

Virginia's Hearing Targeted cCMV Screening Program

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Learning Objectives

Provide

- An overview of cCMV

Discuss

- Development of legislation and screening protocols

Review

- The training and education of stakeholders

Explain

- The screening program and VDH follow up

Analyze

- Lessons learned

Disclosures

We have no financial disclosure or conflicts of interest with the material in this presentation

Cytomegalovirus (CMV)

60-80% humans are infected by adulthood

Transmission:

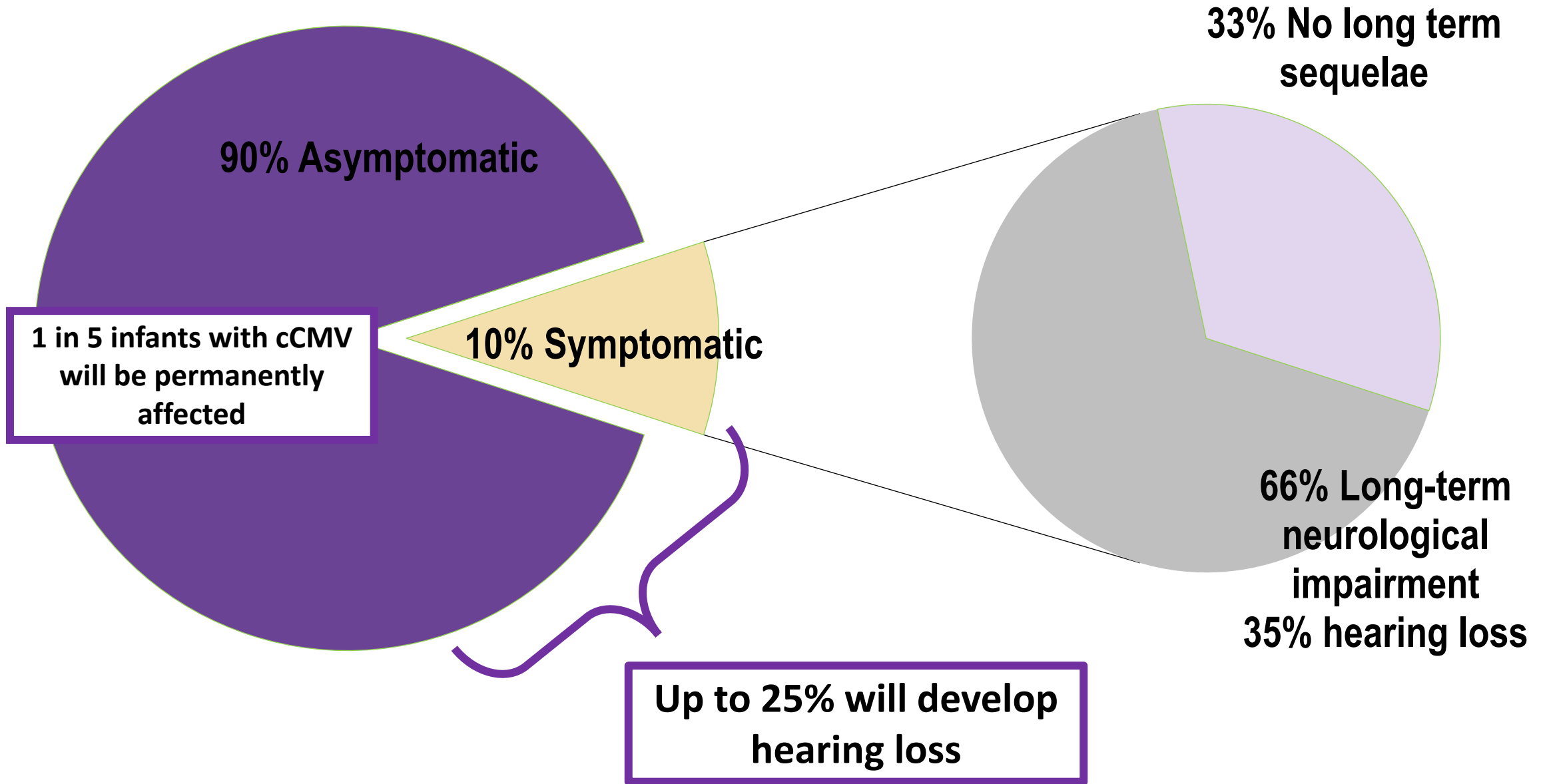
- Direct contact: Secretions (oral, genitourinary)
- In utero
- Breastmilk
- Transfusion or transplantation

In Utero Transmission Rate

- 30-35% primary maternal infection
- 1-2% maternal reactivation

0.5-1% of all live born infants are infected with CMV at birth





Long Term Complications of Congenital CMV Infection

Developmental and motor delay

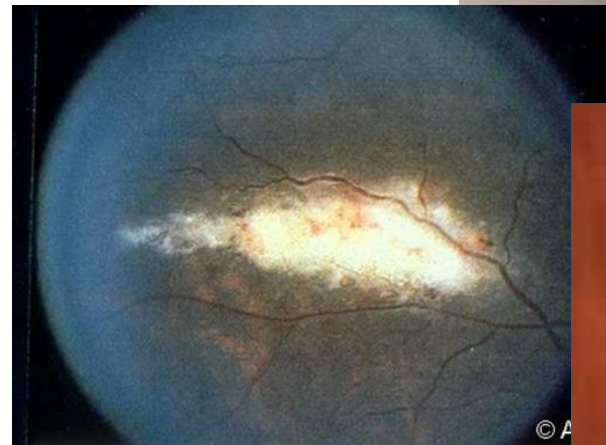
Vision loss

Microcephaly

Seizures

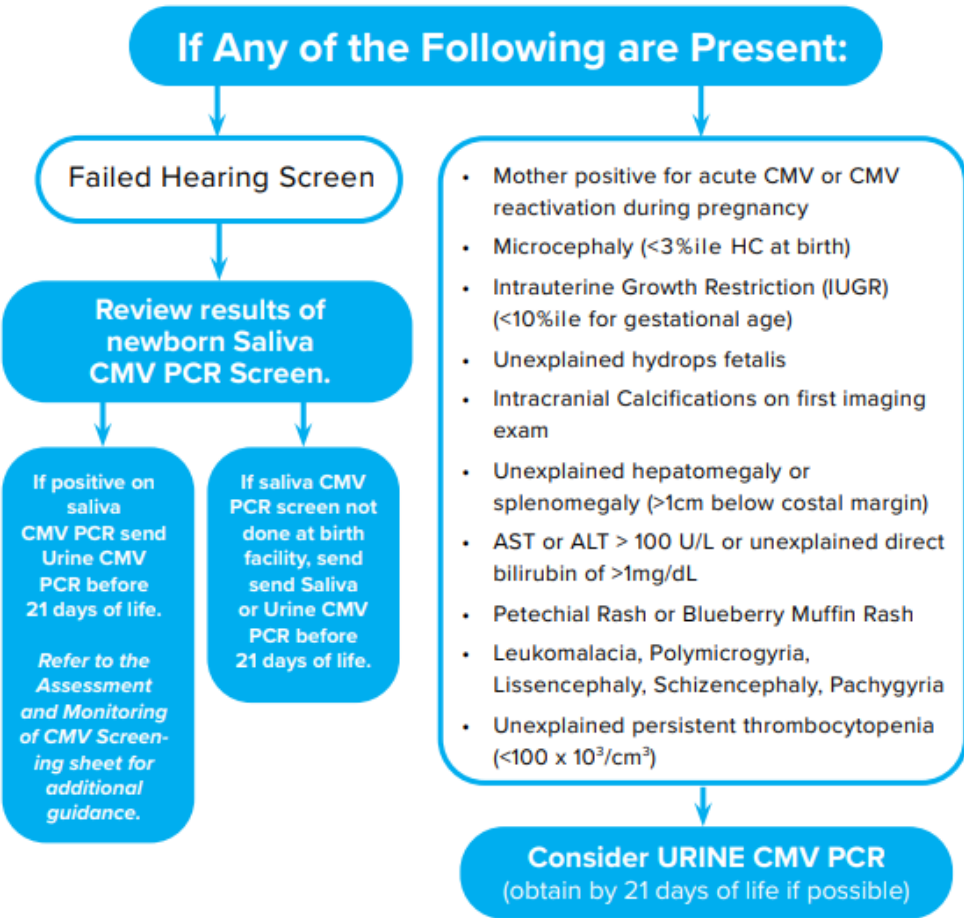
Sensorineural Hearing Loss:

- 35-50% of symptomatic cCMV
- 15% of asymptomatic cCMV





When to Screen congenital Cytomegalovirus (cCMV) ?



These recommendations are for outpatient cCMV testing.

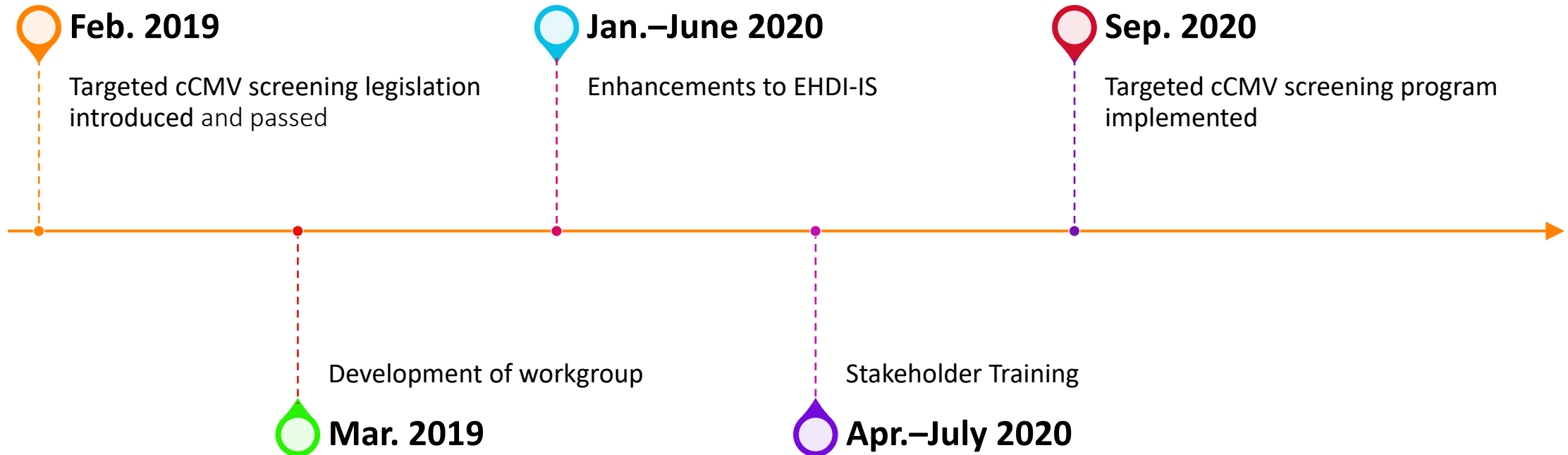
Physical Exam

- ? Microcephaly
- ? SGA/IUGR
- ? Hepatosplenomegaly
- ? Petechiae and/or Purpura
- ? Jaundice
- ? Failed Newborn Hearing Test

Evaluate Baby

1. Urine CMV PCR
2. CBC with diff, platelets
3. AST, ALT
4. Total and Direct Bili
5. Head Ultrasound

Timeline



cCMV Workgroup

Included Key Stakeholders

- Audiologist
- Infectious Disease Specialists
- Otolaryngologists
- Neonatologists
- Parents/Family Members
- Hearing Screeners
- Nursing Staff

Develop Legislation and Protocols

- When/how to conduct screening
- Testing Parameters
- Follow up Outpatient

Design Educational materials

- Inform and educate providers and families

Virginia Early Hearing Detection & Intervention Program
HEARING TARGETED CONGENITAL CYTOMEGALOVIRUS (cCMV) SCREENING PROTOCOLS



2020

PROTECT YOUR BABY FROM CMV



Avoid kissing young children on the lips



Wash hands after changing diapers



Avoid sharing utensils or straws with young children



Never put a child's pacifier in your mouth



Do not share a toothbrush with a young child.



Did you know:

- Congenital Cytomegalovirus (cCMV) is the leading non-genetic cause of hearing loss and other birth defects and developmental disabilities.
- CMV is often a symptomless virus spread through contact with saliva, mucus, and urine.
- 1 out of 3 pregnant women who are infected with CMV, in the first or second trimester, will pass the virus to their unborn child.
- Infants who acquire CMV infection in the womb are at risk for complications.
- Only 9% of pregnant women know about CMV. Protect you and your unborn child and ask your doctor about CMV.

Visit our website at www.VDHLiveWell.com for resources, or email us at va_ehdi@vdh.virginia.gov

Child Information

VISITS ID **18906** Primary Contact **TEST,MOM (Biological Mother)**

Child Name **CHILD25.CHILD25** Date of Discharge **08/26/2020**

Date of Birth **08/25/2020** Date of Hearing Screening **08/26/2020**

1 Order Form Submitted 2 Order Sent to DCLS

cCMV Screening

cCMV Sample Collection Time *

Staff Completing the Screening *

Was the sample collected within an hour of child being breastfed? *

Staff Phone *

cCMV Pending List

Child First Name Child Last Name

Child Date of Birth From To

Facility Name Medical Record No.

Clear Search

cCMV Pending List

Child ID	Child Name	Child Date of Birth	Primary Contact	Birth hospital	Transferred hospital	Create Order Form	Reason Not Screened
18906	CHILD25.CHILD25	08/25/2020	TEST,MOM	BON SECOURS ST. MARY'S HOSPITAL	-		
18907	CHILD26.CHILD26	08/25/2020	-	BON SECOURS ST. MARY'S HOSPITAL	-		

Congenital Cytomegalovirus Submitter Form

PATIENT INFORMATION	SUBMITTER INFORMATION
Last Name: CHILD25	Submitter Name: BON SECOURS ST. MARY'S HOSPITAL
First Name: CHILD25 M.I.: C	Address: 5801 BREMO ROAD
Date of Birth(mm/dd/yyyy): 08/25/2020	City: RICHMOND
Address: 9514 TEST LN	State: VA Zip code: 23226
City: HENRICO State: VIRGINIA Zip code: 23231	Phone#: (804) 9999999 Fax#:
<input checked="" type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Unknown MRN#: ADWER2E2334	Contact Name: MARY JANE

ADDITIONAL INFORMATION

Date Collected: **08/26/2020** Time Collected: **04:00:00 PM**

Specimen Source: Buccal Swab

Date of Failed Hearing Test: **08/26/2020**

External ID#: **18906**

Mother's Name: **MOMTEST**

Mother's Date of Birth: **05/25/1977**

Pediatrician Name: **AMELIA COUNTY - LOCAL HEALTH DEPARTMENT**

Pediatrician Phone:

Pediatrician Address: **16320 CHURCH STREET**

City: **AMELIA CT HSE** | State: **VA** | Zip Code: **23002**

DCLS STATE LAB USE ONLY:
Place applicable DCLS Sample Label(s) in space provided.

EHDI – IS CMV Module

WHAT DO YOU KNOW ABOUT CMV?

Conduct Hospital Training Sessions

Develop of educational resources

Distribute resources to hospitals and PCPs

Trainings and Outreach

- Did you know?
- Congenital Cytomegalovirus (cCMV) is the leading non-genetic cause of hearing loss and other brain and developmental disabilities.
 - 1 in 200 children are born with cCMV each year.
 - If your newborn is hearing, they should also be screened for cCMV right away.
 - cCMV can only be diagnosed if the virus is found in an infants urine, saliva, blood or other body tissues during the first 21 days of life.
 - Many children with cCMV have no symptoms and will never know they have it.
 - Some children will be at risk for hearing loss, vision impairment, developmental delays and other problems.

Talk to your doctor today about next steps for determining whether your child has cCMV.
Visit our website at www.VDHLiveWell.com for resources, or email us at va_ehdi@vdh.virginia.gov

EHDI Team: CMV Follow Up Coordinator
CMV Follow Up Specialist

DCLS Personnel

**Parent Support/ Family
Educator**

Key Personnel

CMV Sample Collection

CONGENITAL CMV SALIVA Sample Collection Guide

1. Obtain a flocked swab - Flexible minitip flocked swab, plastic applicator, sterile, individually packaged.

For example:

- a. **Puritan** - HydraFlock[®] swab with or without viral transport media.

- Catalog Number (Peel Pouch): 25-3316-H
- Catalog Number (Dry Tube): 25-3316-H-BT
- Catalog Number (Swab in Conical Tube with 1 ml UTM): UT116

- b. **COPAN** - FLOQSwabs[®] with or without viral transport media.

- Catalog Number (Peel Pouch): 503CS01
- Catalog Number (Dry Tube): 553C
- Catalog Number (Swab in Conical Tube with 1 ml UTM): 360C

Or equivalent.



2. Confirm that the baby was breastfed > 1 hour prior to collection of the sample.

- a. For sample collection, baby could be held or in the bassinet.



3. Wash hands and/or put gloves on, then proceed to opening the sterile flocked swab.



4. 4a. Introduce the swab between the cheek and the gum in one side of the mouth. Allow to sit for 10-15 seconds.



- 4b. Move the swab tip to the other side of the mouth for another 10-15 seconds. Make sure the swab appears moistened when removed.



5. Remove the swab from the mouth and replace in the holder (paper wrapper, plastic tube or tube with no more than 1mL UTM). The sample is stable 48 hrs at room temperature or 7 days refrigerated.

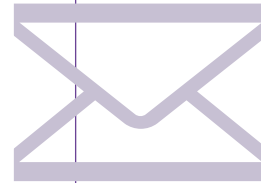
6. Proceed to transport the sample to the

Congenital cytomegalovirus (cCMV) Screening at DCLS

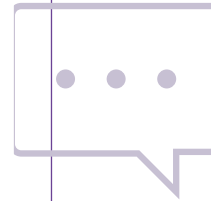
Rejection reasons:

- Sample arrived warm/not cold
- Sample Viral Transport Media (VTM) volume is greater than or less than 1 mL
- Sample was collected when baby was more than 21 days old
- Sample was collected more than 7 days ago
- Labeling error/lack of identification on the sample

VDH Follow up



Letters



Texting

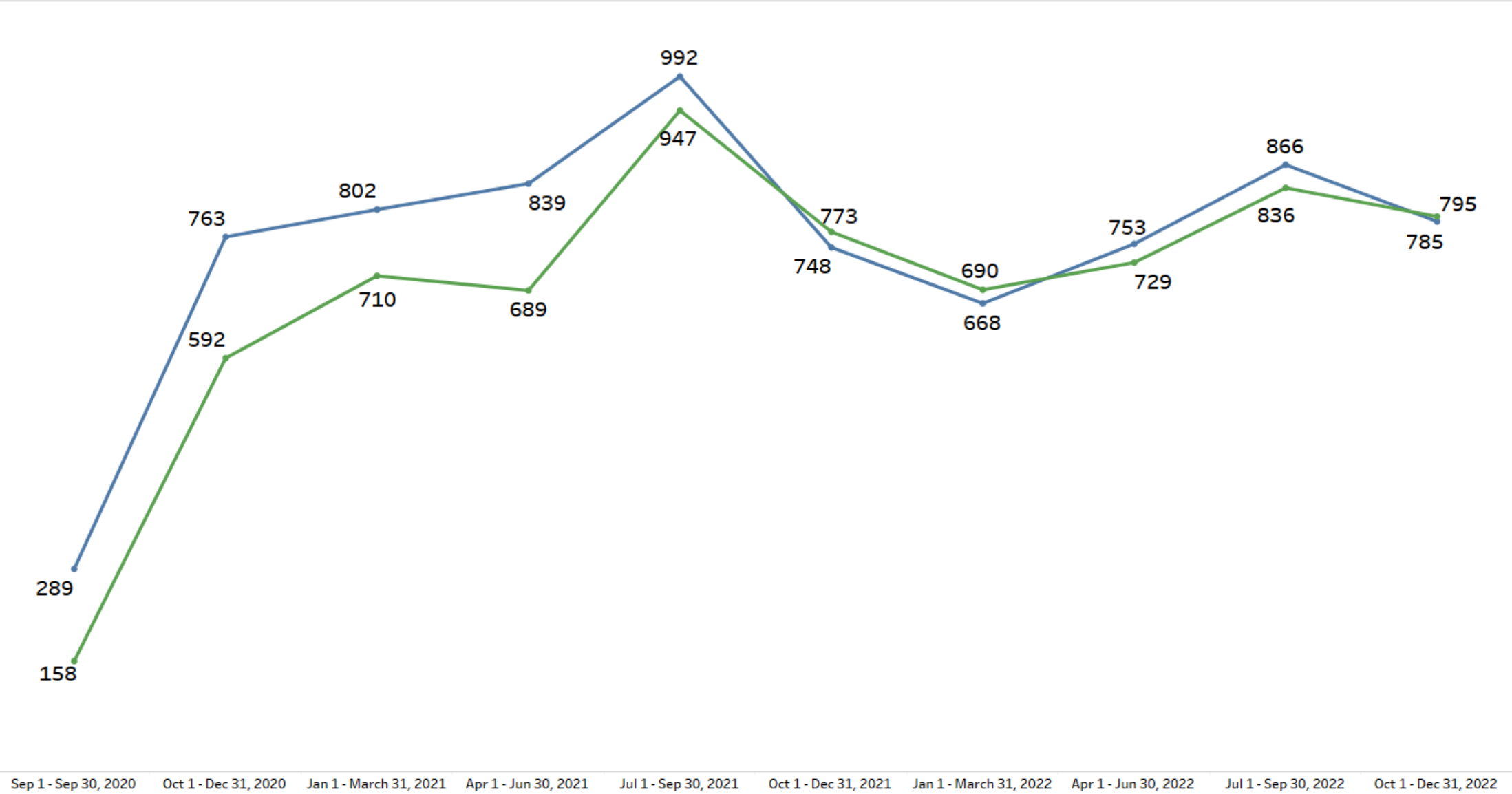


Follow up Calls

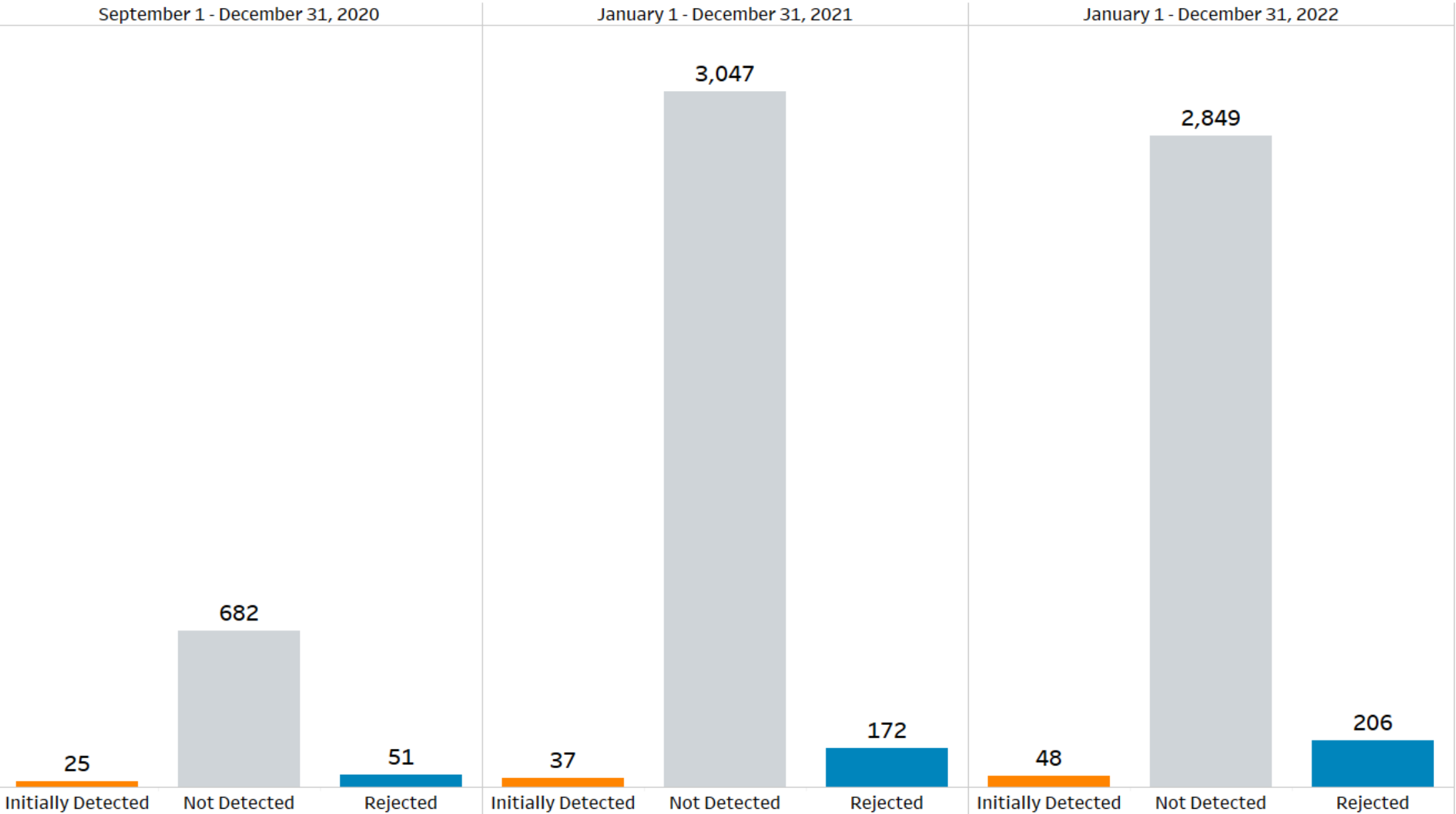
Follow up Recommendations

Saliva Screening Result	Recommendation
Not Detected	Follow recommendations for outpatient hearing screening within 1 month.
Detected	Child should have a urine CMV PCR collected before 21 days of life Follow recommendations for outpatient hearing screening within 1 month.
Unsatisfactory Evaluation	Urine CMV PCR collected before 21 days of life Follow recommendations for outpatient hearing screening within 1 month.
No cCMV test done in hospital	Saliva or urine CMV PCR collected before 21 days of life.

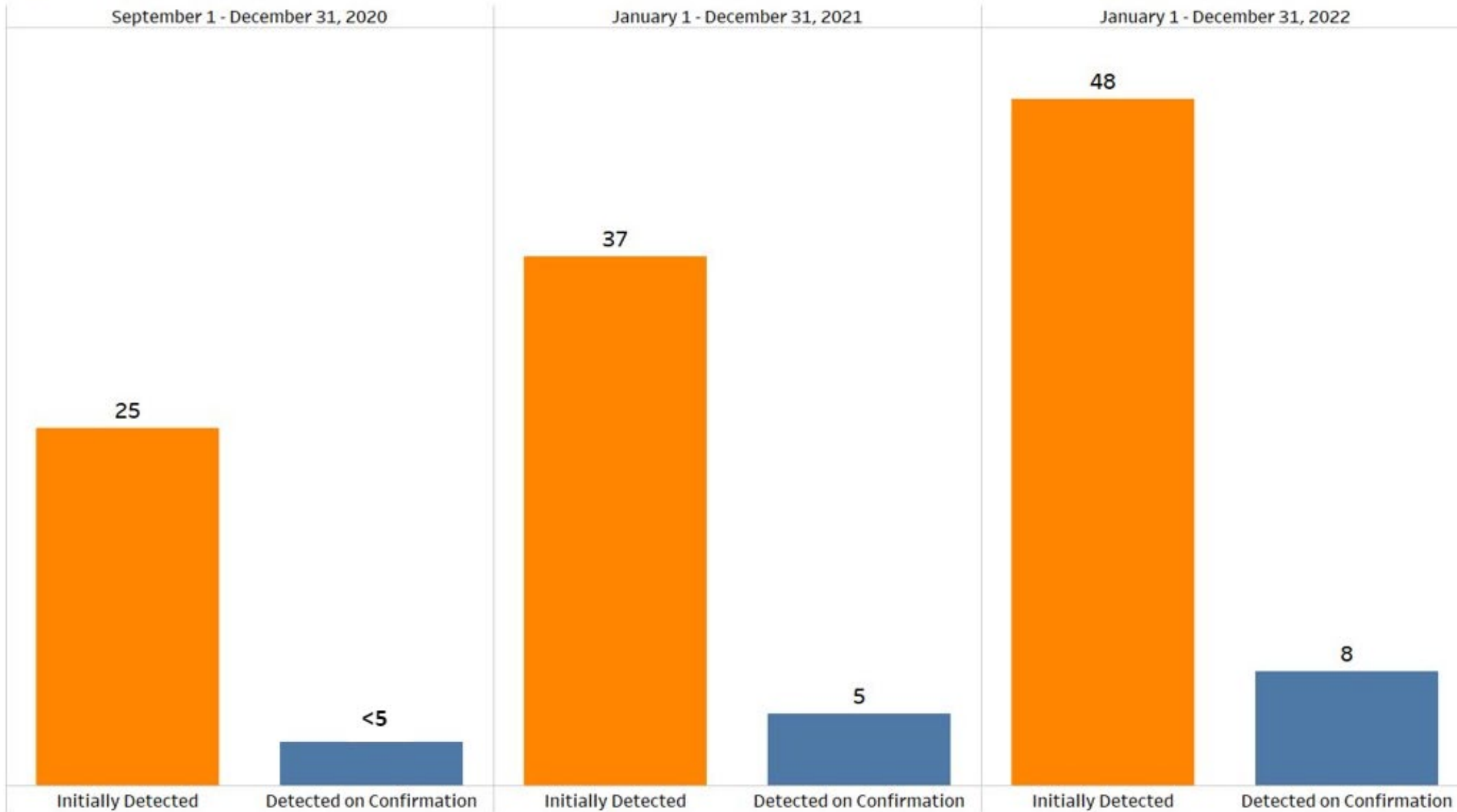
Failed Hearing Screen vs. Screened for cCMV
by Quarter, 2020-2022



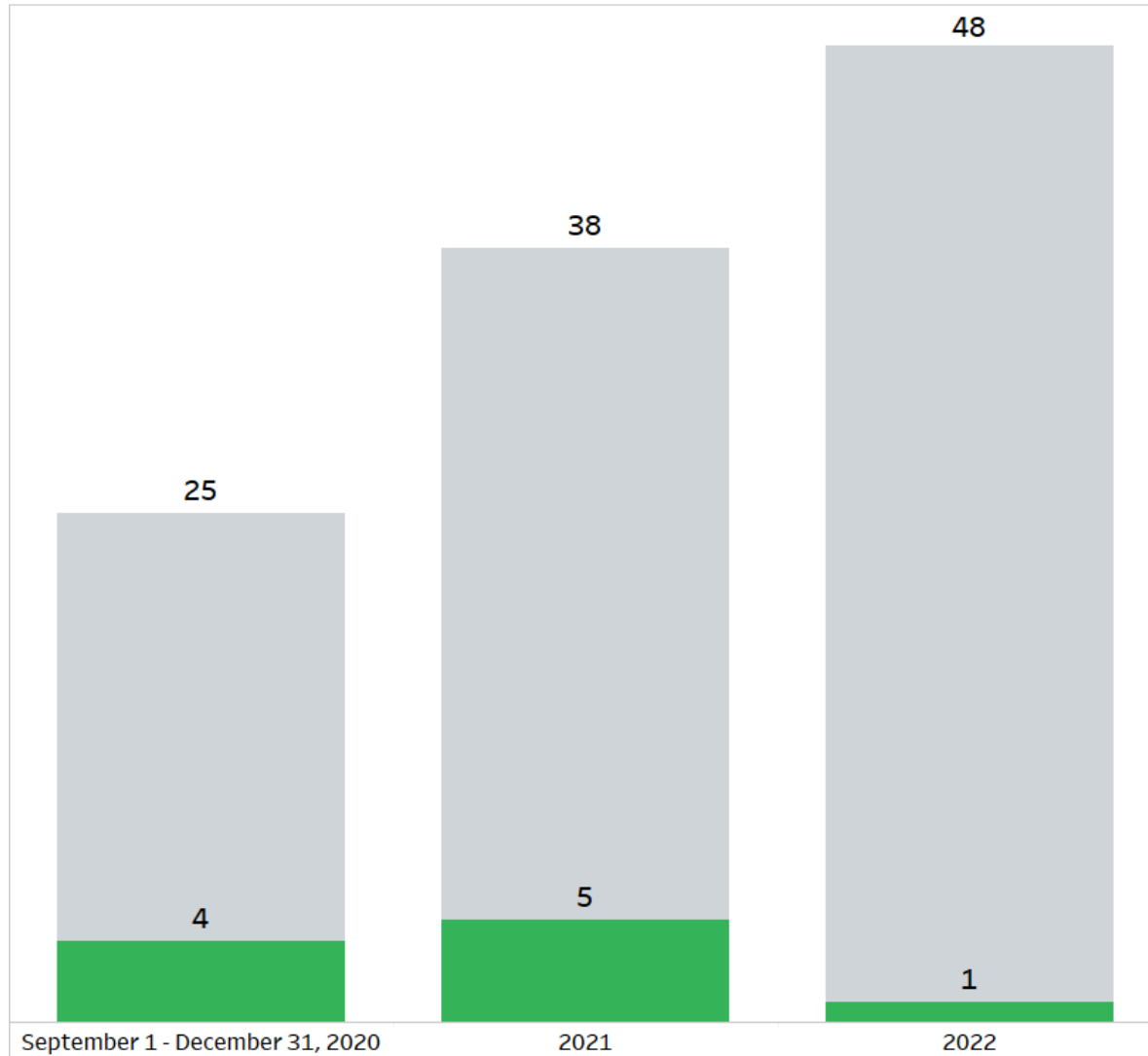
Results of Initial cCMV Screen 2020 and 2021



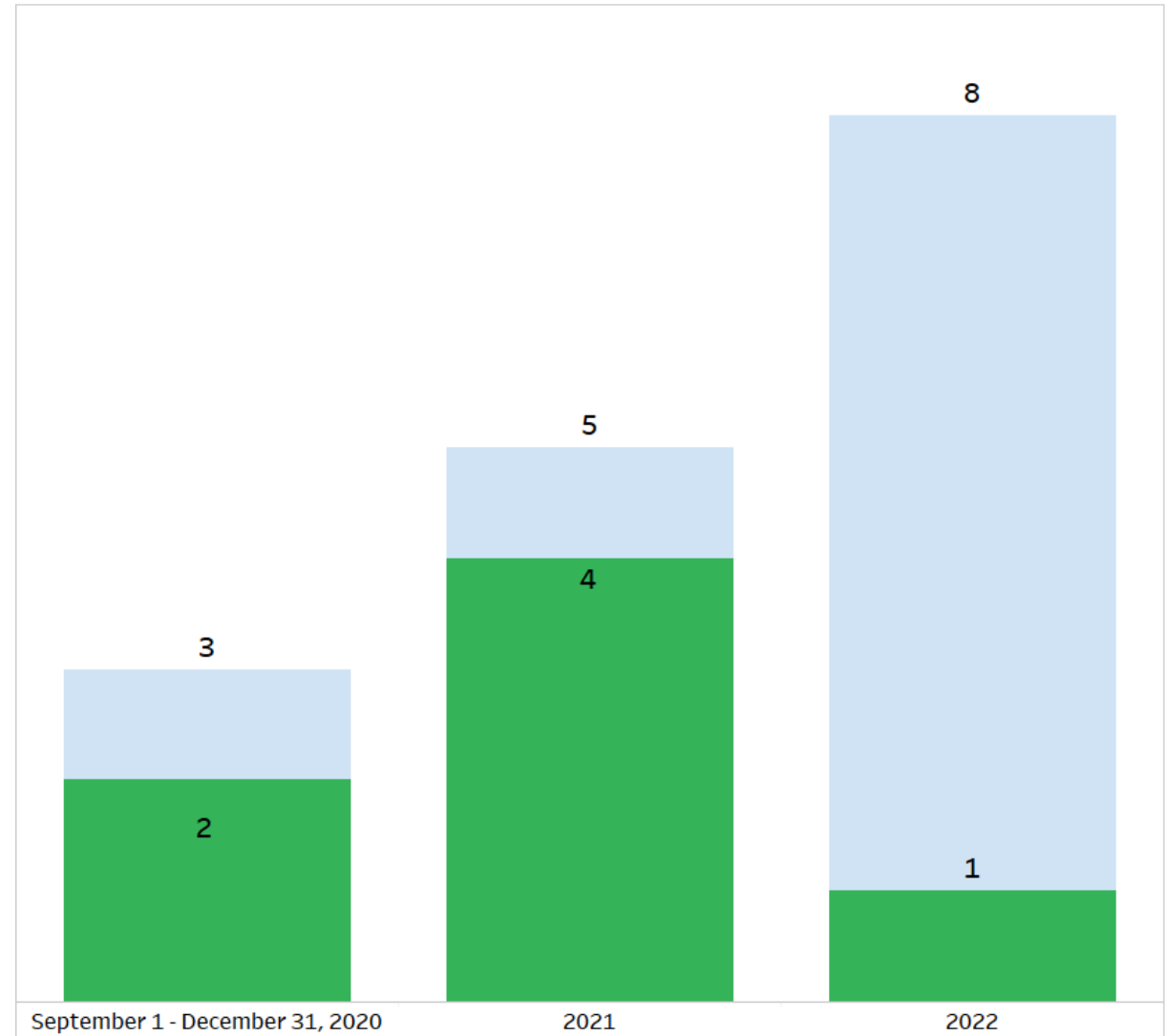
cCMV Initially Detected vs. cCMV Detected on Confirmation
2020 and 2021



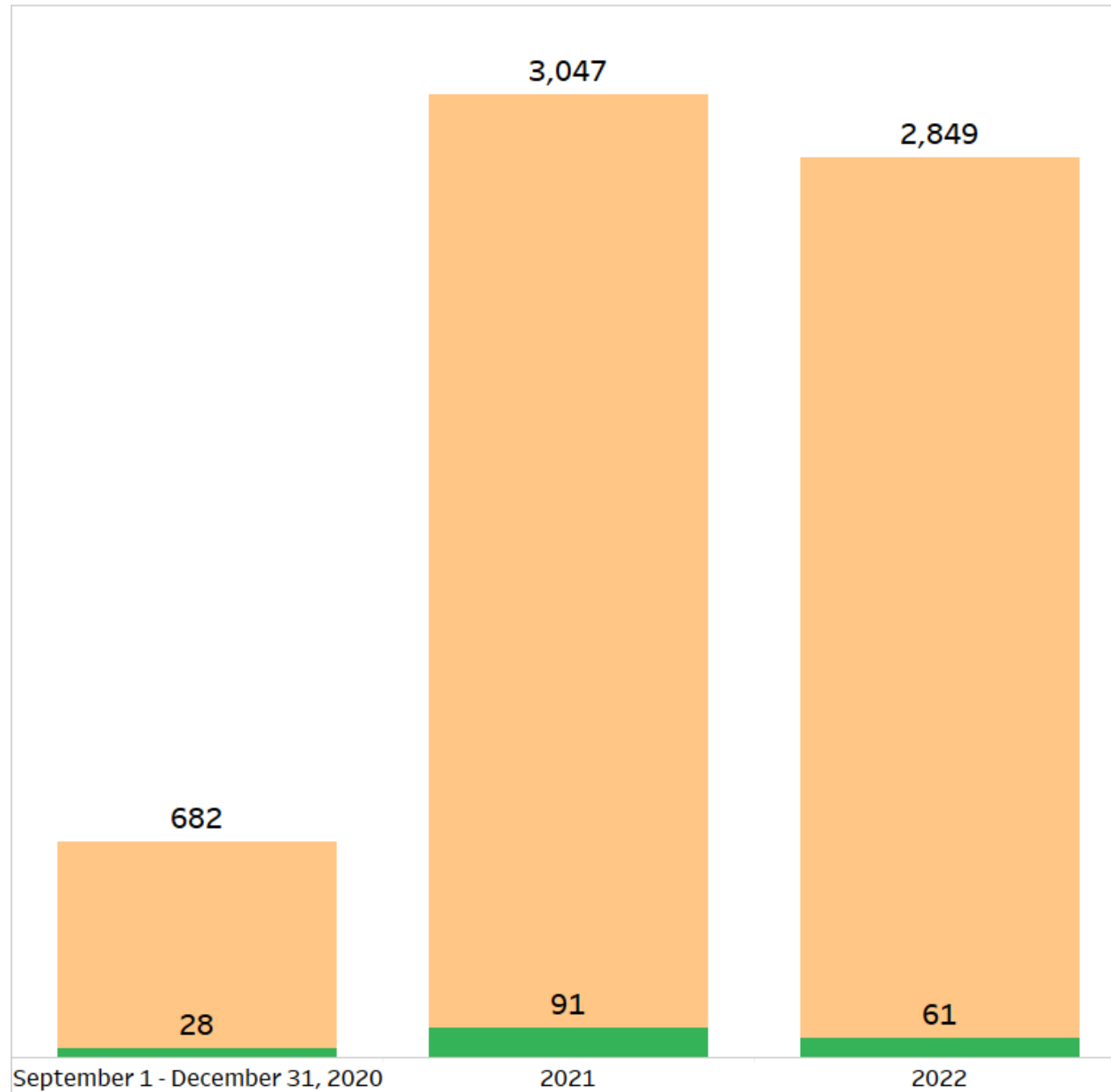
cCMV Initially Detected vs. Hearing Loss
2020 - 2022



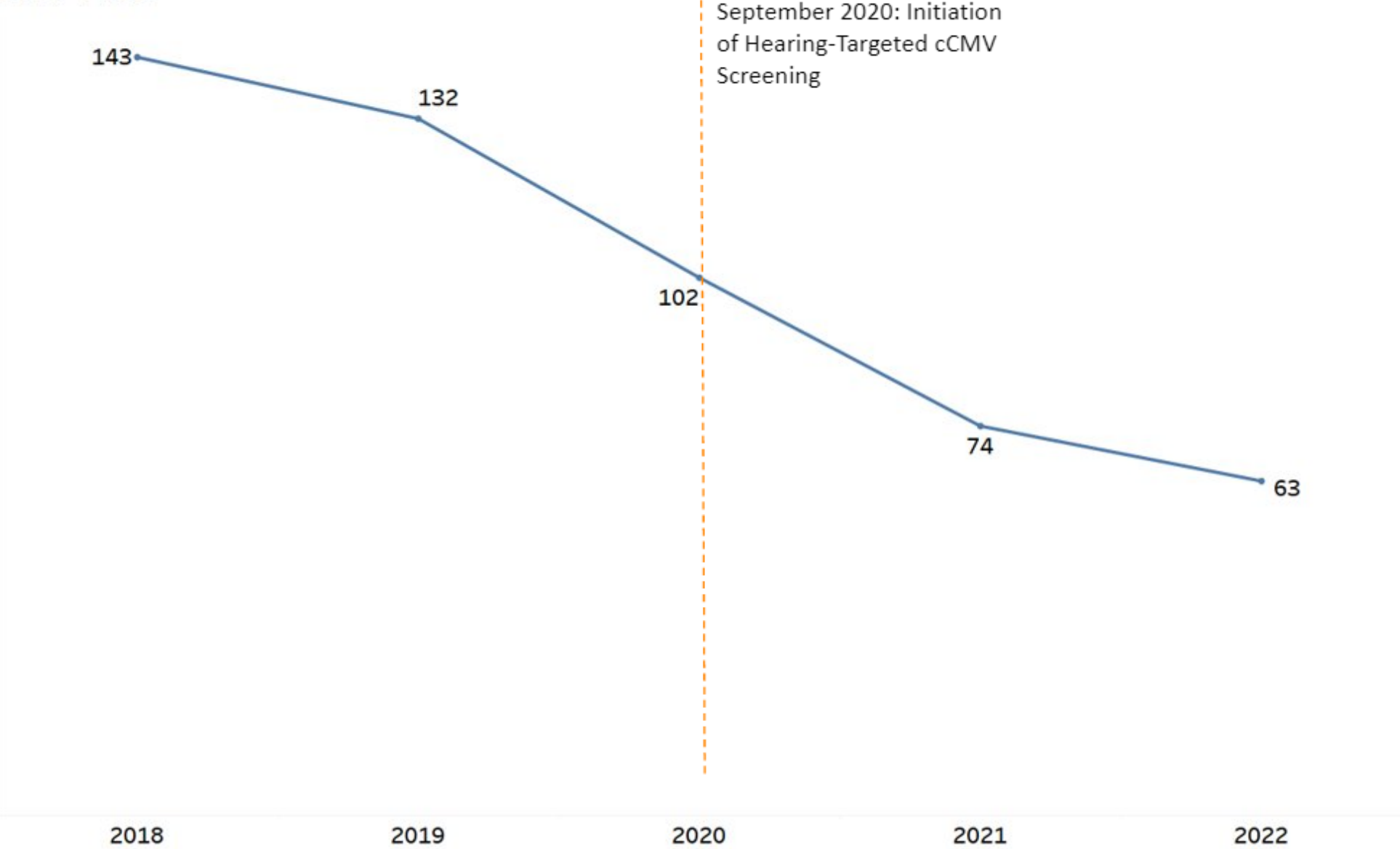
cCMV Detected on Confirmation vs. Hearing Loss
2022



cCMV Not Detected vs. Hearing Loss
2020-2022



Average Age at Diagnosis of Hearing Loss, In Days 2018 - 2022



After Implementation

Successes

- Hospital support
- Virtual trainings
- DCLS for all testing

Challenges

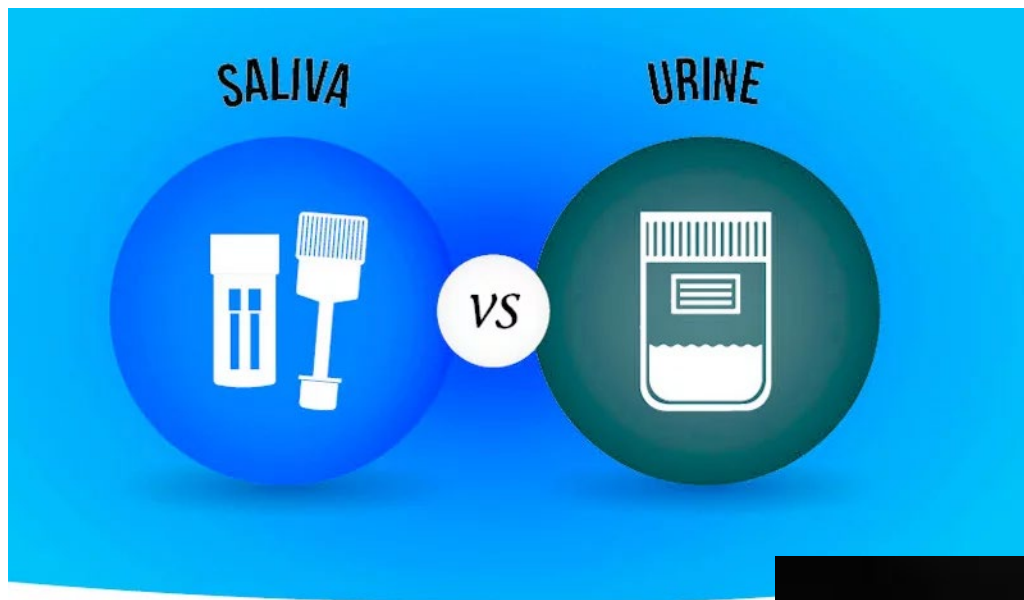
- Sample rejection
- High false positive rate
- PCP education and outreach
- Increasing awareness

Physician to Physician Education

- 2019: Key Clinician Stakeholders from all across Virginia crafted the regulations
- 2020: virtual educational sessions through VDH EHDI
- 2020: Pediatric Grand Rounds throughout Virginia
 - all Children’s Hospitals had outreach educational sessions
- September 2021: VA AAP/VDH congenital CMV Lecture
- Network of Pediatric Infectious Diseases Physicians based on regions of VA
 - Referral network for clinicians with any clinical cCMV questions



Next Steps



Questions