

# EPIC, CareRef, and More: Optimizing Clinical Decision Support Tools

February 8, 2024

Minnesota Center of Excellence in Newcomer Health

# Acknowledgment

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No financial conflicts of interest.



# Learning Objectives

- Identify existing electronic clinical decision tools and available learning opportunities for newcomer health
- Employ clinical decision tools to perform appropriate screening and management actions for newly arrived newcomer patients
- Utilize newcomer health clinical decision tools to identify patients in need of outreach for completion of newcomer screening and management
- Understand how existing newcomer clinical decision support tools can be adapted to support broader populations

# Today's Speakers



**Jeremy Michel, MD**  
Children's Hospital of  
Philadelphia



**Kailey Urban, MPH**  
Minnesota Department of  
Health

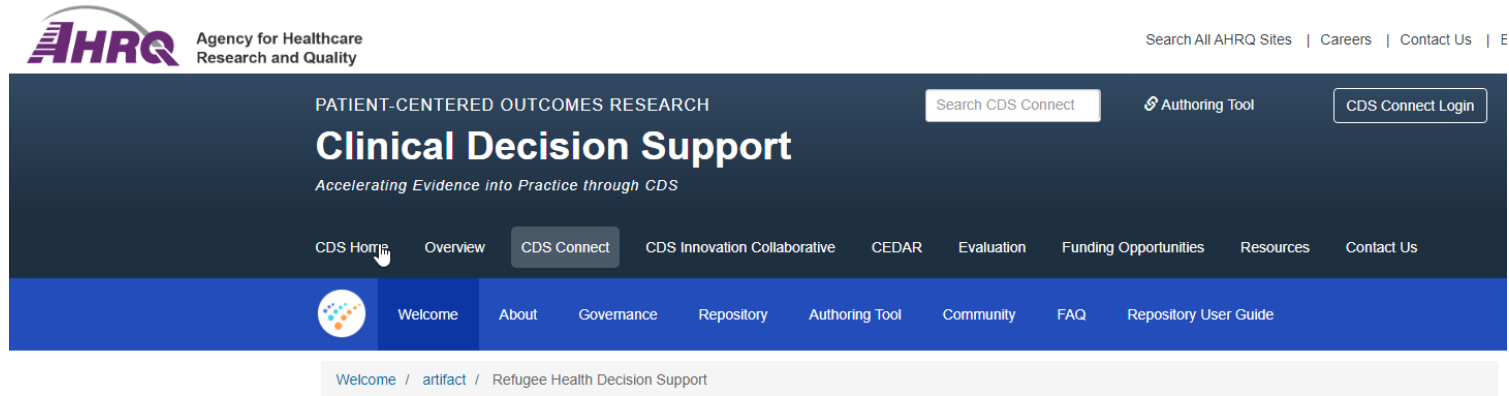


**Sarah Kuech, RN MSc MCHES**  
Minnesota Center of  
Excellence  
(Moderator)

# Agenda

- Overview of Clinical Decision Tools
- Demonstration of CareRef and VaxRef
- Demonstration of Decision Support Tools
- Applying these tools to broader uses and populations
- Additional learning opportunities
- Q&A
- Wrap Up

# Newcomer Health Clinical Decision Support



The screenshot shows the AHRQ (Agency for Healthcare Research and Quality) Clinical Decision Support (CDS) website. The header includes the AHRQ logo and navigation links for 'Search All AHRQ Sites', 'Careers', 'Contact Us', and 'E'. The main navigation bar features 'PATIENT-CENTERED OUTCOMES RESEARCH' and 'Clinical Decision Support' with the tagline 'Accelerating Evidence into Practice through CDS'. A search bar for 'Search CDS Connect' and an 'Authoring Tool' link are present. The main menu includes 'CDS Home', 'Overview', 'CDS Connect', 'CDS Innovation Collaborative', 'CEDAR', 'Evaluation', 'Funding Opportunities', 'Resources', and 'Contact Us'. The secondary menu includes 'Welcome', 'About', 'Governance', 'Repository', 'Authoring Tool', 'Community', 'FAQ', and 'Repository User Guide'. The breadcrumb trail at the bottom of the screenshot reads: 'Welcome / artifact / Refugee Health Decision Support'.

## Refugee Health Decision Support

Publicly available Clinical Decision Support for Newcomer Health (Revised: May 2023)

[Refugee Health Decision Support \(https://cds.ahrq.gov/cdsconnect/artifact/refugee-health-decision-support\)](https://cds.ahrq.gov/cdsconnect/artifact/refugee-health-decision-support)

# Clinical Decision Support for Newcomer Health

- Is Clinical Decision Support right for Newcomer Health
  - Arrival testing is complex and depends on multiple variables
  - Follow up testing and management for particular age groups and underlying health conditions
  - Complex visit considerations including language and cultural barriers to care
  - Outside data needs to be considered for care decisions
  - Care recommendations apply routinely across the United States

# Clinical Decision Support

*A clinical decision support (CDS) system is intended to improve healthcare delivery by enhancing medical decisions with targeted clinical knowledge, patient information, and other health information.*

(Osheroff, 2012)

## **Clinical Decision Support Modalities**

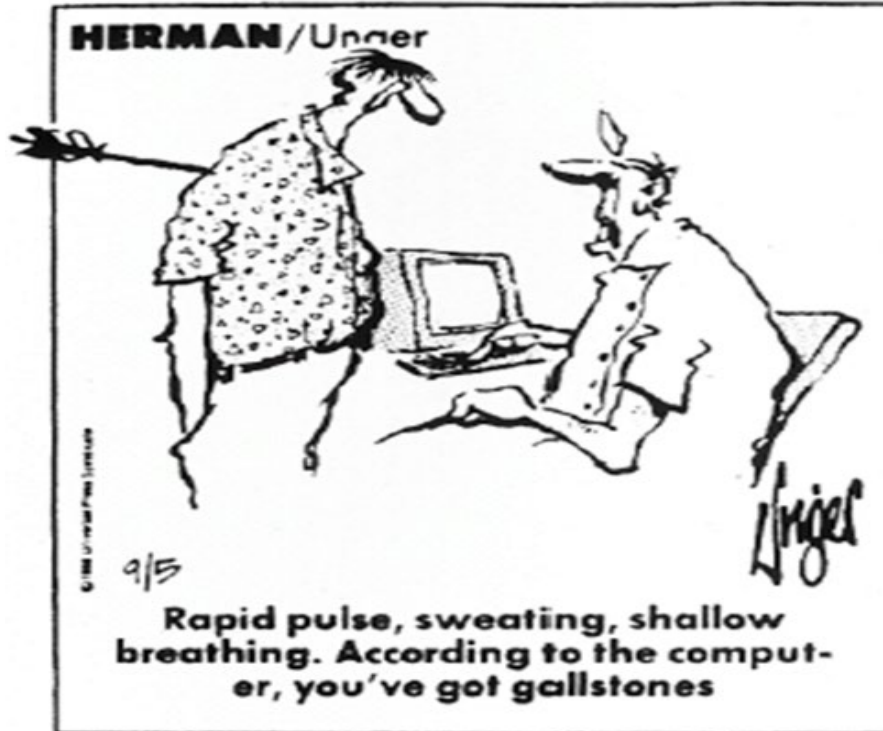
- Alerts
- Reminders
- Computerized Provider Order Entry (CPOE)
- Documentation Templates
- “Linked in” Information
- Patient Instructions
- Handouts
- Diagnostic Support
- Order Sets



# Good Clinical Decision Support: The 5 Rights

- Applying the “5 Rights” to newcomer health clinical decision support
  - Right information
    - How do we know if a patient in need of newcomer health
    - What data is relevant to help make decisions
  - Right person
    - Who on the team needs to see which information? The clinician, the nurse, the welcome desk
  - Right format
    - Is the layout/display appropriate? Do we need to consider patient language preferences?
  - Right channel
    - How do we organize the content given separate laboratory testing and documentation needs
  - Right time in the workflow
    - What content is needed during the overseas medical exam data extraction and during the domestic medical examination

# Remember: The Computer is Never in Charge



# Clinical Decision Support Standardizes Care

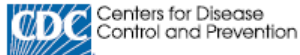
- Care recommendations apply routinely across the United States
  - Clinical Decision Support is an appropriate intervention
- Each organization could create its own tools
  - Lots of effort expected across organizations
  - Potential for operationalizing divergent interpretations of recommendations
  - Care would then be different based on where a patient is seen
- Organizations could use Shareable Clinical Decision Support to standardize care

# Sharable Clinical Decision Support

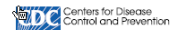
- What is meant by Sharable Clinical Decision Support
  - Most CDS is developed at a single organization or institution – others wishing to use the same process are often forced to re-invent the wheel
  - CDS that can be implemented by other organizations is considered sharable
- Numerous benefits of sharing
  - Decreases unintentional variations in care received between organizations
  - Sites that incorporate shareable CDS spend less time developing ‘de novo’
  - Improvements to CDS can occur during the process of making it shareable
- Barriers to sharing exist as well
  - Each organization has its own electronic health record, own local culture, own workflows, local resources, specializations, access issues, patient populations, ...
  - Even sites that use the same electronic health record type install it differently
- How can we improve sharing?

# Make it Trustworthy

- Guidance obtained from CDC on care and management of newcomer patients
- Each recommendation gets mapped to the CDS
- When guidance is updated, the new and old recommendations are compared



## Refugee Health Guidelines



Immigrant and Refugee Health

Domestic Intestinal Parasite Guidelines

Presumptive Treatment and Screening for Strongyloidiasis, Infections Caused by Other Soil-Transmitted Helminths, and Schistosomiasis among Newly Arrived Refugees

Background

Guideline Comparison Tracker		Key: Highlight = No Perceived Change					
Highlight = Flagged to double check							
Guideline	Past Guideline	Page #	Section Header, Paragraph #, Line #	New Guideline	Page #	Section Header, Paragraph #, Line #	Interpretation
Intestinal Parasite Guideline	If the eosinophil count is normal, repeat testing for eosinophilia in an asymptomatic person is not indicated.	7	Persistent eosinophilia in refugee populations; paragraph 1; lines 5-6	If the initial eosinophil count is normal, repeat testing for eosinophilia in an asymptomatic person is not indicated.	11	Persistent Eosinophilia in Refugee Populations; paragraph 1, line 1	No clinically relevant change
Intestinal Parasite Guideline	If the absolute eosinophil count is > 400 cells/mL, clinical decision making should be based on the history of presumptive treatment.	7	Persistent eosinophilia in refugee populations; paragraph 1; lines 6-8	If the initial absolute eosinophil count is 450 cells/μL or greater, clinical decision-making should be guided by the history of presumptive treatment.	11	Persistent Eosinophilia in Refugee Populations; paragraph 1, line 1-3	Clinically relevant change

*Change Identified*

# Make It Localizable

- Each organization will need to modify content to match local resources (like resettlement agencies) and organizational workflows
- Utilizing clinical terminology standards helps organizations speak the same language

**Customization point**

originally resettled by {resettlement agency:15718}; after moving to the US from {country of departure};  
air {mother/father/sisters/brothers/children:22642};

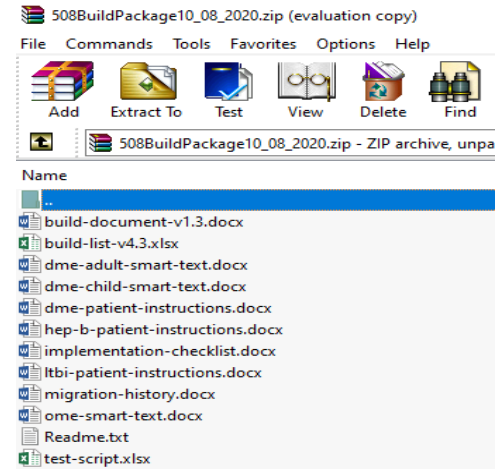
HIAS and Council (Hebrew Immigrant Aid Society),  
NSC (Nationalities Service Center),  
LCFS (Lutheran Children and Family Services)  
\*\*\*

Customization point: Add the resettlement agencies that work with the most refugees at your institution to the list and remove agencies that you do not work with.

CHOP Order Name	Standard	Code
CBC,Platelet With Differential	LOINC	69742-5
Hepatitis B virus panel: SAg	LOINC	58452-4
Hepatitis B Total Core AB	LOINC	22316-4
Hepatitis B Surface Antibody	LOINC	16935-9
(HIV Screening) HIV Antigen/Antibody	LOINC	56888-1
Lead (venous)	LOINC	77307-7
TB INTRADERMAL TEST	LOINC	23537-4
Quantiferon Gold	LOINC	53704-3
Urine Pregnancy Test(Office)	LOINC	2106-3
C. Trachomatis/N.Gonorrhoeae	LOINC	44806-8

# Support Sharing

- Shareable CDS is NOT ‘plug-and-play’
- Build guides help to orient the installation; checklists keep team organized
- While this tool was developed in Epic, guidance documents like these can help the clinical decision support be installed in any electronic health record

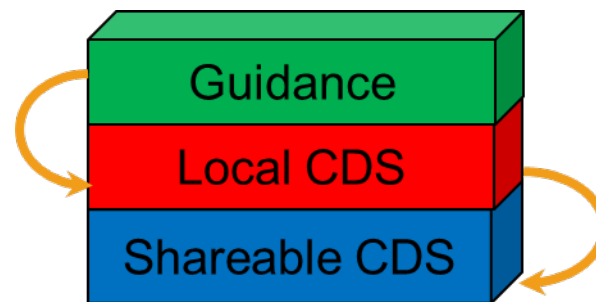
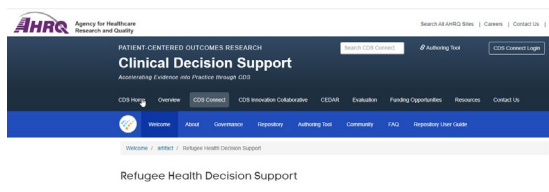


Refugee Health CDS Implementation Checklist				
	Task	Task Owner	Completed	Resource Identity, Owner, or Location
PEOPLE	Identify Clinical Champion to serve as Implementation Leader			
	Identify Impacted Clinicians and other End Users			
	Identify Subject Matter Expert / Clinical Content Reviewer (can be clinical Champion or other clinician)			
	Identify CDS Integration Team Leader			
	Identify Data Abstracter/Analyst			
PROCESS	Categorize workflow (type 1 or type 2)			
	Are there institutional documentation requirements (modify templates)?			
	Are there institutional CDS review committee requirements?			
	Are there institutional CDS organization standards (modify order sets)?			
	Does your institution have the ability to pull data on implementation process?			
SKILLS	Plan to collect end user feedback?			
	Can implement Epic/ct			
	Can modify the browser white list			
	Can determine which workflow type matches the organization's workflow			
	Can check mapping of medications, laboratory orders, and diagnosis codes to local codes			
RESOURCES	Can check that this material matches the clinical context and needs			
	Time – Clinician Champion			
	Time – Implementer(s)			
	Time – Analyst 1			
	Time – Analyst 2			
POST	Financial Resources (if any)			
	Patient Volume (test implementation)			
	Call to provide feedback on implementation experience			
	Document implementation resources			
	Monitor use of implemented resources			
	Develop a plan for updating resources			

# Ways To Share Your Work

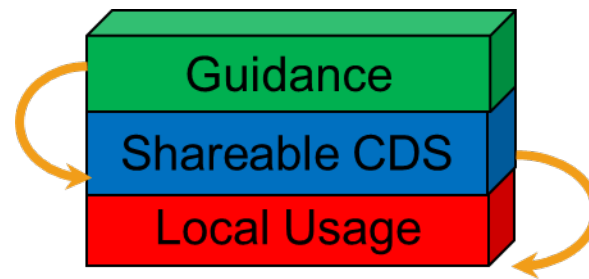
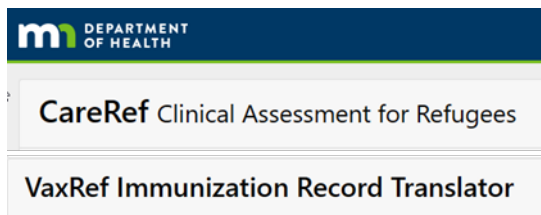
## The 'you can learn to do it, too' approach

Example: The Newcomer Health Clinical Decision Support toolkit



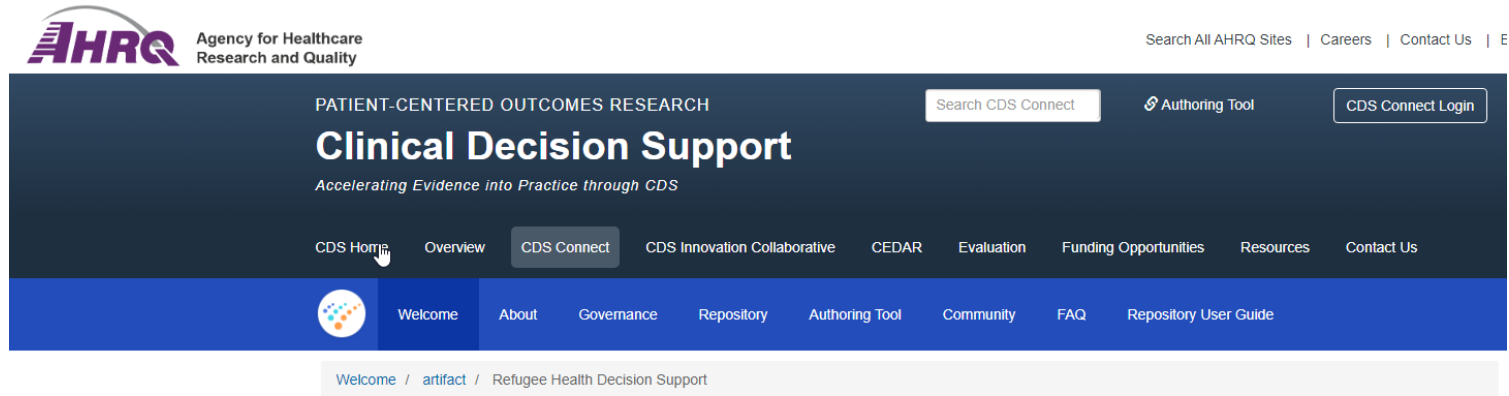
## The 'if you build it, they will come' approach

Example: CareRef and VaxRef





# Newcomer Health Clinical Decision Support



The screenshot shows the AHRQ Clinical Decision Support website. At the top left is the AHRQ logo with the text "Agency for Healthcare Research and Quality". To the right are links for "Search All AHRQ Sites", "Careers", "Contact Us", and "E". The main header is dark blue with "PATIENT-CENTERED OUTCOMES RESEARCH" and "Clinical Decision Support" in large white text. Below this is the tagline "Accelerating Evidence into Practice through CDS". A search bar for "Search CDS Connect" and buttons for "Authoring Tool" and "CDS Connect Login" are also present. A navigation menu includes "CDS Home", "Overview", "CDS Connect" (highlighted), "CDS Innovation Collaborative", "CEDAR", "Evaluation", "Funding Opportunities", "Resources", and "Contact Us". A secondary blue navigation bar contains a logo and links for "Welcome", "About", "Governance", "Repository", "Authoring Tool", "Community", "FAQ", and "Repository User Guide". A breadcrumb trail at the bottom of the screenshot reads "Welcome / artifact / Refugee Health Decision Support".

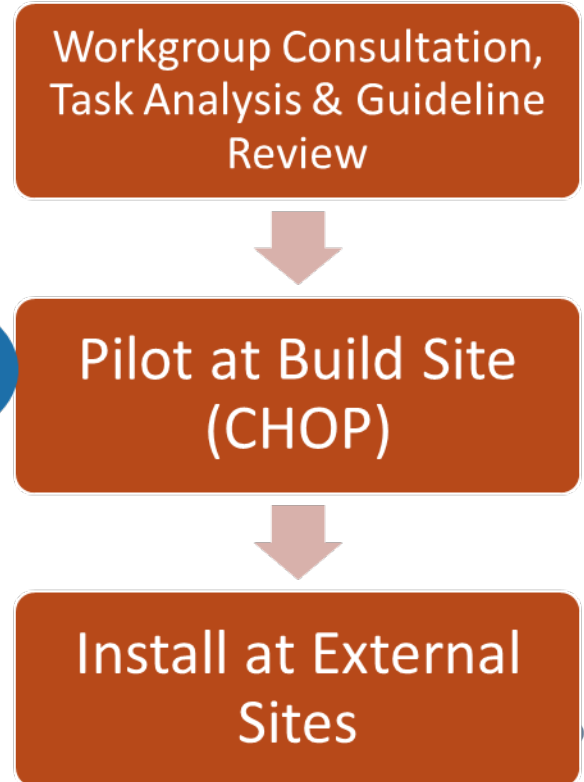
## Refugee Health Decision Support

Publicly available Clinical Decision Support for Newcomer Health (Revised: May 2023)

[Refugee Health Decision Support \(https://cds.ahrq.gov/cdsconnect/artifact/refugee-health-decision-support\)](https://cds.ahrq.gov/cdsconnect/artifact/refugee-health-decision-support)

# The Share Journey

- **Gather requirements:** Survey of refugee health professionals (2016, N=414)
- **Gather Feedback:** Large scale project involving multiple healthcare organizations to define workflow (2016-2018, N=19)
- **Install Local CDS:** Build and testing at CHOP created a massively powerful CDS platform (2017-2018)
- **Disseminate Shareable CDS:** Content developed to support external builds (2019-2020)



# Sharing Begets Sharing

- Each implementation required less time and fewer revisions
- Feedback from each site lead to improvements in the build guide and the CDS toolkit
- Content which we will demonstrate today has an estimated build of <10 hours

**Table 1. Implementation Across Sites**

	<b>Effort: Informaticist/ Analyst</b>	<b>Effort: Clinical Champions</b>	<b>Revision Cycles (initial build)</b>
<b>Origin</b>	~20% FTE (Informaticist)	~5% FTE	5
<b>Site 1</b>	31 hours (Analyst)	2 hours	2
<b>Site 2</b>	25-30 hours (Analyst)	2 hours	1
<b>Site 3</b>	<10 hours (Analyst)	<1 hour	1

# Clinical Decision Support Impact

- Clinicians report high satisfaction with the system
- Clinicians report that the system makes them more efficient



# Adherence to Newcomer Screening Guidance

- We evaluated rates of timely newcomer screening for elevated lead, HIV, TB, anemia, eosinophilia, and hepatitis B
- We evaluated the impact of CDS on screening across Plan-Do-Study-Act (PDSA) cycles
- Very high baseline screening
  - Existing order sets did exist in the institution, but it was not automated
  - No improvement with automated tools
- Improvement in second lead testing
  - Approximately doubled timely screening rates from baseline period to the second PDSA cycle

Rates for each evaluated screening component at the initial refugee health evaluation

Initial Screening	Screening Recommendations	Screening Rate (#screened/recommended, % screened) <sup>1</sup>			
		Baseline Period	PDSA Cycle 1	PDSA Cycle 2	Total
Eosinophilia	All patients	475/486 (97.74%)	114/117 (97.44%)	219/227 (96.48%)	808/830 (97.35%)
		476/486 (97.94%)	116/117 (99.15%)	219/227 (96.48%)	811/830 (97.71%)
Anemia	All patients	474/486 (97.53%)	113/117 (96.58%)	219/227 (96.48%)	806/830 (97.11%)
Hepatitis B	All patients	104/107 (97.20%)	26/28 (92.86%)	53/57 (92.98%)	183/192 (95.31%)
		457/469 (97.44%)	109/112 (97.32%)	204/218 (93.58%)	770/799 (96.37%)
Lead*	All patients age ≤ 16y	452/486 (93.00%)	111/117 (94.87%)	210/227 (92.51%)	773/830 (93.13%)
Tuberculosis	All patients	439/486 (90.33%)	107/117 (91.45%)	202/227 (88.99%)	748/830 (90.12%)
	All patients (when recommended)				

Timeframe (after initial testing)	Baseline Period	PDSA Cycle 1	PDSA Cycle 2	Total
0-3 months	17 (7.30%)	6 (10.53%)	10 (15.38%)	33 (9.30%)
3-6 months <sup>1</sup>	37 (15.88%)	5 (8.77%)	19 (29.23%)	61 (17.18%)
6-12 months	31 (13.30%)	15 (26.32%)	7 (10.77%)	53 (14.93%)
12+ months	30 (12.88%)	2 (3.51%)	1 (1.54%)	33 (9.30%)
No follow-up testing	118 (50.64%)	29 (50.88%)	28 (43.08%)	175 (49.30%)
<b>Total</b>	233	57	65	355 <sup>2</sup>

<sup>1</sup>Lead follow-up is recommended at 3-6 months after the initial test for all refugee patients ages ≤6 years regardless of initial screening results, older patients depending upon risk factors, and individuals with EBLL, according to the CDC guidance.

<sup>2</sup>An additional 47 patients seen during PDSA cycle 2 will be due for repeat lead testing, but they were seen too recently to be included. Of these 9 had an elevated blood level at baseline.

# Recap:

## Newcomer Health Clinical Decision Support

- Shareable clinical decision support toolkit developed at a single health system and disseminated to multiple sites
- Incorporates CDC guidance for newcomer health screening
- Informed by expert opinion for system requirements and usability
- Each successive installation was easier and took less time
- High user satisfaction after installation including more efficient care
- Initial screening rates not worse and notable improvements in timely repeat lead testing in appropriate patients

# Demonstration of Newcomer Health Clinical Decision Support

The screenshot shows the top navigation and header of the Clinical Decision Support website. At the top left is the AHRQ logo with the text "Agency for Healthcare Research and Quality". To the right are links for "Search All AHRQ Sites", "Careers", "Contact Us", and "E". Below this is a dark blue header with "PATIENT-CENTERED OUTCOMES RESEARCH" and "Clinical Decision Support" in large white text. Underneath is the tagline "Accelerating Evidence into Practice through CDS". A search bar for "Search CDS Connect" and an "Authoring Tool" link are on the right, along with a "CDS Connect Login" button. A horizontal menu below the header includes "CDS Home" (highlighted with a mouse cursor), "Overview", "CDS Connect", "CDS Innovation Collaborative", "CEDAR", "Evaluation", "Funding Opportunities", "Resources", and "Contact Us". A secondary blue navigation bar contains a logo and links for "Welcome", "About", "Governance", "Repository", "Authoring Tool", "Community", "FAQ", and "Repository User Guide". Below the navigation is a breadcrumb trail: "Welcome / artifact / Refugee Health Decision Support". The main content area begins with the heading "Refugee Health Decision Support".

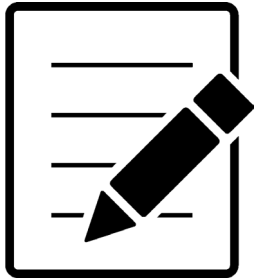
# CareRef: The Clinician's Assistant for Refugee Care





# Who is CareRef's Target Audience?

- Clinician's conducting the U.S. Domestic Medical Examination for Newly Arrived Refugees



**Only 21%** said it was “easy and quick” to find info within CDC guidelines

**1/3** preferred an interactive tool

**Many** use inadequate resources



**Numerous** phone calls to CDC and state programs

# Input

- Demographic Information

- State of residence
- Departure country
- Country of birth
- Date of Birth
- Sex
- Pregnancy status (if applicable)

- Overseas Screening Results

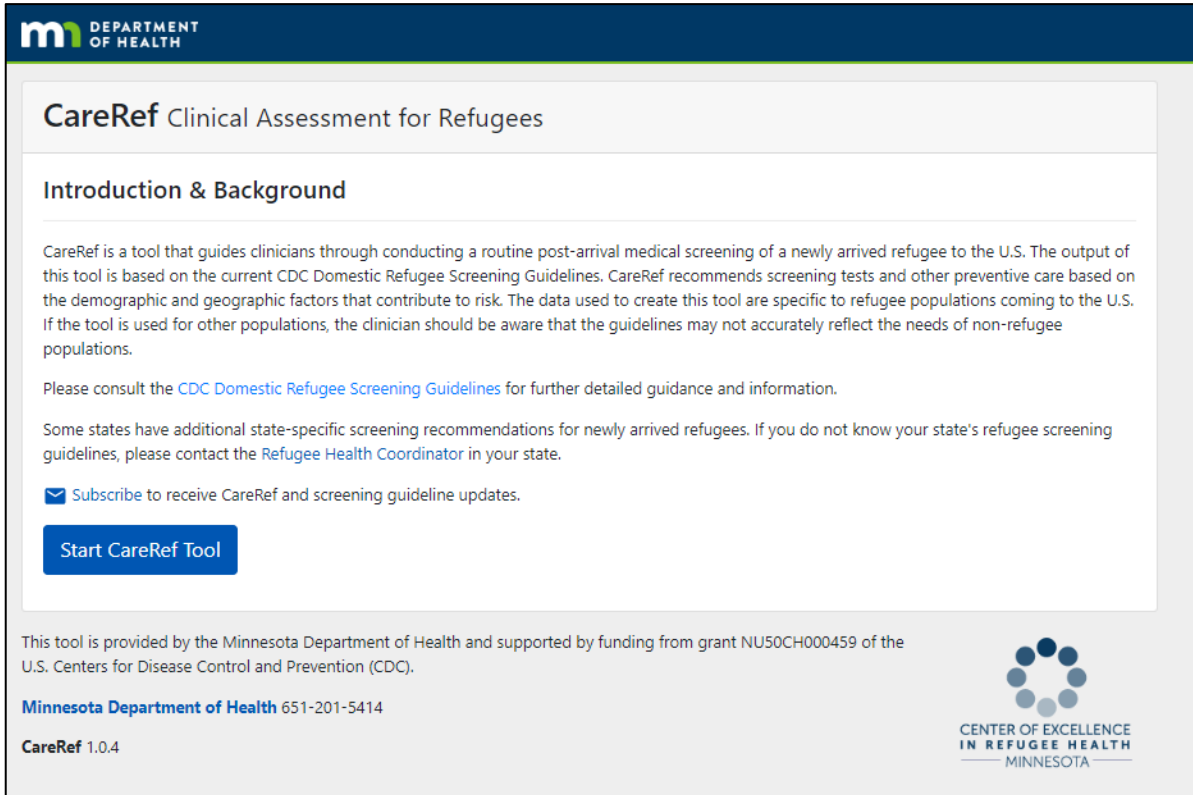
- TB
- Hepatitis B
- Syphilis
- Chlamydia
- Gonorrhea
- Overseas presumptive treatments received

# Output

- CDC Health Alerts
- General Laboratory Testing
- Disease-Specific Laboratory Testing
  - Tuberculosis
  - Hepatitis B and C
  - Syphilis, Gonorrhea, Chlamydia
  - HIV
  - Intestinal Parasites
- History and Physical Exam
- Immunizations
- Mental Health
- Sexual and Reproductive Health
- Cancer (coming soon)
- Links to Health Profiles and Translated Materials

# CareRef demo

[CareRef: Clinical Assessment for Refugees \(https://careref.web.health.state.mn.us/\)](https://careref.web.health.state.mn.us/)



The screenshot shows the CareRef website interface. At the top left is the Minnesota Department of Health logo. The main heading is "CareRef Clinical Assessment for Refugees". Below this is a section titled "Introduction & Background". The text in this section explains that CareRef is a tool for medical screening of refugees, based on CDC guidelines, and provides a link to the "CDC Domestic Refugee Screening Guidelines". It also includes a "Subscribe" checkbox and a "Start CareRef Tool" button. At the bottom, there is a footer with contact information for the Minnesota Department of Health and two logos: the "Center of Excellence in Refugee Health Minnesota" logo and the "Center of Excellence in Newcomer Health Minnesota" logo.

**m** DEPARTMENT OF HEALTH

## CareRef Clinical Assessment for Refugees

### Introduction & Background

CareRef is a tool that guides clinicians through conducting a routine post-arrival medical screening of a newly arrived refugee to the U.S. The output of this tool is based on the current CDC Domestic Refugee Screening Guidelines. CareRef recommends screening tests and other preventive care based on the demographic and geographic factors that contribute to risk. The data used to create this tool are specific to refugee populations coming to the U.S. If the tool is used for other populations, the clinician should be aware that the guidelines may not accurately reflect the needs of non-refugee populations.

Please consult the [CDC Domestic Refugee Screening Guidelines](#) for further detailed guidance and information.

Some states have additional state-specific screening recommendations for newly arrived refugees. If you do not know your state's refugee screening guidelines, please contact the [Refugee Health Coordinator](#) in your state.


[Subscribe](#) to receive CareRef and screening guideline updates.


[Start CareRef Tool](#)

This tool is provided by the Minnesota Department of Health and supported by funding from grant NU50CH000459 of the U.S. Centers for Disease Control and Prevention (CDC).

**Minnesota Department of Health** 651-201-5414

CareRef 1.0.4

 CENTER OF EXCELLENCE IN REFUGEE HEALTH MINNESOTA

 CENTER OF EXCELLENCE IN NEWCOMER HEALTH MINNESOTA

# VaxRef: Helping Patients Translate Overseas Vaccination Records

# Our Solution: VaxRef

Name: Test Test

Email: kail Test.test@gmail.com

Date of Birth: 2000-01-01

## Vaccine List

- vaccine\_type: Measles, Mumps, Rubella (MMR)
- vaccine\_date: 2001-01-01
- vaccine\_type: Measles, Mumps, Rubella (MMR)
- vaccine\_date: 2005-01-01
- vaccine\_type: Polio (IPV)
- vaccine\_date: 2001-03-01
- vaccine\_type: Polio (IPV)
- vaccine\_date: 2001-05-01
- vaccine\_type: Hepatitis B
- vaccine\_date: 2000-01-01
- vaccine\_type: Hepatitis B

Щеплення проти кору Measles										
Вік	Дата	Доза	Серія	Реакція на щеплення		Медичні протипоказання (дата, причина)				
12.01.2001	12.01.2001	MMR (кпк)	1	задовільно	місцева					
12.01.2001	12.01.2001	MMR (кпк)	2	задовільно	місцева					
Щеплення проти краснухи										
Вік	Дата	Доза	Серія	Реакція на щеплення		Медичні протипоказання (дата, причина)				
12.01.2001	12.01.2001	COVID-19	1	задовільно	місцева					
12.01.2001	12.01.2001	COVID-19	2	задовільно	місцева					
Щеплення проти гепатиту В Hep B										
Вік	Дата	Доза	Серія	Реакція на щеплення		Медичні протипоказання (дата, причина)				
12.01.2001	12.01.2001	Hep B	1	задовільно	місцева					
12.01.2001	12.01.2001	Hep B	2	задовільно	місцева					
12.01.2001	12.01.2001	Hep B	3	задовільно	місцева					
Інші щеплення										
Вік	Дата	Доза	Серія	Реакція на щеплення		Медичні протипоказання (дата, причина)				
12.01.2001	12.01.2001	Hib	1	задовільно	місцева					
12.01.2001	12.01.2001	Hib	2	задовільно	місцева					
12.01.2001	12.01.2001	Hib	3	задовільно	місцева					
Туберкульозні проби TB Screen Test										
Вік	Дата	Доза	Серія	Результат		Вік	Дата	Доза	Серія	Результат
12.01.2001	12.01.2001	1	1	негативний						
12.01.2001	12.01.2001	2	2	негативний						
12.01.2001	12.01.2001	3	3	негативний						



# Who is VaxRef's Target Audience?

- Patients with vaccination records that need translation
- VaxRef can be used in-clinic or outside of clinic
- Translated records can be sent directly to the provider



# Languages Available in VaxRef:

- English
- Ukrainian
- Russian
- Spanish
- French
- Portuguese
- More to come!



# VaxRef demo

[VaxRef: Immunization Record Translator \(https://forms.web.health.state.mn.us/form/vaxref/\)](https://forms.web.health.state.mn.us/form/vaxref/)

## VaxRef Form

Translate: English ▾

\* Asterisk (\*) Indicates required field

This application will help you translate your vaccine records to English. Select the language of your document and complete all the information below.

### Disclaimer

The Minnesota Department of Health and Minnesota IT Services developed this application (VaxRef) to translate immunization records. You should always give the original immunization records with the translated materials to your doctor or other health care professionals.

The application is intended for use by people who want to translate their immunization records, health care professionals needing help with translating immunization records, or community organizations translating immunization records.

This application and its translated materials do not give medical advice or immunization guidance. Talk to your doctor or other health care professional for advice or information about immunizations.

Information you enter in this application, including the patient or user's name, date of birth and other personal information, will be deleted immediately. The Minnesota Department of Health will not have access to or store the information you provide when using this application, except for two items: (1) the US state where the user accessed or used the application and (2) the original language of the translated materials. The Minnesota Department of Health will use the state and language information to understand how and where the application is used.

If you do not wish to enter the requested information, you cannot use the application to translate immunization records.

First Name:

First name must be written in English/Latin characters

Last Name:

Last name must be written in English

Date of Birth

Enter your date of birth in month (MM), day (DD), year (YYYY)

State

Select your state of residence (in English)

# Patient Outreach and Quality Improvement (QI)

# Identifying Patients for Outreach and QI

- Use of Clinical Decision Support leaves a trace in the Electronic Health Record (EHR)
- Organization has the ability to pull data from the EHR
- We used a combination of markers in the chart to determine patients who were eligible for newcomer health screening
  - One of these includes utilization of the Newcomer Health CDS Toolkit
- This combined with an 'active patient' flag allows our team to target outreach and messaging to appropriate patients
- Engaged in 5 outreach and QI projects so far

# 1. COVID Immunization Outreach

- We recognized that COVID immunization outreach had additional barriers for newcomer patients
  - Immunization data was pulled for patients in our health system
  - We evaluated immunization uptake among newcomer patients based on primary language and looked for groups with lower than predicted rates
  - Team members reached out to cohorts of patients by preferred language to help schedule immunizations as part of the QI project



## 2. COVID Immunization Reconciliation

- Newcomer patients sought COVID vaccines inside and outside the medical home
- We noted that several newcomer patients who reported immunizations did not have these listed on their chart
- We identified 2 newcomer patients with separate charts for COVID vaccination and the remainder of the medical record
  - One patient had the same name in both charts
  - Second patient registered with a Americanized name when getting the COVID vaccine, other chart data and review of physical COVID helped to prove patient match
- Using the active patient list, we confirmed data providence of COVID vaccinations for these patients and merge the records
- Project demonstrated the importance of confirming legal name when providing medical care to this population to support appropriate documentation

# 3. Adolescent Immunization Metric (AIM-REF)

- Arriving newcomer adolescents present unique vaccination challenges
  - Delayed vaccination
  - Vaccines not accepted as valid in the United States
  - Increased rates of immunity due to prior infection
- Patient-level calculations may not correctly determine up to date status
- Existing population-level metrics may fail to identify gaps in coverage
- We developed and validated the **A**dolescent **I**mmunizations **M**etric for **REF**ugees (AIM-REF), for population-level immunization coverage evaluation.

# AIM-REF Metric Development

**Metric Population: Refugee patient, ages 12-18 years, seen with the last 3 years, arrival date more than 1 year before calculation date**

Vaccination Series	Population Relevance	Handling in AIM-REF
<b>Human Papilloma Virus, Meningococcal ACYW-135</b>	Relevant for population, no difference from United States timing/spacing recommendations	Include in metric calculation as per standard US schedule
<b>Tetanus, Pertussis</b>	Relevant for population, need to account for potential of adolescent first dose for series	Include catchup schedule evaluation in metric calculation
<b>Measles, Mumps, Rubella (MMR)</b>	Relevant for population, handling different for MMR before age 1yr	Include valid doses as per US schedule in metric calculation
<b>Hepatitis B</b>	Relevant for population, low incidence of Hepatitis B carrier/disease in adolescent refugees	Include in metric calculation, account for 2-dose adolescent series (rarely used)
<b>Poliovirus</b>	Relevant for population, monovalent/bivalent OPV products do not provide adequate protection	Include in metric calculation if IPV or trivalent OPV (given before April 2016)
<i>H. influenza, Pneumococcal, Rotavirus</i>	Age at arrival in US may be after recommended age	Should not evaluate in metric
<i>Hepatitis A, Varicella</i>	High likelihood of natural immunity	Should not evaluate in metric
<i>Dengue, COVID-19, Seasonal Influenza</i>	Geographic-based recommendations, variability over time, and seasonality issues related to calculation	Should not evaluate in metric



# AIM-REF Findings

- **Total of 326 patients across 2 health systems**

- 65.8% fully vaccinated
- HPV vaccination rates lowest (a target for future QI)
- Rates lowest in younger patients, patients last seen < 2021, and US arrivals < 2019

Table 1: Vaccination Rates for 12-18 year old adolescent refugee patients seen since 2019 who arrived in the United States before November 2021, overall and by individual vaccination series, across institutions (N=326)

	Up to Date	
	n	%
All Series (AIM-REF)	214	65.8%
<b>Individual Vaccination Series</b>		
Hepatitis B	314	96.3%
Human papilloma virus	234	71.7%
Measles, Mumps Rubella	325	99.7%
Meningitis ACYW-135	293	89.8%
Poliovirus	306	93.8%
Tetanus	281	86.2%

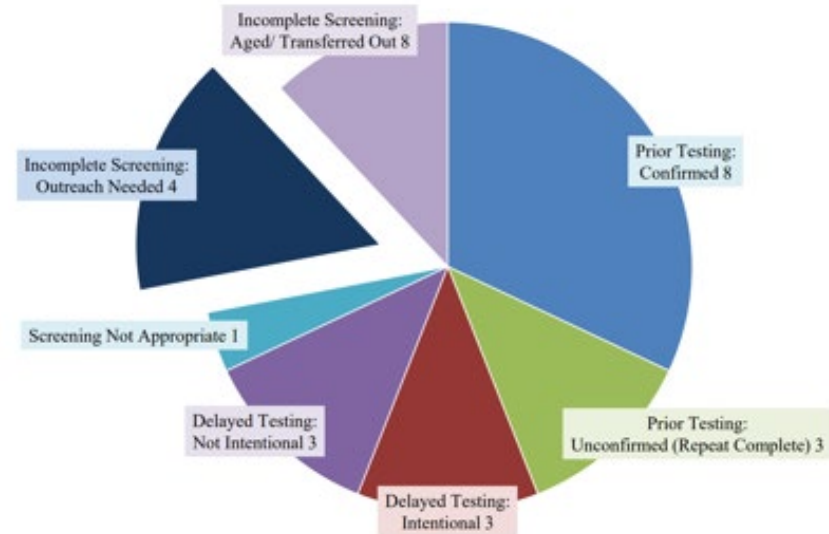
Table 2: Vaccination rates by age, year of arrival in the United States and year of most recent in person primary care visit, across institutions (N=326)

	Age	Up to Date N=214		Not Up to Date N=112		p-value*
		%	n	%	n	
<b>Age</b>	12	11.7%	25	28.6%	32	<0.0001
	13	10.3%	22	28.6%	32	
	14	18.7%	40	14.3%	16	
	15	13.1%	28	8.9%	10	
	16	16.4%	35	6.3%	7	
	17	17.3%	37	8.0%	9	
	18	12.6%	27	5.4%	6	
<b>Year of Arrival in the US</b>	Before 2019	65.4%	140	75.0%	84	0.08
	During or After 2019	34.6%	74	25.0%	28	
<b>Year of Most Recent Primary Care</b>	Before 2021	22.4%	48	55.4%	62	<0.0001
	During or After 2021	77.6%	166	44.6%	50	

\* Fisher's exact  $\chi^2$  test

# 4. Newcomer Health Screening Completion

- 25 newcomer patients seen since 2020 flagged as not having timely newcomer health screening (within 30 days of DME)
- We performed a manual chart review of these patients to investigate
- Most had delayed (but completed) newcomer screening
  - Some intentionally to align with care plans
- 8 patients had documentation of prior testing scanned into the record
- **Only 4 patients identified as needing outreach to complete screening**



# 5. Targeting Clinical Areas for Improvement

- Newcomer patients with elevated lead levels seen at an increasing rates
  - Anecdotal evidence initially
  - Data from patient records used to confirm
- Investigation of patient factors found causes were multifactorial
  - Use of lead-based cosmetic products (e.g. Kohl)
  - Changes overtime in definition of elevated lead level
  - Impact of post-arrival exposure (e.g. housing and environmental factors)
- Several active interventions
  - Developed education for clinicians about newcomer lead exposure risk factors
  - Community outreach to discuss safe alternatives to lead-based cosmetic products
  - Increase timely lead follow up, scheduling visits, and identifying outreach targets
  - Including newcomer testing guidance in general lead-testing protocols in the EHR

# Extending Our Work to Broader Populations

- Newcomer Clinical Decision Support toolkit adapted to create a tool applicable to other children born outside the United States
  - Need to help clinicians identify which patients may need screening
  - Evaluate screening recommendations and honed clinical decision support
  - Display existing data in the chart to guide clinician decision making
  - Eliminate content that was population specific (e.g. OME abstraction)
  - Added guidance to inform clinicians about generalized recommendations

## Documentation

For OME data, check the [CDC's Electronic Disease Notification Website](#) (login)  
For guidance on conducting a routine post-arrival medical screening of a newly arrived refugee to the U.S., see [CareRef](#).  
This tool is based on the current CDC Domestic Refugee Screening Guidelines.

- Overseas Medical Exam Abstraction  
 Overseas Medical Exam Not Available

## Migration History

Please go to the Social History Tab and use: MIGRATIONHISTORY to document the migration history if available. Use Ctrl+Shift+S to return to SmartSets.

## Laboratory Testing

## CDC Domestic Medical Exam Screening Guidelines

- CBC, Platelet With Differential-COMBO ■  
Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Procedure Master:85025.999
- HIV Antigen/Antibody-COMBO ■  
Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Procedure Master:86703.002
- Lead Blood ■  
Expected: 3/5/2020, Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Procedure Master:83655.010
- Quantiferon Gold Plus ■  
Expected: 3/5/2020, Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Procedure Master:86480.056
- Hepatitis B Surface Antigen ■  
Expected: 3/5/2020, Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Blood, Procedure Master:87340.001
- Hepatitis B Surface Antibody ■  
Expected: 3/5/2020, Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Procedure Master:86706.001
- Hepatitis B Total Core AB ■  
Expected: 3/5/2020, Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Blood, Procedure Master:86704.001
- Vitamin D 25 OH-COMBO ■  
Expected: 3/5/2020, Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Procedure Master:82306.001
- RPR Qualitative w/Rflx Titer-COMBO ■  
Expected: 3/5/2020, Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Procedure Master:86592.002
- VZV IgG Serology-COMBO ■  
Expected: 3/5/2020, Expires: 6/5/2020, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Procedure Master:86787.999
- Hepatitis A IgG Antibody ■  
Expected: 3/6/2020, Expires: 6/5/2020, Office Collect, Routine, Blood, Procedure Master:86790.017
- Hepatitis C Ab w/ Reflex-COMBO ■  
Expected: 3/5/2020, Expires: 3/5/2021, Office Collect, Resulting Agency - THE CHILDREN'S HOSPITAL OF PHILADELPHIA, Routine, Procedure Master:86803.001
- G6PD Screen w/reflx to Quant ■  
Expected: 3/5/2020, Expires: 6/5/2020, Office Collect, Routine, Procedure Master:82690.015
- ▼ Supplemental Pre-Visit Labs To Consider if not Already Addressed in Overseas Documentation
- Strongyloides Antibody IGG-COMBO ■  
Expected: Today Approximate, Expires: S+365, Office Collect, Routine, Consider in refugees/migrants who did not receive presumptive treatment (alternatively, US-based presumptive treatment is acceptable) Procedure Master: 86682.001
- Schistosoma Antibody, IgG-Q ■  
Expected: S Approximate, Expires: S+365, Quest, Routine, Consider in refugees who did not receive presumptive treatment and patient is from schistosomiasis endemic region, see link above (alternatively, US-based presumptive treatment is acceptable), Procedure Master: 34306.001

# Changes to Support Non-Refugee Immigrant Patients

## Immigrant Health Screening (Routine)

**Basic screening is suggested recommended for MOST children born outside the US**

- Additional screening should be based on birth country and patient age.
- See [CareRef](#) for location/age specific recommendations.

*Historical relevant lab results (if present):*

No results found for: "HBSAB", "HIV", "LEAD", "QFGPT", "PPD", "RPR", "EOS", "HGB", "SCHISTO"

## Basic Screenings Tests

- CBC, Platelet With Differential (standard for most children born outside the US) ■  
Expires: 1/9/2025, Office Collect, Resulting Agency - CHOP UC LAB, Routine, Procedure Master:85025.999, Blood, Venous, Blood
- Hepatitis B (standard for most children born outside the US) panel
- Hepatitis B Surface Antibody ■  
Expires: 7/7/2024, Office Collect, Resulting Agency - CHOP UC LAB, Routine, Procedure Master:86706.001, Serum, Blood
- Hepatitis B Surface Antigen ■  
Expected: 1/9/2024, Expires: 1/9/2025, Office Collect, Resulting Agency - CHOP UC LAB, Routine, Procedure Master:87340.001, Serum, Blood
- Hepatitis B Total Core AB ■  
Expected: 1/9/2024, Expires: 1/9/2025, Office Collect, Resulting Agency - CHOP UC LAB, Routine, Procedure Master:86704.001, Serum, Blood
- HIV Antigen/Antibody (suggested for most children born outside the US) ■  
Expires: 1/9/2025, Office Collect, Resulting Agency - CHOP UC LAB, Routine, Procedure Master:86703.002, Plasma, Blood
- Lead Blood (suggested for most children born outside the US) ■  
Expires: 7/7/2024, Office Collect, Resulting Agency - CHOP UC LAB, Routine, Procedure Master:83655.010, Blood, Venous, Blood
- RPR Qualitative w/Rflx Titer (suggested for most children born outside the US) ■  
Expires: 4/8/2024, Office Collect, Resulting Agency - CHOP UC LAB, Routine, Procedure Master:86592.002, Blood, Venous, Blood
- Quantiferon Gold ■  
Expected: 1/9/2024, Expires: 1/9/2025, Office Collect, Resulting Agency - CHOP UC LAB, Routine, Procedure Master:86480.056, Blood, Venous, Quantiferon Collection Kit, Blood



# Additional Learning Opportunities

# Where Can I Learn More?



The screenshot shows the top of a research article page. The header includes the Children's Hospital of Philadelphia PolicyLab logo and navigation links for 'BLOG', 'Twitter', and 'LinkedIn'. Below the header is a breadcrumb trail: 'Home > Providing Tools for Clinicians to...'. The main title of the article is 'Providing Tools for Clinicians to Better Support Immigrant Health'. Below the title are social media sharing icons for Facebook, Twitter, and LinkedIn, along with icons for printing and emailing. The section 'Statement of Problem' is visible, starting with the text: 'More than 1 million immigrants arrive in the U.S. each year. These newcomers are dispersed all across the country and are often sent to primary care providers and public health clinics that do not have expertise in newcomer health. The Centers for Disease Control and Prevention (CDC) created guidance for providers that includes recommended screenings based on the age, sex, and country of origin of newcomers, but this guidance can be challenging for providers to enact in their clinical practice due to time constraints and limitations of electronic health records (EHR). This often means that newcomers are not receiving the evidence-based care they need in order to lead a healthy life. We know that when caregivers receive support to meet their needs, it positively

2/8/2024

## Order Set

A grouping of orders pertaining to a particular clinical context or workflow

Mar 05  
2019

### Endocrinology: Hypoglycemia Order Set

ORDER SET

Publisher: Veterans Health Administration

Endocrinology  Hypoglycemia  Diabetes Mellitus  Emergency Treatment

Created: 2018-04-20 Reviewed: 2019-03-05 Updated: 2019-03-05

Feb 26  
2019

### Rheumatology: Psoriatic Arthritis Order Set

ORDER SET

Publisher: Veterans Health Administration

Multicenter Study > J Am Med Inform Assoc. 2019 Dec 1;26(12):1515-1524.

doi: 10.1093/jamia/ocz124.

## Development and dissemination of clinical decision support across institutions: standardization and sharing of refugee health screening modules

Evan W Orenstein<sup>1, 2</sup>, Katherine Yun<sup>3, 4</sup>, Clara Warden<sup>3</sup>, Michael J Westerhaus<sup>5</sup>, Morgan G Mirth<sup>3, 6</sup>, Dean Karavite<sup>7</sup>, Blain Mamo<sup>8</sup>, Kavya Sundar<sup>3</sup>, Jeremy J Michel<sup>4, 7</sup>

Affiliations + expand

PMID: 31373356 PMID: PMC7647163 DOI: 10.1093/jamia/ocz124

Free PMC article



# Additional Learning Opportunities



**Save the dates!**  
**August 5-7,**  
**2024**



Thank you!



Questions?



# Center of Excellence Reminders!

## Subscribe to Center of Excellence in Newcomer Health Updates

[https://public.govdelivery.com/accounts/MNMDH/subscriber/new?topic\\_id=MNMDH\\_463](https://public.govdelivery.com/accounts/MNMDH/subscriber/new?topic_id=MNMDH_463)) for training announcements and other guidance and resources.

## Upcoming trainings at

## Center of Excellence in Newcomer Health: Webinars

[www.health.state.mn.us/communities/rih/about/coe.html#webinar](http://www.health.state.mn.us/communities/rih/about/coe.html#webinar))

2/8/2024

## NEWCOMER HEALTH



This ECHO series increases medical providers' knowledge of the resettlement and health issues of newcomers, including refugee, immigrant and migrant (RIM) populations. It reviews resettlement pathways, evidence-based screening recommendations, and more common diagnoses and treatment approaches for pediatric and adult populations. Sessions include brief didactic presentations by immigrant health experts and discussion of participant-submitted cases. Participants are highly encouraged to submit de-identified patient cases for group discussion and expert consultation.

**ONGOING MONTHLY VIRTUAL SESSIONS**  
Last Tuesday of the month  
8:00 AM PT | 9:00 AM MT | 10:00 AM CT | 11:00 AM ET

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**REGISTER TODAY!**  
[echocolorado.org/echo/newcomer-health/](http://echocolorado.org/echo/newcomer-health/)

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**UPCOMING SESSIONS**

**JANUARY 30**  
Asylum Seekers and Shelters

**FEBRUARY 27**  
Clinical Considerations for Latin American Newcomers

**MARCH 26**  
Trauma Informed/Preventative Care for Newcomer Women



**REGISTER HERE**



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Thank You!  
Please remember to complete  
your evaluation