Update of Immunization Records

1. At age 1 month, Luna goes to a follow-up appointment in Glendale with her **pediatrician Dr. Damon**, accompanied by her **foster parents, Laura and Matt Taylor**, and by her **social worker, Lena Fisher**.
2. The **Practice Office Manager, Reva Kapur**, gives the intake paperwork to Laura and Matt and they **choose NOT** to opt out of sharing immunization data in the paperwork. They also provide patient identifying info, including Luna's full name and date of birth, and her Medi-Cal insurance card.
3. Lena provides Reva with a paper file containing Luna's medical records and the name of Luna's birth mother, Ana Ramirez.
4. Reva creates a record for Luna in the practice's EHR and manually updates the EHR with the information from the paper file, including Luna's birth dose of Hep B, which was previously listed under the name Baby Ramirez.



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5. Dr. Damon administers Luna's second dose of Hep B.
6. Reva updates Luna's EHR record with this Hep B dose.
7. Reva logs into the CAIR portal and sends Luna's updated vaccination records to CAIR.  
The practice's EHR automatically sends Luna's vaccination record as an HL7 v2 VXU message to CAIR via CAIR's Bidirectional Data Exchange (BiDX).



Use Case 2: Transfer of Medical and Immunization Records Post-Adoption

### Use Case 3: Administration of Follow-Up Vaccines, Immunization Record Deduplication, and Authorization of Data Sharing

#### Use Case Scene 3A: Mia's Move, Name Change, Authorization of Data Sharing, and Follow-up Vaccines

1. When Luna is **6 months old**, the Taylors move from LA to San Benito County. They've finalized their daughter's adoption, and have renamed Luna Ramirez to Mia Taylor. Laura takes Mia to an appointment with Mia's new **pediatrician** in San Benito, **Dr. Gutierrez**, so she can get follow-up vaccines.
2. During intake, **Terry Wu, the San Benito Pediatrics Practice Office Manager**, provides educational materials to Laura about the importance of sharing vaccination data for



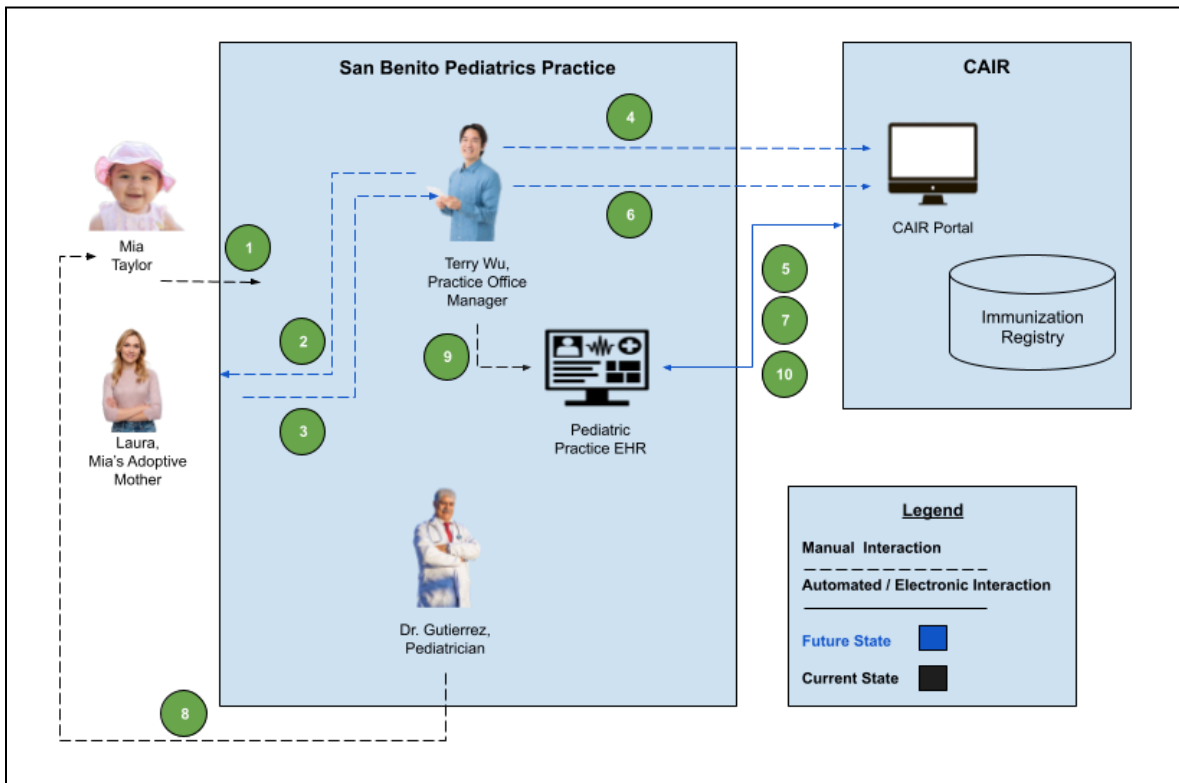
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completeness of immunization records. Laura is also informed about the option to lock/unlock Mia’s CAIR records via a [form](#) on the CAIR website.

- a. Locking the CAIR record will prevent CAIR from sharing Mia’s immunization data with other stakeholders, such as her MCP.
3. Laura signs the intake forms and decides not to opt out of data sharing and not to limit immunization data sharing using the CAIR lock/unlock form.
  - a. The default for CAIR is to leave the patient form unlocked.
4. ~~Terry Wu, the San Benito Pediatrics Practice Office Manager,~~ logs into the CAIR portal to query for Mia Taylor’s immunization records.  
Terry queries CAIR for Mia Taylor’s immunization records through the practice EHR.
5. ~~CAIR does not return any matches for Mia Taylor to Terry in the portal.~~  
CAIR does not return any matches for Mia Taylor.
  - a. Mia’s immunization record does not exist in CAIR because all of her vaccinations are under the name Luna Ramirez in CAIR.
6. Laura suggests searching under her birth name, Luna Ramirez, to locate the missing records. ~~Terry logs into the CAIR portal to query for Mia’s vaccination records under her previous name, Luna Ramirez.~~  
Terry queries CAIR for Mia’s vaccination records under her previous name, Luna Ramirez, in the practice EHR.
  - a. The query includes her previous name, date of birth, and her birth mother Ana’s maiden name.
7. ~~CAIR returns a match for Luna Ramirez’s vaccination records in the CAIR portal, allowing Dr. Gutierrez to identify which follow-up vaccinations Mia needs.~~  
CAIR returns a match for Luna Ramirez’s vaccination records, allowing Dr. Gutierrez to view and identify which follow-up vaccinations Mia needs.
8. Dr. Gutierrez administers the vaccines that Mia needs at 6 months, which include HepB (3rd dose), DTaP (3rd dose), PCV (3rd dose), and IPV (3rd dose).
9. Terry enters the follow-up vaccines in Mia’s EHR record.
10. ~~Terry logs into the CAIR portal to submit Mia Taylor’s immunization records.~~  
The practice’s EHR automatically sends Mia’s vaccination records under the name Mia Taylor as an HL7 V2 VXU message to CAIR via CAIR’s [Bidirectional Data Exchange \(BiDX\)](#).



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Use Case Scene 3A: Mia's Move, Name Change, Authorization of Data Sharing, and Follow-up Vaccines

### Use Case Scene 3B: Merging and Sharing of Updated Immunization Records

1. **Terry Wu**, the San Benito Pediatrics Practice Office Manager, submits a request through CAIR's [duplicate multiple records correction form](#) to merge Mia's new vaccination records with her existing vaccination records under the name Luna Ramirez. The merged record will be under her new name, Mia Taylor.
  - a. Terry provides Mia's CAIR ID, First Name, Last Name, DOB
  - b. The new record for Mia Taylor would likely not include her adoptive mother's maiden name, but rather her birth mother's maiden name once the records are merged.
2. **Brad Schultz**, a **Data Quality Analyst** at CAIR, receives a merge request from Terry and sends back a list of patients who match the name and DOB for "Luna Ramirez" for Terry to review in the CAIR portal.
3. Terry reviews the records and indicates which is the correct Luna Ramirez record, using Mia's birth mother's maiden name.
4. Brad manually merges Mia Taylor and Luna Ramirez's vaccination records in the CAIR database.

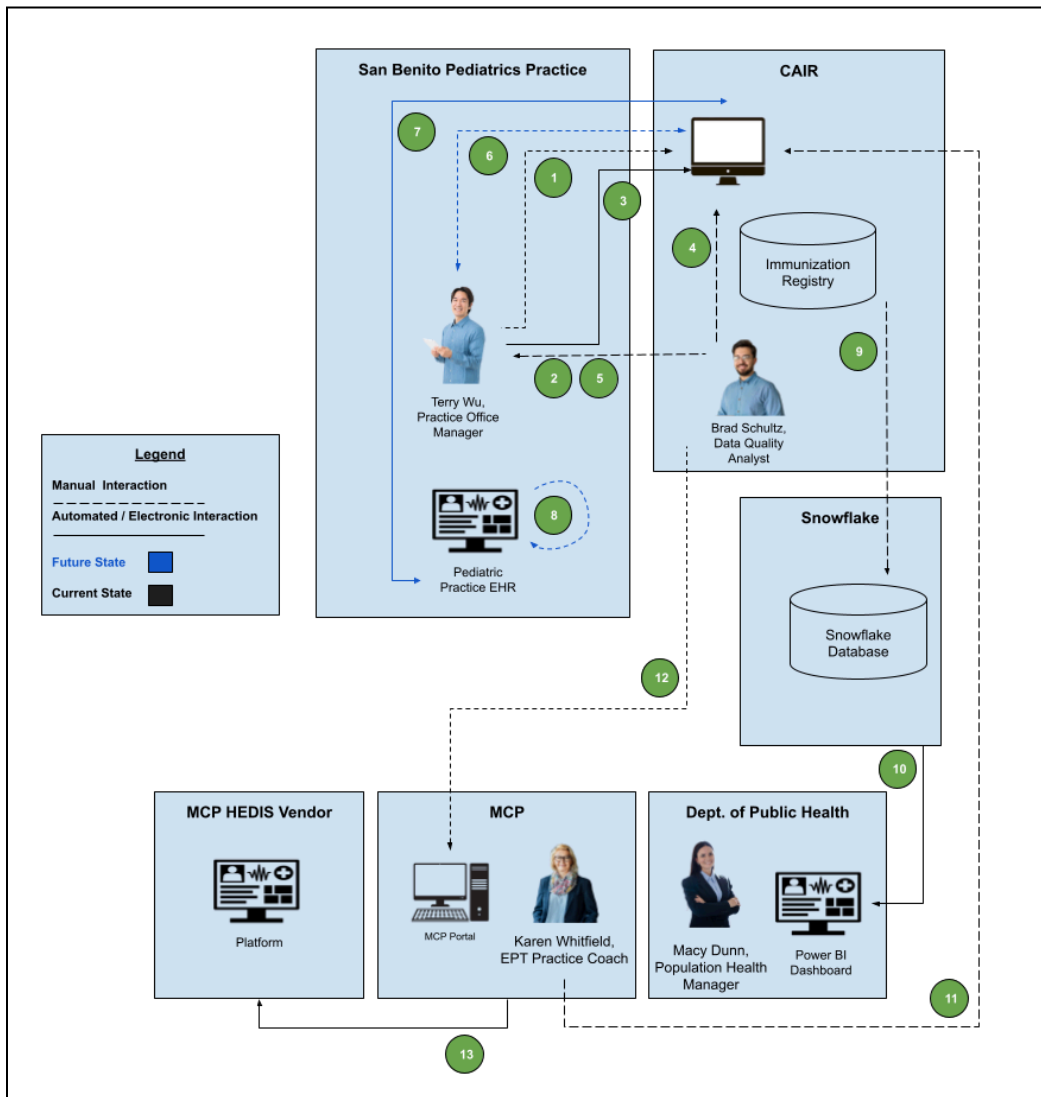


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5. Brad notifies Terry via email that the records have been manually merged.
6. ~~Terry reviews Mia's updated vaccination record in the CAIR portal, and then uploads the data into Mia's EHR record.~~  
Terry queries for Mia's updated records in the practice EHR.
7. CAIR returns a match for Mia Taylor's immunization record.
8. Terry selects the record and imports the immunization data into Mia's EHR record.
9. CAIR automatically pushes Mia's updated immunization data to the Snowflake database.
10. **Macy Dunn, Population Health Manager** at the San Benito Public Health Department, accesses the vaccination data from the Snowflake database using the county's Power BI Dashboard in order to track county vaccination rates.
11. **Karen Whitfield, the EPT Practice Coach for the MCP**, queries CAIR for members' updated immunization data.
12. **Brad Schultz, the CAIR Data Quality Analyst**, matches the list of members with corresponding data in the immunization registry and sends this back to the MCP via a flat file format.
13. The MCP pushes the immunization data to a MCP population health management system used for HEDIS data tracking.



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Use Case Scene 3B: Merging and Sharing of Updated Immunization Records

### Use Case 3C: Sharing Flu Shot Records from Public Health Fair

1. Laura and Mia are at the farmers market, and go to a health fair run by the San Benito Department of Public Health to receive flu shots. Laura shows **David Wright, the Public Health Fair Coordinator**, Mia's yellow vaccination card to indicate which vaccinations she has already received.
2. David Wright administers Mia her first dose of flu vaccine.
  - a. Because the vaccination was administered as part of the Department of Public Health's outreach fair, there is no CPT code.

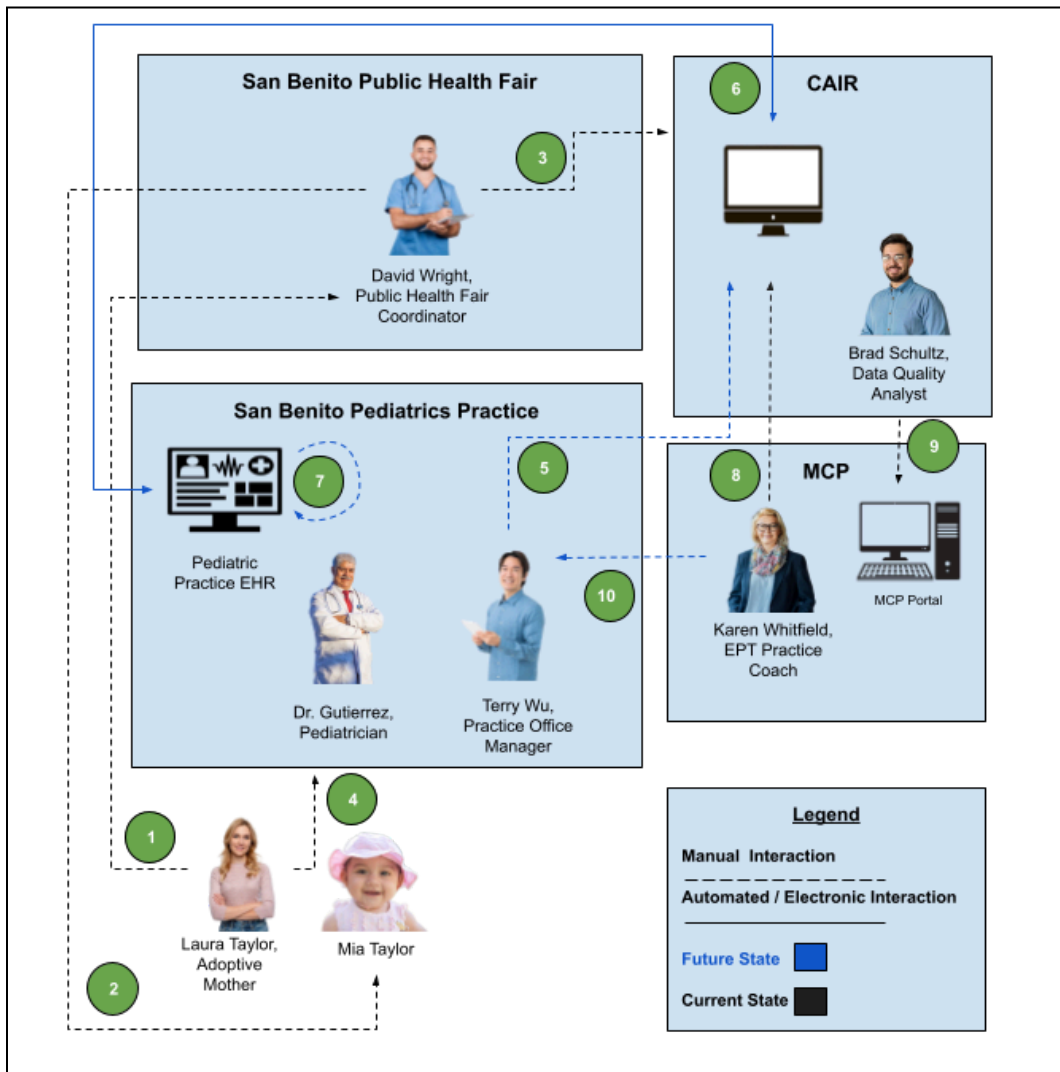


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3. After the health fair, David submits the flu vaccinations from the fair to CAIR using the CAIR portal.
4. Laura takes Mia to her next follow up appointment with Dr. Gutierrez at San Benito Pediatrics, and indicates that Mia has received her first flu vaccine.
5. ~~Terry logs into the CAIR portal and queries CAIR for Mia's latest vaccination records:~~  
Terry uses the practice EHR to query CAIR for Mia's latest vaccination records.
6. ~~CAIR sends back Mia's updated vaccination record to the portal, which Terry inputs into the practice's EHR:~~  
CAIR returns the match for Mia Taylor's vaccination record, which includes the latest flu vaccination.
7. Terry reviews the record and imports Mia's newest flu dose into her EHR record.
8. Karen Whitfield, the EPT practice coach from the Managed Care Plan, queries CAIR for the MCP members' updated vaccination data.
9. **Brad Schultz, the CAIR Data Quality Analyst**, matches the list of members with corresponding data in the immunization registry and sends this back to the MCP via a flat file format. This includes the updated record for Mia Taylor.
10. Karen reaches out to San Benito Pediatrics to confirm the data with Terry, and provides strategies on gap closure, including providing support on how the practice can analyze data to target outreach to improve EPT performance.



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Use Case Scene 3C: Sharing Flu Shot Records from Public Health Fair

## Use Case 4: Mia is Hospitalized with RSV

At **age 16 months**, Mia comes home from daycare one day with a runny nose and reduced appetite. The next day she develops a low-grade fever and stays home with her grandmother. A few days later she is short of breath and wheezing and coughing almost constant.

### Scene 4A: Hospitalization with RSV

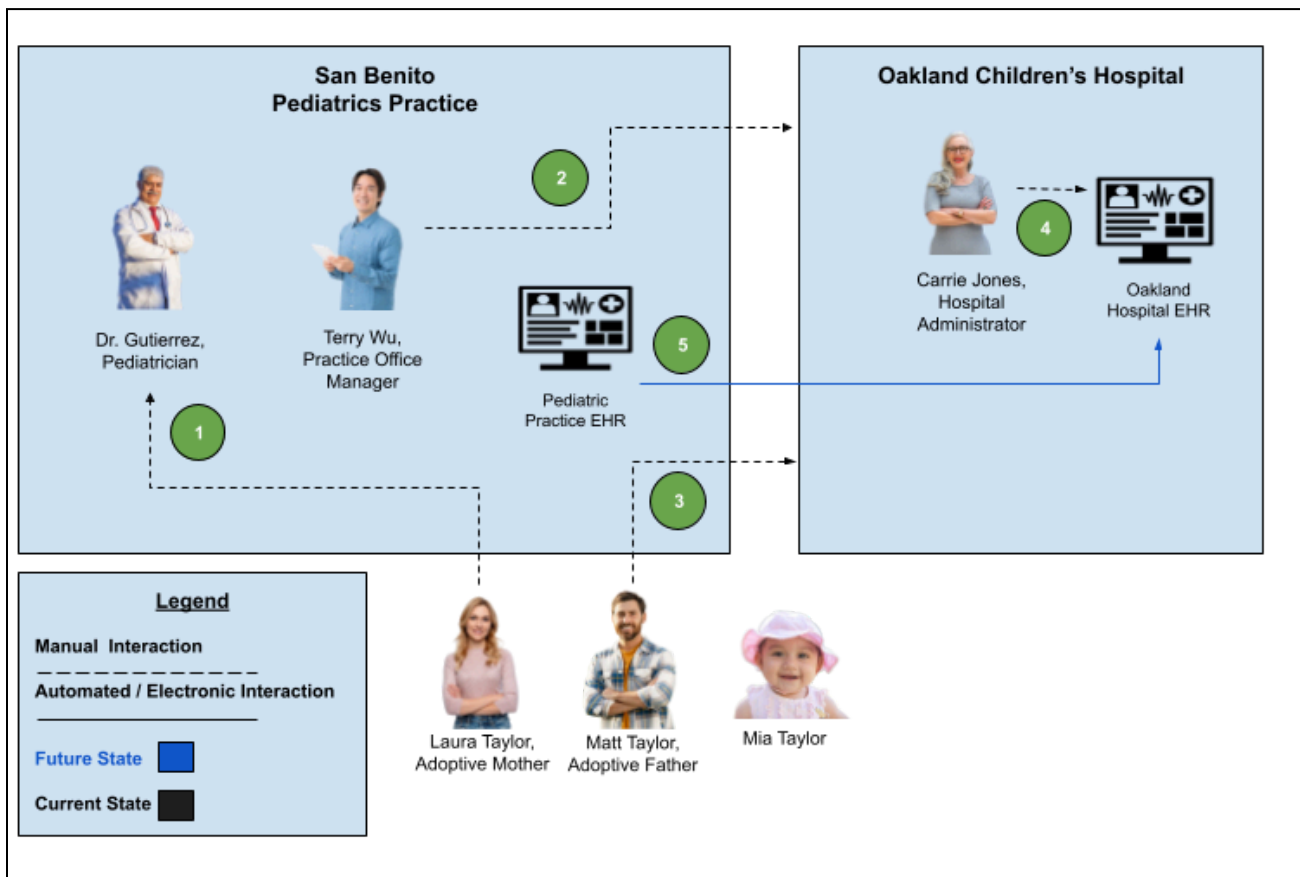
1. Mia's parents take her to see her pediatrician Dr. Gutierrez, who feels that she needs to be hospitalized and recommends that they drive her to the children's hospital in Oakland.
2. Terry, the Practice Office Manager, calls the hospital to inform them that Mia is on her way.
3. Laura and Matt provide identity verification, adoption info, and insurance info to **Carrie Jones**,



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**the Oakland Children's Hospital Administrator.**

4. Carrie opens a new record for Mia in the hospital EHR.
5. ~~Carrie calls the practice to request Mia's records.~~  
~~Terry shares the notes and records with Carrie via fax.~~  
~~Carrie manually enters the information from Mia's records into her hospital EHR record.~~  
Mia's records and notes from her pediatrician are available from the hospital EHR and automatically populate her new record.



Use Case Scene 4A: Hospitalization with RSV

**Scene 4B: Hospital Updates Immunizations & Shares Updated Records**

1. ~~Carrie, the Oakland hospital administrator, logs into the CAIR portal and queries for Mia's immunization data.~~  
Carrie, the Oakland hospital administrator, queries CAIR for Mia's immunization data in the



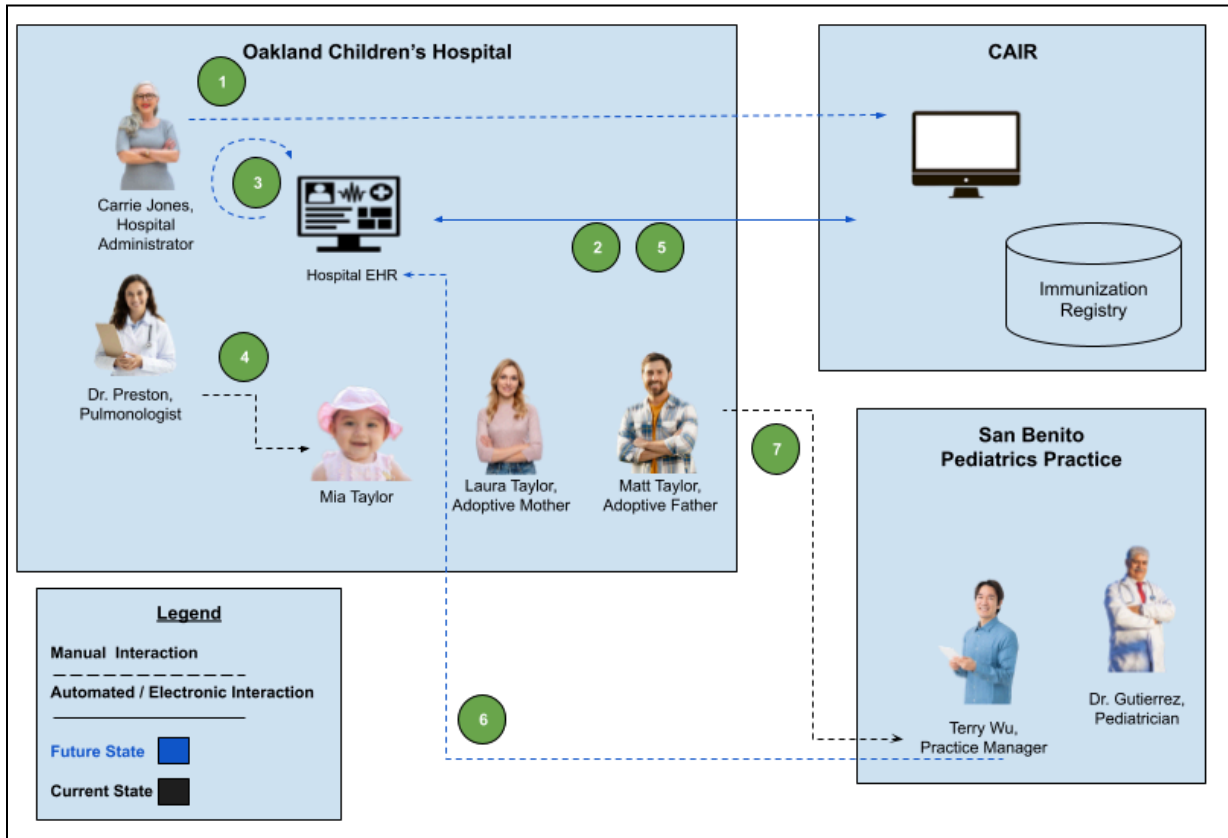
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hospital EHR.

2. ~~CAIR sends back Mia Taylor's immunization data via the CAIR portal.~~  
CAIR returns a match for Mia Taylor's immunization data.
3. ~~Carrie creates a record for Mia in the hospital EHR, and uploads Mia's vaccination data.~~  
Carrie selects Mia's immunization record and imports the data into the hospital EHR.
4. Oakland hospital **pulmonologist Dr. Preston** realizes Mia has not received this year's flu shot, which would be her necessary second dose of flu vaccine, and administers that vaccination before she is discharged from the hospital.
5. ~~Carrie logs into the CAIR portal and submits Mia's updated immunization records.~~  
The hospital EHR automatically pushes Mia's updated immunization data to CAIR as an HL7 V2 VXU message to CAIR via CAIR's [Bidirectional Data Exchange \(BiDX\)](#).
6. ~~Laura and Matt sign a medical record release form for Mia since Dr. Gutierrez's EHR is not integrated with the hospital.~~  
Terry calls the hospital to get Mia's medical records from her hospital stay.  
~~Carrie faxes medical records to Terry when Mia is released from the hospital.~~  
The San Benito Pediatric Practice and the Oakland hospital are on the same national network, therefore Terry can directly query the hospital's records to obtain Mia's records upon her release from the hospital. As a result, Laura and Matt also do not have to resign medical release forms.
7. Laura and Matt call Terry to schedule a follow up visit for Mia with Dr. Gutierrez.



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Use Case Scene 4B: Hospital Updates Immunizations & Shares Updated Records

Personas referenced in this document:

Name	Photo	Human Actor	Business Actor	System Actor
Mia Taylor (Luna Ramirez)		Patient		
Laura Taylor		Mia's adoptive mother		
Matt Taylor		Mia's adoptive father		



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Ana Ramirez		Mia's biological mother		
Dr. Lee		NICU Doctor	Los Angeles Doctors Hospital	Hospital EHR
Beth Reynolds		Hospital Administrator	Los Angeles Doctors Hospital	Hospital EHR
Lena Fisher		Social Worker	LA County Children and Adult Services	- Child Welfare Services/Case Management System (CWS/CMS) - Paper records
Dr. Damon		Pediatrician	Glendale Pediatrics Practice	Practice EHR
Reva Kapur		Practice Office Manager	Glendale Pediatrics Practice	Practice EHR
Dr. Gutierrez		Pediatrician	San Benito Pediatrics Practice	Practice EHR
Terry Wu		Practice Office Manager	San Benito Pediatrics Practice	Practice EHR



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Macy Dunn		Population Health Manager	San Benito Public Health Department	Snowflake database and Internal Power BI Dashboard
David Wright		Public Health Fair Coordinator	San Benito Public Health Department	CAIR Portal
Carrie Jones		Hospital Administrator	Oakland Children's Hospital	Hospital EHR
Dr. Preston		Pulmonologist	Oakland Children's Hospital	Hospital EHR
Brad Schultz		Data Quality Analyst	CAIR	Immunization Registry
Karen Whitfield		EPT Practice Coach	Managed Care Plan	Population Health Management System