

Public Health Information Management System

Multi-Enterprise Digital Ecosystem

INFO5100.20180.202610 Final Project | Group 02

Group Members: Akira Hanada / Maxwell Sowell / Travis Hodo (Withdrawn from the Group)

Northeastern University • December 2025

Team Member Repository

https://github.com/hanada-a/Final_Project_Group_02.git

Problem Statement

Challenge

Fragmented communication across public health stakeholders leads to delays in vaccine distribution and disease surveillance.

Gap 1: Siloed Systems

CDC, state departments, and providers operate independently without unified data sharing.

Gap 2: Manual Workflows

Paper-based processes create bottlenecks in critical vaccine allocation and outbreak response.

Gap 3: Delayed Response

Lack of real-time coordination hinders emergency preparedness and public health outcomes.

| System Architecture

System Level

National coordination

Network Level

US Public Health Network

Enterprise Level (3 types)

CDC, State Health Departments, Healthcare Providers

6 Organizations

Divisions and facilities across enterprises

12+ Specialized Roles

Epidemiologist, Coordinator, Officer, Manager

8+ Work Request Types

Allocation, reporting, shipment, appointments

Value Proposition

Cross-enterprise workflows enable real-time collaboration beyond isolated operations.

UML Class Diagram (1/2)

Core Hierarchy (4)

System, Network, Enterprise, Organization

Directories (3)

Employee, Account, Organization

Person Classes (2)

Employee, UserAccount

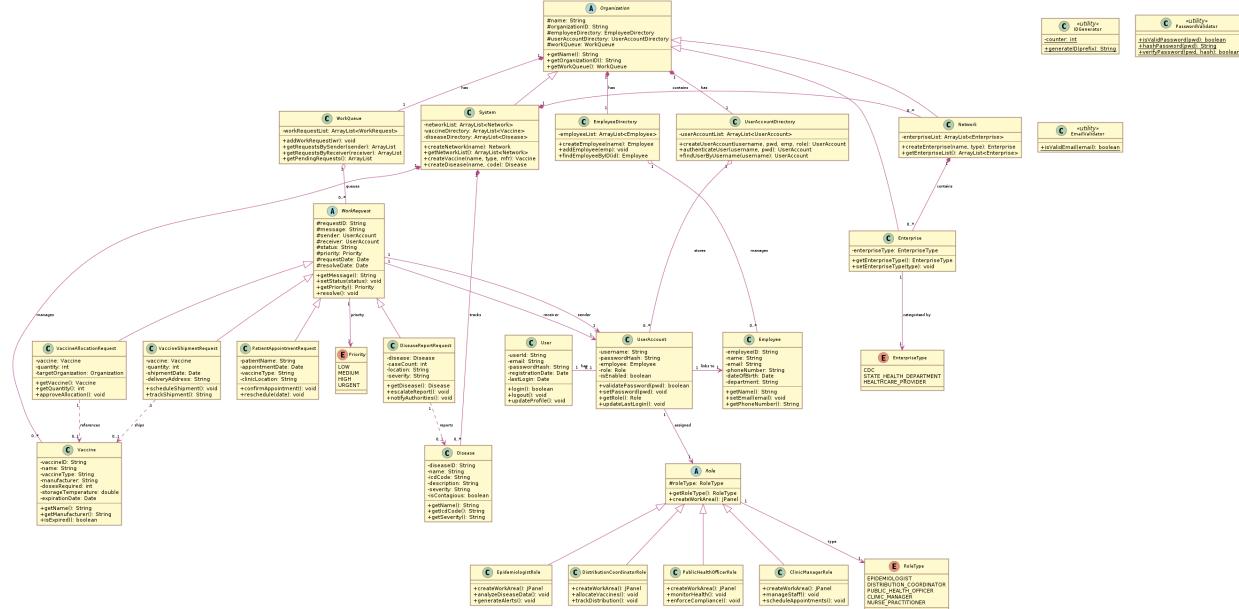
Roles (13)

12 concrete + abstract

Requests (9)

8 concrete + abstract

UML Class Diagram



Domain (3)

Vaccine Disease Prescription

UML Class Diagram (1/2)

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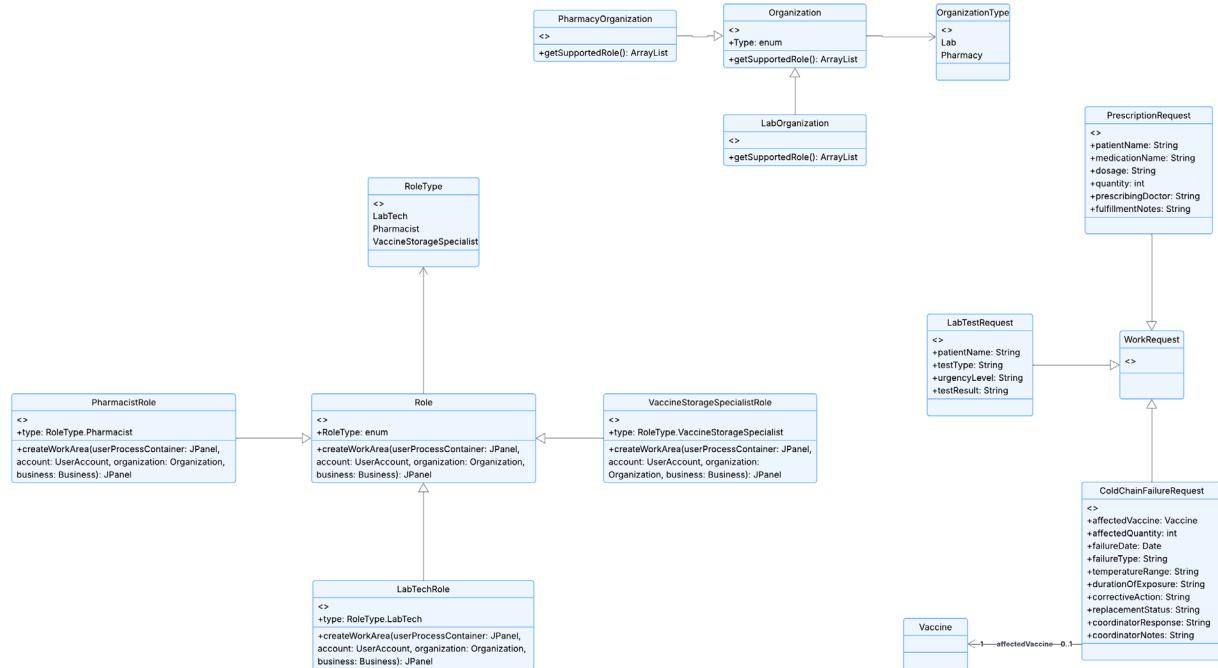
Requests (9)

8 concrete + abstract

Domain (3)

Vaccine, Disease, Prescription

UML Class Diagram



Component Architecture (1/2)

Presentation Layer

Role-based UI, Dashboards

Business Logic

Services, Processors

Data Access Layer

Repositories, CRUD ops

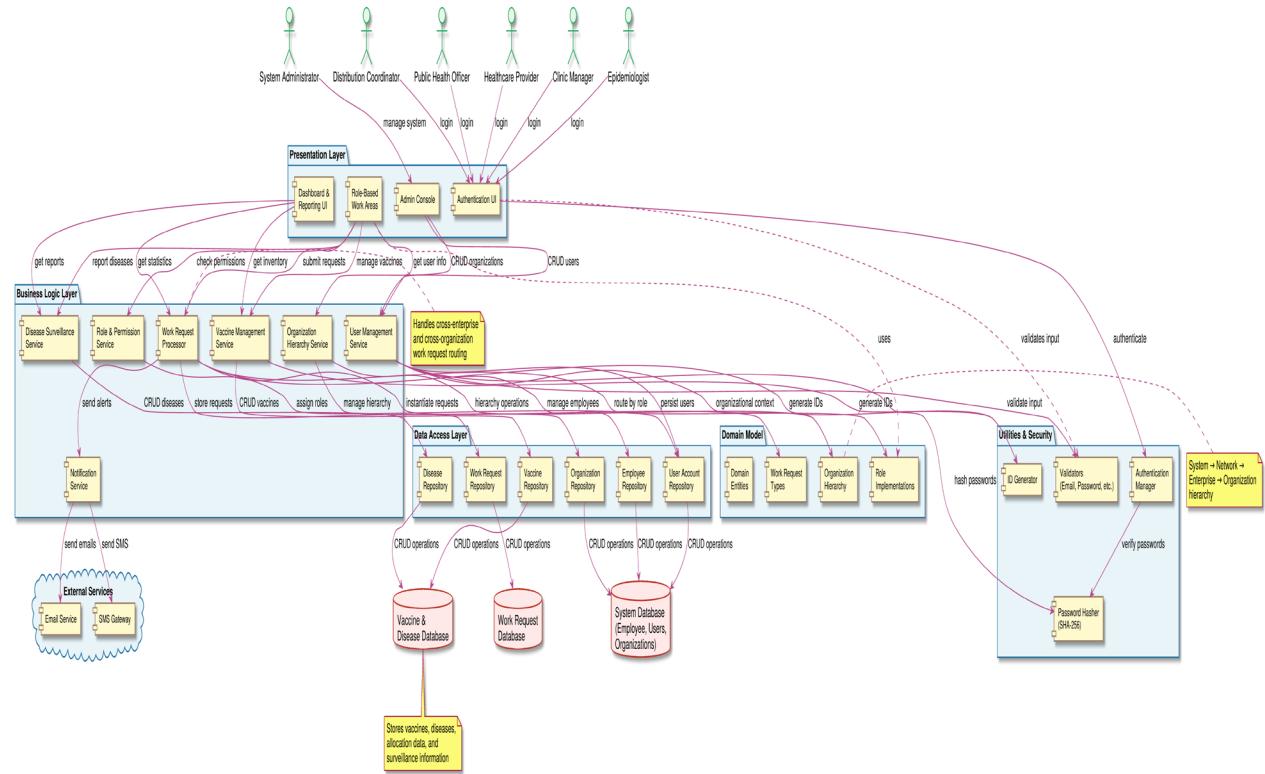
Domain Model

Core entities

Security & Utilities

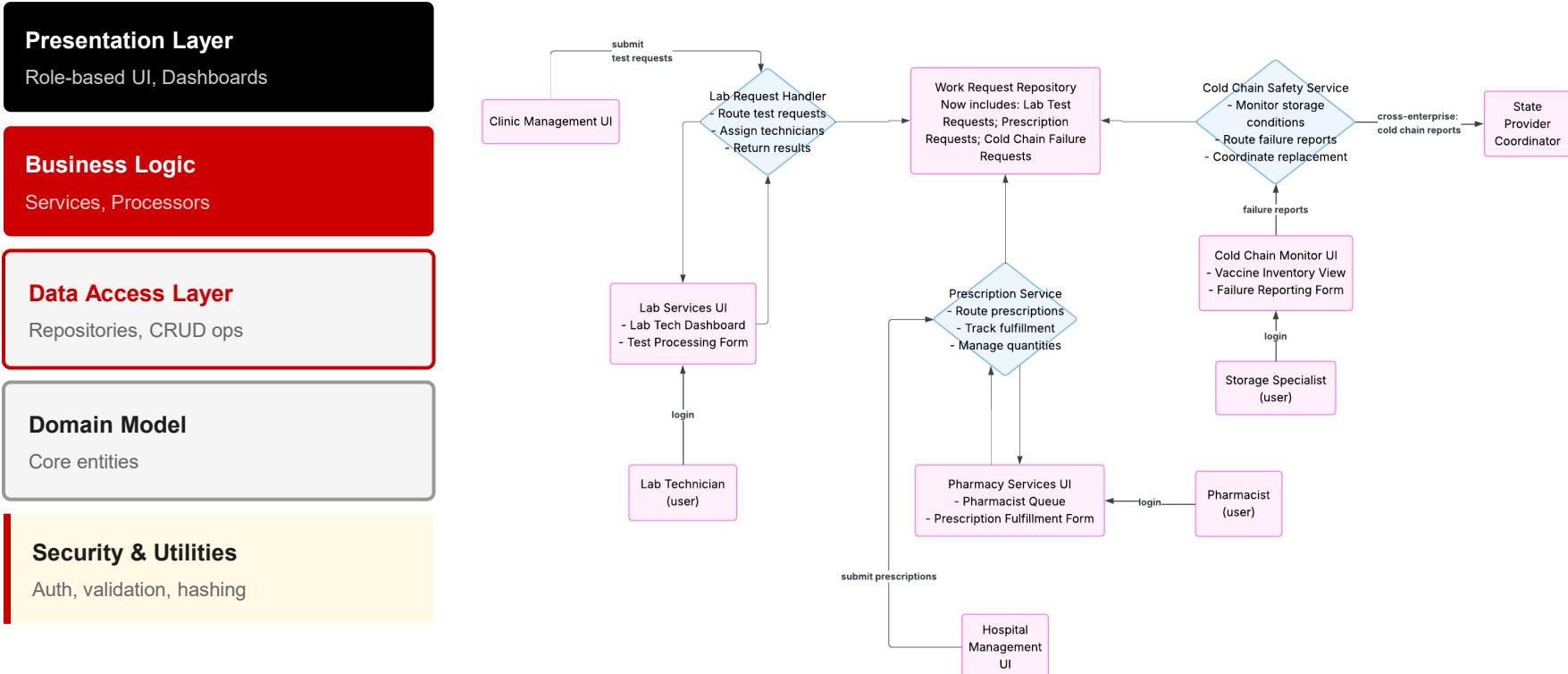
Auth, validation, hashing

Component Diagram



Component Architecture (2/2)

Component Diagram



Advanced Features

Security

- SHA-256 password hashing
- Role-based access control
- Secure session management

Data Management

- Automated ID generation
- Data validation framework
- DB4O persistence layer

Cross-Enterprise Workflows

Work requests flow between CDC, state, and providers with routing.

Real-Time Analytics

System-level metrics, vaccine tracking, disease surveillance.

Smart Validation

Form validators with error handling and null safety.

Integration Ready

Email, SMS, AI outbreak prediction, mapping, external APIs supported.

Individual Contributions to the Project

Team Member Repository: https://github.com/hanada-a/Final_Project_Group_02.git



Akira Hanada hanada.a@northeastern.edu

Overall Project Management

Program code creation (Branch: main)

👤 main

Documentation creation

- Project Proposal
- Presentation slides
- High-level component diagram
- UML class diagram



Maxwell Sowell sowell.m@northeastern.edu

Program code creation (Branch: sowell-m, sowell-m-2)

👤 sowell-m

Documentation additions and review

👤 sowell-m-2

Program testing and code review



Travis Hodo hodo.t@northeastern.edu

N/A (withdrawn from the Group)

Installation & Setup

Team Member Repository

https://github.com/hanada-a/Final_Project_Group_02.git

Prerequisites

- Java JDK 8+ • NetBeans IDE 8.2+ • Windows/Mac/Linux
- **JavaFaker Library:** Download from Maven Repository

Running the Application

1. Add JavaFaker Library

- NetBeans: Right-click project → Properties → Libraries → Add JAR/Folder
- Select • App runs without Faker using fallback data

2. Open Project

File → Open Project
Select project folder
Click "Open Project"

3. Build

Right-click project
Clean and Build
Verify dependencies

4. Run

Right-click → Run
Or press F6
Check console

Test Credentials 1/2

Pre-configured test accounts for demonstration and testing

System Admins

CDC Admin

admin / Admin@2024!

State Admin

stateadmin / Admin@2024!

Provider Admin

provideradmin / Admin@2024!

CDC Roles

Epidemiologist

sarah.johnson / Cdc@2024!

Data Analyst

jennifer.williams / Cdc@2024!

Distribution Coord

robert.martinez / Cdc@2024!

State Roles

Public Health Officer

emily.thompson / State@2024!

Provider Coordinator

patricia.davis / State@2024!

Hospital

Administrator

amanda.garcia / Hospital@2024!

Vaccine Storage Manager

ray.kim / Cold@2024!

Cold Chain Specialist

jay.poe / Cold@2024!

Clinic

Manager

christopher.lee / Clinic@2024!

Nurse Practitioner

susan.taylor / Clinic@2024!

Test Credentials 2/2

Pre-configured test accounts for demonstration and testing

Laboratory Roles

Lab Director

lisa.ann / Lab@2024!

Sr Lab Technician

john.bob / Lab@2024!

Lab Technician

mary.sue / Lab@2024!

Pharmacy Roles

Lead Pharmacist

dan.man / Pharm@2024!

Clinical Pharmacist

kim.park / Pharm@2024!

Vaccine Storage Manager

mae.toh / Cold@2024!

Application Demo: System Admins

CDC Admin

Login as admin / Admin@2024!

Public Health Information Management System

Username: admin
Password: *****
Login

Administrative Work Area

Welcome Admin John Smith!

Administrative Work Area

Manage Organizations
Manage Employees
Manage Users
System Dashboard & Rep...



Manage Organizations

Welcome Admin John Smith! Log Out

<< Back Manage Organizations

Organization List:

ID	Name
5	CDC Administration
6	Disease Surveillance Division
7	Vaccine Distribution Coordination
14	Healthcare Provider Registry

Add Organization:
Select Organization Type: Disease Surveillance ... Add

Employee Management - Full CRUD Operations

Welcome Admin John Smith! Log Out

Employee Management - Full CRUD Operations

Organization: CDC Administration

Employee List

ID	Name	Email	Phone	Position
EMP-1000	Admin John ...	admin.cdc@...	(404) 555-00...	CDC System...

Click an employee to select, or fill form to create new

Name: _____
Email: _____
Phone: _____
Position: _____

Create Update
Delete Clear

User Account Management – Full CRUD Operations

Welcome Admin John Smith! Log Out

User Account Management - Full CRUD Operations

Organization: CDC Administration

User Accounts

Username	Employee	Role	Enabled	Last Login	Failed Attemp...
admin	Admin John ...	System Adm.	Yes	12/04/2023 ...	0

Click an account to select or fill form to create new

Employee: Admin John Smith (EMP-1000)

Username: _____
Password: _____
Role: _____
Account Enabled: _____
Create Update
Reset Password Delete
Clear Refresh Data

System Analytic Dashboard

Welcome Admin John Smith!

System Analytics Dashboard

Overview Work Requests Employees Organizations Health Data Export

1 Networks	3 Enterprises	11 Organizations
92 Employees	27 User Accounts	84 Work Requests
4 Vaccines	4 Diseases	27 Active Users

SYSTEM HEALTH INSIGHTS

- Work Request Complete Rate: 32.1%
- Pending Requests Requiring Attention: 31
- Total Vaccines Available: 4
- Local Vaccine Distribution: 4
- Active User Accounts: 27

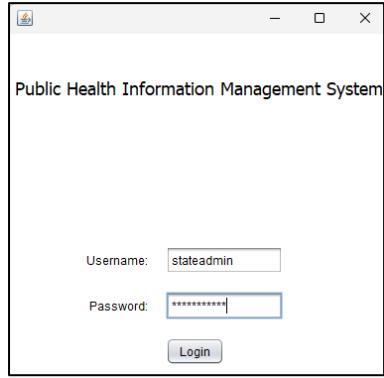
SYSTEM STATUS: NEEDS ATTENTION - High number of pending requests

Refresh Data Back

Application Demo: System Admins

State Admin

Login as stateadmin / Admin@2024!



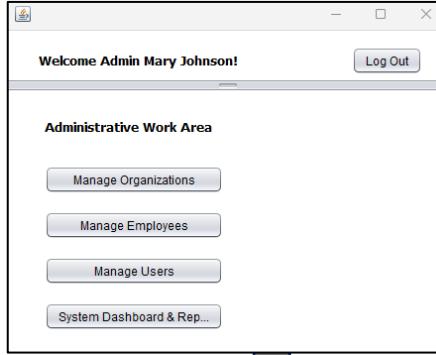
Public Health Information Management System

Username: stateadmin

Password: *****

Login

Administrative Work Area



Welcome Admin Mary Johnson!

Log Out

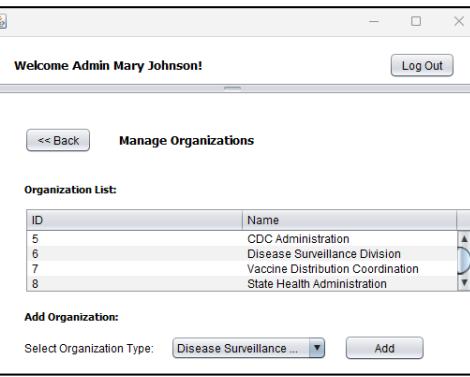
Administrative Work Area

Manage Organizations

Manage Employees

Manage Users

System Dashboard & Rep...



Welcome Admin Mary Johnson!

Log Out

<< Back

Manage Organizations

Organization List:

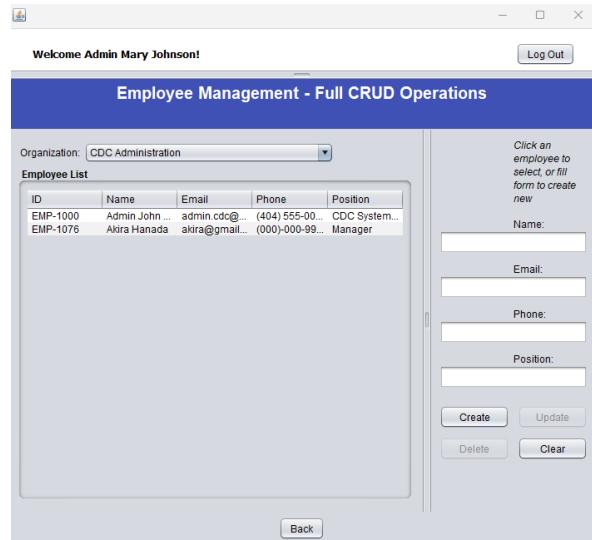
ID	Name
5	CDC Administration
6	Disease Surveillance Division
7	Vaccine Distribution Coordination
8	State Health Administration

Add Organization:

Select Organization Type: Disease Surveillance ...

Add

Employee Management - Full CRUD Operations



Welcome Admin Mary Johnson!

Log Out

Employee Management - Full CRUD Operations

Organization: CDC Administration

Employee List

ID	Name	Email	Phone	Position
EMP-1000	Admin John J.	admin.cdc@...	(404) 555-00...	CDC System...
EMP-1076	Akira Hanada	akira@gmail...	(000)-000-99...	Manager

Click an employee to select or fill form to create new

Name: _____

Email: _____

Phone: _____

Position: _____

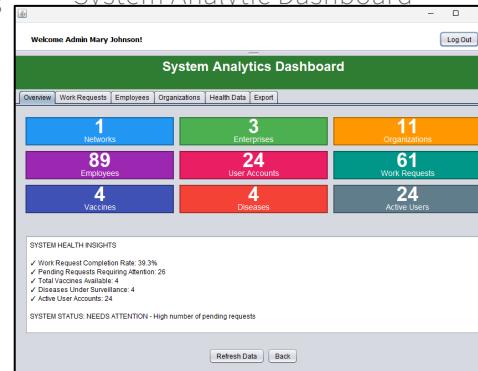
Create

Update

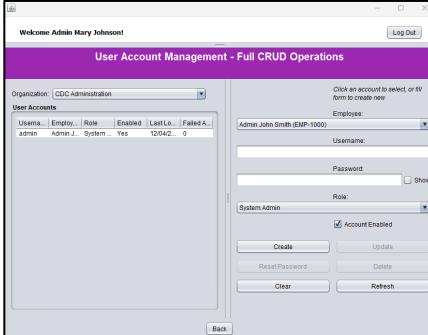
Delete

Clear

System Analytic Dashboard



User Account Management – Full CRUD Operations



Welcome Admin Mary Johnson!

Log Out

User Account Management - Full CRUD Operations

Organization: CDC Administration

User Accounts

Username	Employee	Role	Enabled	Last Log In	Failed Attempts
admin	Admin J.	System Admin	Yes	120442	0

Click on account to select or RV form to create new

Employee: Admin John Smith (EMP-1000)

Username: _____

Password: _____

Show

Role: System Admin

Account Enabled:

Create

Update

Reset Password

Delete

Clear

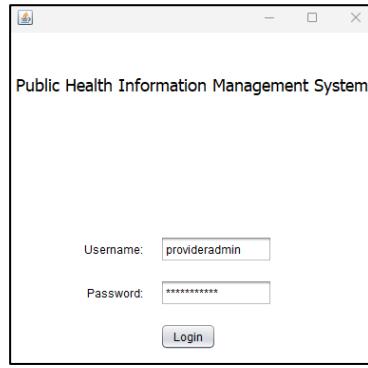
Refresh

Back

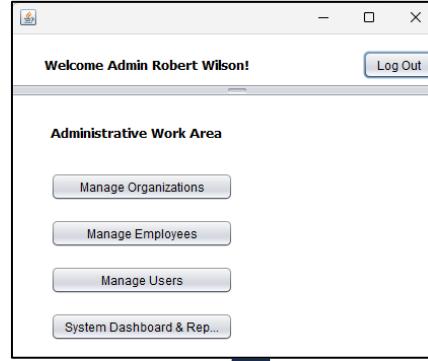
Application Demo: System Admins

Provider Admin

Login as provideradmin / Admin@2024!



Administrative Work Area



The screenshot shows the 'Manage Organizations' screen. It has a title bar 'Manage Organizations' and a 'Welcome Admin Robert Wilson!' message. A 'Log Out' button is in the top right. Below is a 'Manage Organizations' section with a 'Back' button and a table titled 'Organization List' showing four rows of organization data. At the bottom is an 'Add Organization' section with a dropdown 'Select Organization Type' set to 'Disease Surveillance ...' and a 'Add' button.

Employee Management - Full CRUD Operations

The screenshot shows the 'Employee Management - Full CRUD Operations' screen. It has a title bar 'Employee Management - Full CRUD Operations' and a 'Welcome Admin Robert Wilson!' message. A 'Log Out' button is in the top right. Below is a 'Employee List' table with columns ID, Name, Email, Phone, and Position. To the right are input fields for 'Name', 'Email', 'Phone', and 'Position', along with 'Create', 'Update', 'Delete', and 'Clear' buttons. A 'Back' button is at the bottom right.

User Account Management – Full CRUD Operations

The screenshot shows the 'User Account Management - Full CRUD Operations' screen. It has a title bar 'User Account Management - Full CRUD Operations' and a 'Welcome Admin Robert Wilson!' message. A 'Log Out' button is in the top right. Below is a table for 'User Accounts' with columns Username, Employee, Role, Enabled, Last Login, and Failed At. To the right is a form for creating new accounts, including fields for 'Username', 'Password', 'Role', and 'Account Enabled'. Buttons for 'Create', 'Update', 'Reset Password', 'Delete', 'Clear', and 'Refresh' are at the bottom. A 'Back' button is at the bottom right.

System Analytic Dashboard

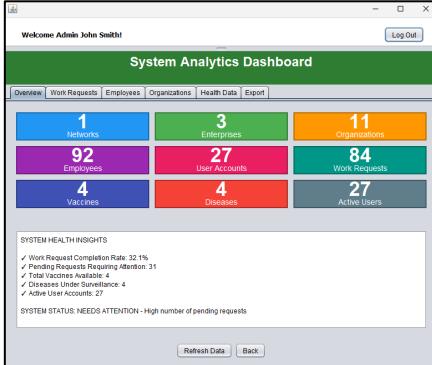
The screenshot shows the 'System Analytics Dashboard'. It has a title bar 'System Analytics Dashboard' and a 'Welcome Admin Mary Johnson!' message. A 'Log Out' button is in the top right. Below is a 'System Overview' section with tabs for 'Overview', 'Work Requests', 'Employees', 'Organizations', 'Health Data', and 'Export'. It displays various statistics in colored boxes: 1 Networks, 3 Enterprises, 11 Organizations, 89 Employees, 24 User Accounts, 61 Work Requests, 4 Vaccines, 4 Diseases, and 24 Active Users. At the bottom are sections for 'SYSTEM HEALTH INSIGHTS' and 'SYSTEM STATUS NEEDS ATTENTION - High number of pending requests'. Buttons for 'Refresh Data' and 'Back' are at the bottom.

Application Demo: System Admins

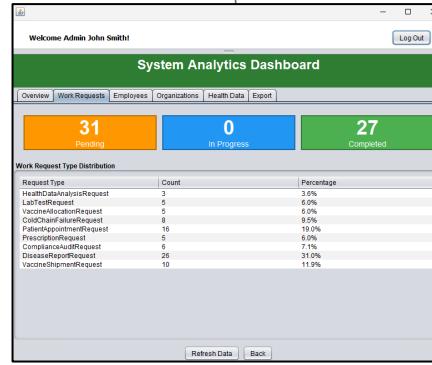
System Analytic Dashboard

System Administrators (CDC Admin, State Admin, Provider Admin) can view the System Analytics Dashboard after logging in. They can switch between six screens using tabs (Overview, Work Requests, Employees, Organizations, Health Data, Export).

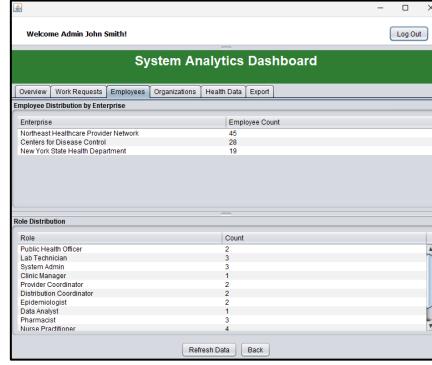
Overview



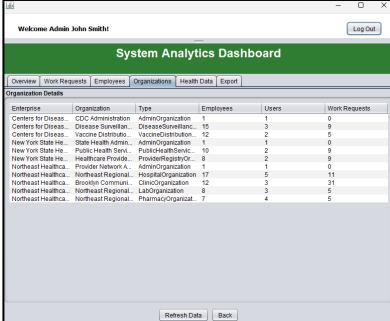
Work Requests



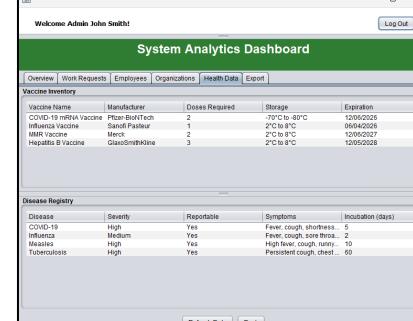
Employees



Organizations



Health Data



Export



Application Demo: Clinic Manager

Login as christopher.lee / Clinic@2024!

Clinic Manager Dr. Christopher Lee

Public Health Information Management System

Username: christopher.lee

Password: *****

Login



Welcome Dr. Christopher Lee

Clinic Manager - Dr. Christopher Lee

- Request Vaccine Shipment
- Manage Clinic Staff
- Schedule Patient Appointments
- View Vaccine Inventory
- Report Disease Cases
- View Clinic Statistics
- Request Lab Test



View Vaccine Inventory

Welcome Dr. Christopher Lee

View Vaccine Inventory

Available Vaccines at Clinic

This section shows all vaccines available for administration at your clinic.

Vaccine Name	Manufacturer	Doses Required	Storage Temp	Expiration Date	Status
Influenza Vaccine	Sanofi Pasteur	1 (50445)	2°C to 8°C	06/04/2025	In Stock
MMR Vaccine	Merk	2 (50445)	2°C to 8°C	12/05/2027	In Stock
Hepatitis B Vaccine	GSKSmithKline	3 (50445)	2°C to 8°C	12/05/2028	In Stock

Patent Name:

Contact Phone:

Service Type: COVID-19 Vaccination

Date (MM/DD/YYYY): 12/05/2025

Time (HH:MM): 10:00

Schedule **Back**



Report Disease Cases

Welcome Dr. Christopher Lee!

Report Disease Cases

Disease Reports

Submit Disease Report

Disease: COVID-19 (High)

Date: 12/05/2025

Number of Cases: 1

Details: Cases observed at clinic. Symptoms include fever, cough, and fatigue.

Submit Report **Back**



My Lab Test Requests

Welcome Dr. Christopher Lee!

My Lab Test Requests

ID	Specimen Type	Test Name	Result	Status	Reason
129850	COVID-19	Antigen	Positive	Pending	Process
129851	COVID-19	Antigen	Negative	Completed	Delivered
129852	MMR	Antigen	Positive	Completed	Delivered
129853	COVID-19	Antigen	Positive	Completed	Delivered

Logout



Request Vaccine Shipment

Welcome Dr. Christopher Lee!

Request Vaccine Shipment

New Vaccine Request

Request ID	Vaccine	Quantity	Status	Reason
129860	COVID-19 mRNA Vaccine (Pfizer-BioNTech)	2500	Pending	Process
129861	MMR Vaccine	1500	Completed	Delivered
129862	COVID-19	1000	Completed	Delivered
129863	COVID-19	1000	Delivered	

Quantity (dozes): 100

Reason: Regular inventory replenishment for upcoming vaccination campaign

Submit Request **Back**

Manage Clinic Staff

Welcome Dr. Christopher Lee!

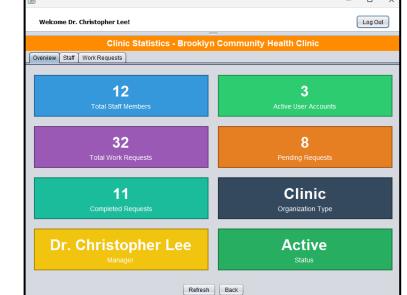
Manage Clinic Staff

Clinic Staff Directory - Brooklyn Community Health Clinic

Employee ID	Name	Email	Phone	Role
EMP-1001	Dr. Christopher Lee	christopher.lee@hc.org	(718) 555-0001	Clinic Manager
EMP-1002	Nurse Olivia Taylor	nurse.olivia@hc.org	(718) 555-0002	Nurse Practitioner
EMP-1003	Nurse Karen Miller	nurse.karen@hc.org	(718) 555-0003	Nurse Practitioner
EMP-1004	Dr. Mary Hernandez	dr.mary.hernandez@hc...	(351) 941-7479	Staff
EMP-1005	Dr. Patricia Johnson	dr.patricia.johnson@hc...	(777) 749-0059	Staff
EMP-1006	Nurse Emily Williams	nurse.emily.williams@hc...	(995) 933-0050	Staff
EMP-1007	Dr. Patricia Johnson	dr.patricia.johnson@hc...	(995) 933-0077	Staff
EMP-1008	Nurse David Martinez	nurse.david.martinez@hc...	(642) 911-3441	Staff
EMP-1009	Nurse William Miller	nurse.william.miller@hc...	(423) 479-9476	Staff
EMP-1010	Nurse Sarah Wilson	nurse.sarah.wilson@hc...	(351) 739-6960	Staff
EMP-1011	Nurse Mary Stevens	nurse.mary.stevens@hc...	(188) 851-0520	Staff
EMP-1012	Nurse Jennifer Miller	nurse.jennifer.miller@hc...	(321) 511-4620	Staff

Refresh **View Details** **Back**

Clinic Statics Brooklyn Community Health Clinic



Application Demo: Clinic

Clinic Manager's Dashboard

Clinic Manager(Dr. Christopher Lee) can view the Clinic Manager's Dashboard after logging in. They can switch between six screens using tabs (Overview, Staff, Work Requests).

Overview

Welcome Dr. Christopher Lee! Log Out

Clinic Statistics - Brooklyn Community Health Clinic

Overview Staff Work Requests

12 Total Staff Members	3 Active User Accounts
32 Total Work Requests	8 Pending Requests
11 Completed Requests	Clinic Organization Type
Dr. Christopher Lee Manager	Active Status

Refresh Back

Staff

Welcome Dr. Christopher Lee! Log Out

Clinic Statistics - Brooklyn Community Health Clinic

Overview Staff Work Requests

Name	Email	Phone	Role
Dr. Christopher Lee	christopher.lee@bchc.org	(718) 555-0601	Clinic Manager
Nurse Susan Taylor	susan.taylor@bchc.org	(718) 555-0602	Nurse Practitioner
Nurse Kevin White	kevin.white@bchc.org	(718) 555-0603	Nurse Practitioner
Dr. Robert Smith	dr.robert.smith@bchc.org	(431) 654-9282	Staff
Dr. James Martinez	dr.james.martinez@bchc.org	(715) 742-2213	Staff
Dr. Lisa Williams	dr.lisa.williams@bchc.org	(876) 555-0798	Staff
Dr. Daniel Green	dr.daniel.green@bchc.org	(914) 555-1234	Staff
Nurse Thomas Brown	nurse.thomas.brown@bchc.org	(732) 712-3476	Staff
Nurse Jennifer Williams	nurse.jennifer.williams@bchc.org	(164) 890-2894	Staff
Nurse Emily Johnson	nurse.emily.johnson@bchc.org	(269) 551-8700	Staff
Nurse Emily Johnson	nurse.emily.johnson@bchc.org	(415) 976-1429	Staff
Nurse Patricia Garcia	nurse.patricia.garcia@bchc.org	(715) 182-9954	Staff

Refresh Back

Work Requests

Welcome Dr. Christopher Lee! Log Out

Clinic Statistics - Brooklyn Community Health Clinic

Overview Staff Work Requests

Type	Status	Sender	Message
VaccineShipment	Pending	christopher.lee	COVID-19 mRNA Vaccine - Qty...
VaccineShipment	Pending	christopher.lee	Influenza Vaccine - Qty 500 -...
VaccineShipment	Completed	christopher.lee	MMR Vaccine - Qty 1000 - Urg...
VaccineShipment	Completed	christopher.lee	Hepatitis B Vaccine - Qty 1500...
VaccineShipment	Completed	christopher.lee	COVID-19 mRNA Vaccine - Qty...
PatientAppointment	Scheduled	christopher.lee	Thomas Johnson - COVID-19 ...
PatientAppointment	Scheduled	christopher.lee	Jennifer Miller - Flu Shot
PatientAppointment	Scheduled	christopher.lee	Thomas Lopez - General Cons...
PatientAppointment	Completed	christopher.lee	Michael Garcia - Disease Scre...
PatientAppointment	Completed	christopher.lee	Maria Hernandez - Annual Visit
PatientAppointment	Completed	christopher.lee	John Miller - COVID-19 mRN...
PatientAppointment	Completed	christopher.lee	James Garcia - Influenza Vac...
PatientAppointment	Completed	christopher.lee	Mary Garcia - MMR Vaccine - Fir...
PatientAppointment	Completed	christopher.lee	Emily Davis - Hepatitis B Vac...
PatientAppointment	Completed	christopher.lee	Robert Davis - COVID-19 mRN...
PatientAppointment	Completed	christopher.lee	David Brown - Influenza Vaccin...
DiseaseReport	Pending	christopher.lee	Patient: Emily Williams, Disease...
DiseaseReport	Pending	christopher.lee	Patient: Michael Johnson, Disease...
DiseaseReport	Pending	christopher.lee	Patient: Patricia Davis, Disease...
DiseaseReport	Pending	christopher.lee	Patient: Jane Brown, Disease...
DiseaseReport	Pending	christopher.lee	Patient: John Jones, Disease...
DiseaseReport	Reported	christopher.lee	Patient: Patricia Davis, Disease...
DiseaseReport	Reported	christopher.lee	Patient: David Brown, Disease...
DiseaseReport	Reported	christopher.lee	Patient: Mary Miller, Disease: C...
DiseaseReport	Reported	christopher.lee	Patient: Richard Garcia, Disease...

Refresh Back

Application Demo: Clinic to State Roles

Clinic

Manager

Login as christopher.lee / Clinic@2024!

Report Disease Cases

Welcome Dr. Christopher Lee!

Report Disease Cases

Disease Reports			
Date	Disease	Cases	Status
12/06/2025	Tuberculosis	10	Pending
12/06/2025	COVID-19	1	Pending
12/06/2025	Influenza	1	Pending
12/06/2025	Measles	1	Pending
12/06/2025	Tuberculosis	1	Pending
12/06/2025	COVID-19	1	Pending
12/06/2025	Influenza	1	Pending
12/06/2025	Measles	1	Pending
12/06/2025	Tuberculosis	1	Pending
12/06/2025	COVID-19	1	Pending
12/06/2025	Influenza	1	Pending
12/06/2025	Measles	1	Pending

Submit Disease Report

Disease: Tuberculosis (High)

Number of Cases: 10

Details: Cases observed at clinic. Symptoms include fever, cough, and fatigue.

Success

Disease report submitted successfully!

Disease: Tuberculosis

Cases: 10

The report will be forwarded to public health authorities for review.

OK

Submit Report Back

Submit Report

State Roles

Public Health Officer

emily.thompson / State@2024!

View Disease Reports

Welcome Dr. Emily Thompson!

View Disease Reports

Date	Disease	Cases	Location	Demographics	Status
12/06/2025	COVID-19	1	Brooklyn, NY	Adults 25-65, Mixed...	Pending
12/06/2025	Influenza	10	Manhattan, NY	Adults 25-65, Mixed...	Pending
12/06/2025	Measles	8	Brooklyn, NY	Adults 25-65, Mixed...	Pending
12/06/2025	Tuberculosis	3	Manhattan, NY	Adults 25-65, Mixed...	Completed
12/06/2025	COVID-19	10	Brooklyn, NY	Adults 25-65, Mixed...	Completed
12/06/2025	Tuberculosis	10	Brooklyn Community...	Clinic patients, mixed...	Pending

Review Report Refresh Back

Application Demo: Clinic to State Role

Clinic

Manager christopher.lee / Clinic@2024!

Request Vaccine Shipment

Welcome Dr. Christopher Lee!

Request Vaccine Shipment

Vaccine Shipment Requests
Request D... Vaccine Quantity Status Response
12/06/2025 COVID-19 ... 100 Pending Pending ap...
12/06/2025 COVID-19 ... 500 Pending Processing
12/06/2025 Influenza V... 2000 Pending Processing
12/06/2025 MMR Vaccine 2000 Completed Delivered
12/06/2025 Hepatitis B ... 500 Completed Delivered
12/06/2025 COVID-19 ... 2000 Completed Delivered

New Shipment Request

Vaccine: COVID-19 mRNA Vaccin...

Quantity (doses): 100

Reason: Regular inventory replenishment for upcoming vaccination campaign

Success

Vaccine shipment request submitted successfully!
Vaccine: COVID-19 mRNA Vaccine
Quantity: 100 doses
The request will be reviewed by the state health department.

OK

Submit Request Back

State

Provider Coordinator
patricia.davis / State@2024!

Process Vaccine Shipments Requests

Welcome Patricia Davis!

Process Vaccine Shipment Requests

Date	Vaccine	Quantity	Clinic	Status
12/06/2025	COVID-19 mRNA Vacc...	500	christopher.lee	Pending
12/06/2025	Influenza Vaccine	2000	christopher.lee	Pending
12/06/2025	MMR Vaccine	2000	christopher.lee	Completed
12/06/2025	Hepatitis B Vaccine	500	christopher.lee	Completed
12/06/2025	COVID-19 mRNA Vacc...	2000	christopher.lee	Completed
12/06/2025	COVID-19 mRNA Vacc...	100	christopher.lee	Pending

Approve Request Refresh Back

Submit Request



Application Demo: Clinic to Hospital

Clinic

Manager christopher.lee / Clinic@2024!

Schedule Patient Appointments

Welcome Dr. Christopher Lee!

Schedule Patient Appointments

Date	Time	Patient	Service	Status
12/09/2025	15:00	Akira Han...	COVID-1...	Scheduled
12/08/2025	10:00	Thomas ...	COVID-1...	Scheduled
12/08/2025	10:00	Lisa Marti...	Flu Shot	Scheduled
12/08/2025	10:00	Sarah Will...	General ...	Scheduled
12/08/2025	10:00	David Da...	Disease ...	Completed
12/08/2025	10:00	John Jon...	Follow-up...	Completed
12/08/2025	10:00	Jane Willi...	COVID-1...	Completed
12/08/2025	10:00	Richard J...	Influenza ...	Completed
12/08/2025	10:00	Thomas ...	MMR Vac...	Completed
12/08/2025	10:00	Jennifer J...	Hepatitis ...	Completed
12/08/2025	10:00	William S...	COVID-1...	Completed
12/08/2025	10:00	Jane Joh...	Influenza ...	Completed

New Appointment

Patient Name:

Contact Phone:

Service Type:

Date (MM/DD/YYYY):

Time (HH:MM):

Success

Appointment scheduled successfully!

Patient: Akira Hanada
Service: COVID-19 Vaccination
Date: 12/09/2025 at 15:00
Contact: (999)-888-7777

Hospital

Administrator

amanda.garcia / Hospital@2024!

View Patient Appointments

Welcome Dr. Amanda Garcia!

View Patient Appointments

Patient appointments scheduled at the hospital

Date	Time	Patient	Service Type	Status	Requested By
12/08/2025	10:00 AM	Mary Davis	First Dose	Pending	christopher.lee
12/08/2025	10:00 AM	Lisa Rodriguez	Second Dose	Pending	christopher.lee
12/08/2025	10:00 AM	Robert Davis	First Dose	Pending	christopher.lee
12/08/2025	10:00 AM	David Lopez	Second Dose	Completed	christopher.lee
12/08/2025	10:00 AM	Thomas Williams	First Dose	Completed	christopher.lee
12/08/2025	10:00 AM	Akira Hanada	COVID-19 Vaccina...	Scheduled	christopher.lee

Submit Schedule



Application Demo: Clinic

Nurse Practitioner

Login as susan.taylor / Clinic@2024!

Public Health Information Management System

Username: susan.taylor

Password: *****

Login

View Patient Records

Welcome Nurse Susan Taylor!

View Patient Records

PatientID	Name	Phone	Last Visit	Status	Service/Vaccine
P001	William Rodriguez	(910) 399-5044	12/06/2025	Scheduled	COVID-19 Vaccine
P002	Elizabeth Garcia	(800) 555-2789	12/06/2025	Scheduled	Flu Shot
P003	Mark Johnson	(802) 812-2142	01/01/2026	Scheduled	General Consultation
P004	Robert Martinez	(084) 311-7170	12/06/2025	Completed	Disease Screening
P005	David Williams	(718) 555-1234	12/06/2025	Completed	COVID-19 mRNA Vaccine
P006	Jennifer Gonzalez	(277) 354-8999	11/06/2025	Completed	COVID-19 mRNA Vaccine
P007	Jamie Jones	(078) 888-1005	12/06/2025	Completed	MMR Vaccine
P008	James Anderson	(080) 999-0000	12/06/2025	Completed	Hepatitis B Vaccine
P009	Michael Lopez	(571) 351-6666	11/11/2025	Completed	Hepatitis B Vaccine
P010	William Johnson	(576) 888-9000	11/26/2025	Completed	COVID-19 mRNA Vaccine
P011	Michael Smith	(693) 339-4247	11/17/2025	Completed	Influenza Vaccine

Refresh Back

Nurse Practitioner Nurse Susan Taylor

Welcome Nurse Susan Taylor!

Nurse Practitioner - Nurse Susan Taylor

Log Out

Administrator Vaccinations

Report Disease Cases

View Patient Records

Schedule Appointments

View Vaccine Availability

Schedule Appointments

Welcome Nurse Susan Taylor!

Schedule Appointments

Schedule New Appointment

Date	Time	Patient	Type	Status
12/06/2025	09:00	William R.	COVID-1...	Scheduled
12/06/2025	09:00	Richard...	Flu Shot	Scheduled
12/06/2025	09:00	Mary Joh...	General...	Scheduled
12/06/2025	09:00	James A...	Disease S...	Scheduled
12/06/2025	09:00	Sarah Ma...	Follow-up	Completed
12/06/2025	09:00	Jennifer ...	First Dose	Completed
12/06/2025	09:00	David J...	Second D...	Completed
12/06/2025	09:00	Michael L...	Second D...	Completed
12/06/2025	09:00	William J...	First Dose	Completed
12/06/2025	09:00	Michael S...	Second D...	Completed

Patient Name:

Appointment Type: Vaccination - First Dose

Date (MM/DD/YYYY): 12/06/2025

Time (HH:MM): 09:00

Schedule Back

Welcome Nurse Susan Taylor!

View Vaccine Availability

Available vaccines at your facility:

Vaccine Name	Manufacturer	Doses Required	Storage Temp	Expiration Date	Status
COVID-19 mRNA V...	Pfizer-BioNTech	2	-70°C to -40°C	12/06/2026	Available
Influenza Vaccine	Sanofi Pasteur	1	2°C to 8°C	06/04/2026	Available
MMR Vaccine	Merck	2	2°C to 8°C	12/06/2027	Available
Hepatitis B Vaccine	GSKSmithKline	3	2°C to 8°C	12/05/2028	Available

Refresh Back

Administrator Vaccinations

Recent Vaccines

Date	Patient	Vaccine	Dose	Administered
12/04/2025	Lisa Williams	COVID-19 mRNA	1	Dr. Christopher...
12/04/2025	James Rodriguez	MMR Vaccine	1	General Con...
12/04/2025	Emily Davis	Flu Shot	1	Follow-up Visit
12/04/2025	Patricia Jones	Immunotherapy	1	Second Dose
12/04/2025	William G...	COVID-19 mRNA	1	Dr. Christopher...
12/04/2025	Evelyn Smith	Parvovirus	1	Dr. Christopher...
12/04/2025	David Miller	Influenza	1	Second Dose

Patient Name:

Vaccine: COVID-19 mRNA Vaccine (Pfizer-BioNTech)

Dose Number: 1

Administrator Back

Report Disease Cases

Welcome Nurse Susan Taylor!

Report Disease Cases

Submitted Reports

Date	Patient	Disease	Status
12/05/2025	Emily Martinez	COVID-19	Pending
12/05/2025	Michael Miller	Influenza	Pending
12/05/2025	Lisa Davis	Tuberculosis	Pending
12/05/2025	John Brown	COVID-19	Reported
12/05/2025	Mary Garcia	Influenza	Reported
12/05/2025	David Miller	Tuberculosis	Reported
12/05/2025	Sarah Martinez	Influenza	Reported
12/05/2025	Michael Miller	Influenza	Reported
12/05/2025	John Brown	Measles	Reported
12/05/2025	Lisa Davis	Tuberculosis	Reported
12/05/2025	Emily Martinez	Influenza	Reported
12/05/2025	David Miller	Influenza	Reported
12/05/2025	John Brown	COVID-19	Reported
12/05/2025	Lisa Davis	Measles	Reported
12/05/2025	Richard Rod...	Measles	Reported

Patient Age:

Disease: COVID-19 (High)

Symptoms:

Submit Report Back

Application Demo: Clinic to State Roles

Clinic

Nurse Practitioner

susan.taylor / Clinic@2024!

Report Disease Cases

Welcome Nurse Susan Taylor!

Report Disease Cases

Date	Patient	Disease	Status
12/07/2025	Akira Hanada	Measles	Pending
12/07/2025	Jennifer Davis	COVID-19	Pending
12/07/2025	Jane Brown	Influenza	Pending
12/07/2025	David Johns...	Measles	Pending
12/07/2025	David Lopez	Tuberculosis	Pending
12/07/2025	Jane Miller	COVID-19	Pending
12/07/2025	James Miller	Influenza	Reported
12/07/2025	Sarah Garcia		
12/07/2025	Jane Jones		
12/07/2025	Sarah Herna...		
12/07/2025	James Davis		
12/07/2025	Robert Hern...		
12/07/2025	Richard Jones		
12/07/2025	Patricia Davis		
12/07/2025	Mary Lopez		
12/07/2025	John Garcia		

Submit Disease Report

Patient Name: Akira Hanada

Patient Age: 55

Disease: Measles (High)

Symptoms: Test

Success

Disease report submitted successfully!

The report will be reviewed by public health authorities.

OK

Submit Report Back

Submit Report



State Roles

Public Health Officer

emily.thompson / State@2024!

View Disease Reports

Welcome Dr. Emily Thompson!

View Disease Reports

Date	Disease	Cases	Location	Demographics	Status
12/07/2025	COVID-19	3	Brooklyn, NY	Adults 25-65, Mix...	Pending
12/07/2025	Influenza	8	Manhattan, NY	Adults 25-65, Mix...	Pending
12/07/2025	Measles	6	Brooklyn, NY	Adults 25-65, Mix...	Pending
12/07/2025	Tuberculosis	10	Manhattan, NY	Adults 25-65, Mix...	Completed
12/07/2025	COVID-19	1	Brooklyn, NY	Adults 25-65, Mix...	Completed
12/07/2025	Measles	1	Brooklyn Commun...	Age: 55	Pending

Review Report Refresh Back

Application Demo: Hospital

Administrator

amanda.garcia / Hospital@2024!

Public Health Information Management System

Username: amanda.garcia

Password: *****

Login

Welcome Dr. Amanda Garcia!

Hospital Administrator - Dr. Amanda Garcia

Log Out

Manage Hospital Staff

View Patient Appointments

Monitor Vaccine Inventory

Submit Prescription Request

Coordinate with Clinics

Review Compliance Status

Generate Hospital Reports

Submit Prescription

Submit Prescription

Welcome Dr. Amanda Garcia!

My Prescription Requests

Log Out

Date	Patient	Medication	Dosage	Quantity	Status	Notes
12/01/2025	Mary Davis	Penicillin	250mg	30 pills	Pending	-
12/01/2025	John Miller	Hydrocodone	30mg	15 pills	Pending	-
12/01/2025	Sarah Lopez	Acetaminophen	500mg	10 pills	Pending	-
12/01/2025	David Jones	Azithromycin	1mg	90 pills	Partial	Prescription N.
12/01/2025	Ben Hernandez	Amoxicillin	20mg	90 pills	Partial	Prescription N.

New Prescription Request:

Patient Name:

Medication:

Dosage:

Quantity:

Submit New Request

Manage Hospital Staff

Welcome Dr. Amanda Garcia!

Manage Hospital Staff

Log Out

Hospital Staff Directory - Northeast Regional Medical Center

Employee ID	Name	Email	Role	Status
EMP-1001	Dr. Amanda Garcia	amanda.garcia@nrmc.org	Medical Director	Active
EMP-1048	Nurse Maria Rodriguez	maria.rodriguez@nrmc.org	Nurse Practitioner	Active
EMP-1025	Nurse John Miller	john.miller@nrmc.org	Nurse Practitioner	Active
EMP-1051	Dr. Alex Kim	alex.kim@nrmc.org	Vaccine Storage S.	Active
EMP-1052	Jay Lee	jay.lee@nrmc.org	Pharmacist	Active
EMP-1053	Dr. Lisa Woods	lisa.woods@nrmc.org	Staff	Active
EMP-1054	Dr. Emily Rodriguez	emily.rodriguez@nrmc.org	Staff	Active
EMP-1055	Dr. William Lopez	william.lopez@nrmc.org	Staff	Active
EMP-1056	Dr. Victoria Hernandez	victoria.hernandez@nrmc.org	Staff	Active
EMP-1057	Dr. Michael Johnson	michael.johnson@nrmc.org	Staff	Active
EMP-1058	Nurse David Jones	david.jones@nrmc.org	Nurse Practitioner	Active
EMP-1059	Nurse Michael Go	michael.go@nrmc.org	Staff	Active
EMP-1060	Nurse David Rodriguez	david.rodriguez@nrmc.org	Staff	Active
EMP-1061	Nurse David Jones	david.jones@nrmc.org	Staff	Active
EMP-1062	Nurse Emily Hernandez	emily.hernandez@nrmc.org	Staff	Active
EMP-1063	Nurse Thomas Lee	thomas.lee@nrmc.org	Staff	Active

Logout | Refresh | View Details | Back

View Patient Appointments

Welcome Dr. Amanda Garcia!

View Patient Appointments

Log Out

Patient appointments scheduled at the hospital

Date	Time	Patient	Service Type	Status	Requested By
12/01/2025	10:00 AM	Michael Davis	First Dose	Pending	christopher.lee
12/01/2025	10:00 AM	Lisa Martinez	Second Dose	Pending	christopher.lee
12/01/2025	10:00 AM	William Brown	First Dose	Pending	christopher.lee
12/01/2025	10:00 AM	Maria Hernandez	Second Dose	Pending	christopher.lee
12/01/2025	10:00 AM	David Johnson	First Dose	Completed	christopher.lee

Logout | Confirm Selected | Back

Monitor Vaccine Inventory

Welcome Dr. Amanda Garcia!

Monitor Vaccine Inventory

Log Out

Total Vaccine Types: 4

Vaccines Available: 4

Locations: 17

Vaccine Name | Manufacturer | Lot Number | Status | Doses Required | Storage Temp

COVID-19 mRNA	Pfizer-BioNTech	N/A	Active	2	70°F to 80°F
Influenza Vaccine	FluBlok	N/A	Active	1	2°C to 8°C
MMR Vaccine	Merck & Co.	N/A	Active	2	2°C to 8°C
HPV Vaccine	Gardasil/9	N/A	Active	3	2°C to 8°C

Refresh | Back

Submit Prescription Request

Welcome Dr. Amanda Garcia!

My Prescription Requests

Log Out

New Prescription Request:

Patient Name:

Medication:

Dosage:

Quantity:

Submit New Request

Coordinate with Clinics

Welcome Dr. Amanda Garcia!

Coordinate with Clinics

Log Out

Reported Clinics in the healthcare network

Clinic Name	Enterprise	Notes	Status	Wish Requests
Bronx Community H.	Northeast Healthcare P.	US Public Health Netw.	Active	57

Refresh | View Details | Back

Review Compliance Status

Welcome Dr. Amanda Garcia!

Review Compliance Status

Log Out

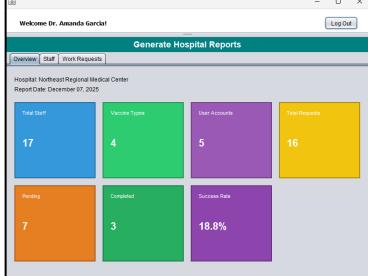
Total Audit	Pending	Completed
2	1	1

Data: 12/01/2025 Audit Type: Vaccine Storage Comp. Status: Pending Required By: emily.thompson Notes: -

Data: 12/01/2025 Audit Type: Distribution Protocol C. Status: Completed Required By: emily.thompson Notes: -

Refresh | Mark Complete | Back

Generate Hospital Reports

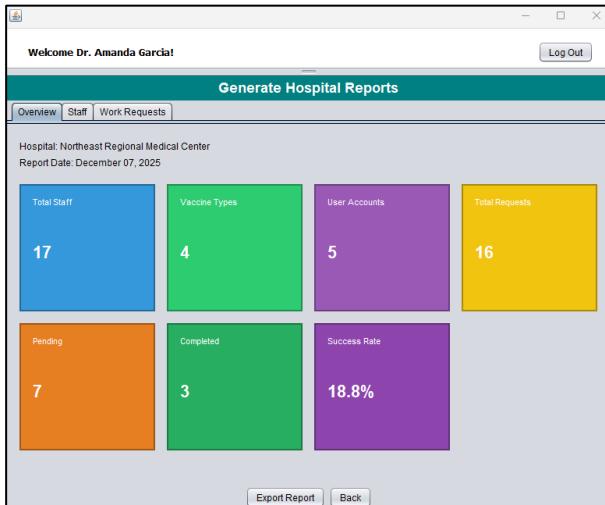


Application Demo: Hospital

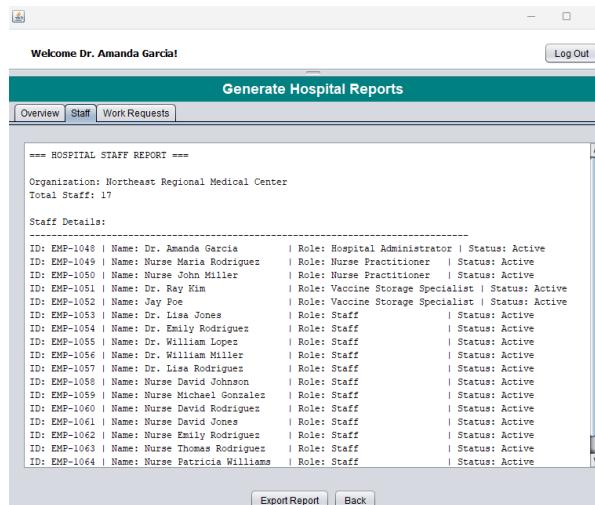
Generate Hospital Reports

Hospital Administrator(Dr. Amanda Garcia) can view the Generate Hospital Reports. They can switch between three screens using tabs (Overview, Staff, Work Requests).

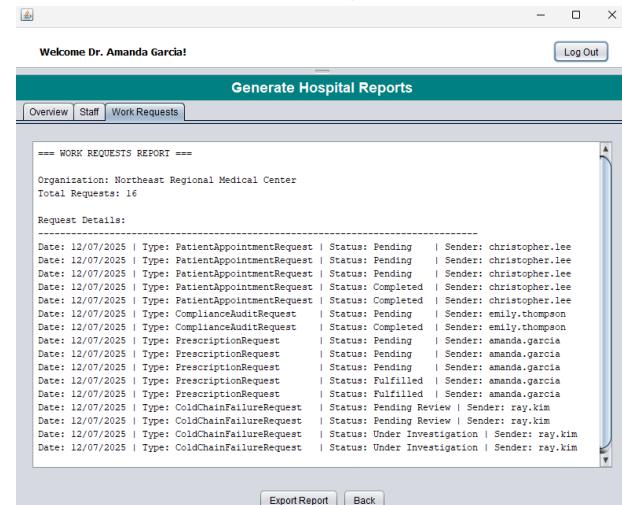
Overview



Staff



Work Requests



Application Demo: State Roles

Public Health Officer

emily.thompson / State@2024!

Public Health Information Management System

Username: emily.thompson

Password: *****

Login

Forward Reports to CDC

Welcome Dr. Emily Thompson

Forward Reports to CDC

Select disease reports to forward to CDC for national tracking

Select	Disease	Cases	Location	Status
<input type="checkbox"/>	COVID-19	1	Brooklyn, NY	Pending
<input type="checkbox"/>	Influenza	3	Manhattan, NY	Pending
<input type="checkbox"/>	Measles	10	Brooklyn, NY	Pending
<input type="checkbox"/>	Tuberculosis	6	Manhattan, NY	Completed
<input type="checkbox"/>	COVID-19	1	Brooklyn, NY	Completed
<input type="checkbox"/>	Tuberculosis	15	Brooklyn Community H.	Pending
<input type="checkbox"/>	Measles	1	Brooklyn Community H.	Pending

Select All | Forward Selected to CDC | Back

Public Health Officer Dr. Emily Thompson

Welcome Dr. Emily Thompson

Public Health Officer - Dr. Emily Thompson

Log Out

View Disease Reports

Coordinate State Response

Forward to CDC

Manage Provider Registry

Issue State Health Alert

View Compliance Reports

Manage Provider Registry

Welcome Dr. Emily Thompson

Manage Provider Registry

Log Out

Registered healthcare providers in the state

Provider Name	Enterprise	Type	Employees	Work Requests
Healthcare Provider Re...	New York State Health...	ProviderRegistry	8	10
Brooklyn Community H...	Northeast Healthcare P...	Clinic	12	37
Northeast Regional Me...	Northeast Healthcare P...	Lab	8	8

View Details | Refresh | Back

Issue State Health Alert

Welcome Dr. Emily Thompson

Issue State Health Alert

Log Out

Alert Information

Disease: Select Disease

Severity Level: Low

Alert Message

Issue Alert | Clear | Back

View Disease Reports

Welcome Dr. Emily Thompson

View Disease Reports

Log Out

Date	Disease	Cases	Location	Demographics	Status
12/07/2025	COVID-19	1	Brooklyn, NY	Adults 25-45, Males	Pending
12/07/2025	Influenza	3	Manhattan, NY	Adults 25-45, Males	Pending
12/07/2025	Measles	10	Brooklyn, NY	Adults 25-45, Females	Pending
12/07/2025	Tuberculosis	6	Manhattan, NY	Adults 25-45, Males	Completed
12/07/2025	COVID-19	1	Brooklyn, NY	Adults 25-45, Males	Completed
12/07/2025	Tuberculosis	15	Brooklyn Commun...	Clinic patients, mix	Pending
12/07/2025	Measles	1	Brooklyn Commun...	Age 55	Pending

Review Report | Refresh | Back

Coordinate State Response

Welcome Dr. Emily Thompson

Coordinate State Response

Log Out

Coordinate public health response across state organizations

Organization	Type	Work Requests	Status
State Health Administration	Admin	0	Active
Public Health Services	PublicHealthServices	11	Active
Healthcare Provider Registry	ProviderRegistry	10	Active

Send Continuation Request | Refresh | Back

View Compliance Reports

Welcome Dr. Emily Thompson

View Compliance Reports

Log Out

Total Audits: 4

Pending: 2

Completed: 2

Date	Audit Type	Provider	Status	Findings
12/07/2025	Provider Compliance	amanda.garcia	Pending	In Progress
12/07/2025	Provider Compliance	christopher.lee	Pending	In Progress
12/07/2025	Provider Compliance	amanda.garcia	Completed	In Progress
12/07/2025	Provider Compliance	christopher.lee	Completed	In Progress

Review Audit | Refresh | Back

Application Demo: State Roles to CDC Roles

Public Health Officer

emily.thompson / State@2024!

Forward Reports to CDC

Welcome Dr. Emily Thompson!

Forward Reports to CDC

Select	Disease	Cases	Location	Status
<input checked="" type="checkbox"/>	COVID-19	10	Brooklyn, NY	Pending
<input type="checkbox"/>	Influenza	5	Manhattan, NY	Pending
<input type="checkbox"/>	Measles	7	Brooklyn, NY	Pending
<input type="checkbox"/>	Tuberculosis	4	Manhattan, NY	Completed

Forwarding Complete

Successfully forwarded 1 disease report(s) to CDC!

Reports have been added to CDC's Disease Surveillance Organization for national tracking.

OK

Select All Forward Selected to CDC Back

Forward Reports to CDC



Epidemiologist

sarah.johnson / Cdc@2024!

Epidemiologist Work Area - Dr. Sarah Johnson

Welcome Dr. Sarah Johnson!

Epidemiologist Work Area - Dr. Sarah Johnson

Request ID	Disease	Case Count	Location	Status	Date
Sat Dec 06	COVID-19	40	New York City, NY	Pending	Sat Dec 06 10:33:3...
Sat Dec 06	Influenza	46	Buffalo, NY	Pending	Sat Dec 06 10:33:3...
Sat Dec 06	Measles	26	Rochester, NY	Pending	Sat Dec 06 10:33:3...
Sat Dec 06	Tuberculosis	46	Albany, NY	Analyzed	Sat Dec 06 10:33:3...
Sat Dec 06	COVID-19	45	Syracuse, NY	Analyzed	Sat Dec 06 10:33:3...
Sat Dec 06	Influenza	45	Yonkers, NY	Analyzed	Sat Dec 06 10:33:3...
Sat Dec 06	COVID-19	10	Brooklyn, NY	Pending	Sat Dec 06 10:33:5...

View Details Analyze Trend Issue Alert Refresh

Application Demo: State Roles

Provider Coordinator

patricia.davis / State@2024!

Public Health Information Management System

Username: patricia.davis

Password: *****

Login



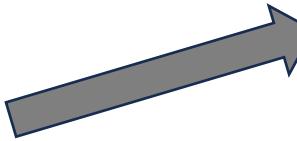
Provider Coordinator Patricia Davis

Welcome Patricia Davis!

Log Out

Provider Coordinator - Patricia Davis

- Manage Healthcare Providers
- Process Vaccine Shipment Requests
- Schedule Compliance Audits
- View Provider Registry
- Request Vaccine Allocation from CDC
- Process Cold Chain Failure Reports



Process Vaccine Shipments Requests

Welcome Patricia Davis!

Log Out

Process Vaccine Shipment Requests

Date	Vaccine	Quantity	Clinic	Status
12/06/2025	COVID-19 mRNA Vac...	2000	christopher lee	Pending
12/06/2025	Influenza Vaccine	2500	christopher lee	Pending
12/06/2025	MMR Vaccine	1500	christopher lee	Completed
12/06/2025	Hepatitis B Vaccine	1500	christopher lee	Completed
12/06/2025	COVID-19 mRNA Vac...	1500	christopher lee	Completed

Approve Request Refresh Back



Schedule Compliance Audits

Welcome Patricia Davis!

Log Out

Schedule Compliance Audits

Provider Name	Type	Last Audit	Status	Action
Northeast Regional Admin.	Admin	N/A	Pending	Not Scheduled
Northeast Regional Medical	Hospital	N/A	Pending	Not Scheduled
Boston Community Health	Clinic	N/A	Pending	Not Scheduled
Northeast Regional Medical	Lab	N/A	Pending	Not Scheduled
Northeast Regional Pharmacy	Pharmacy	N/A	Pending	Not Scheduled

Retire Audit Refresh Back



View Provider Registry

Welcome Patricia Davis!

Log Out

View Provider Registry

Complete registry of healthcare facilities	Facility	Location	Type	Employee
Northeast Regional Admin.	New York City Health Dept.	US Public Health Network	Provider	5
Boston Community Health	Northeast Healthcare Provid.	US Public Health Network	Clinic	12
Northeast Regional Medical	Northeast Healthcare Provid.	US Public Health Network	Lab	8

New Details Edit Registry Back



Request Vaccine Allocation from CDC

Welcome Patricia Davis!

Log Out

Request Vaccine Allocation from CDC

Allocation Request Details

Vaccine:

Quantity Required:

Priority:

Request Justification

Submit Request Clear Back



Process Cold Chain Failure Reports

Welcome Patricia Davis!

Log Out

Process Cold Chain Failure Reports

Date	Vaccine	Affected Qty	Failure Type	Facility	Report Status	Replacement...
12/07/2025	COVID-19 mRNA Vac...	100	Temperature	Dr. Ray Kim	Pending Rev.	Pending
12/07/2025	Influenza Vac...	200	Equipment M...	Dr. Ray Kim	Pending Rev.	Pending
12/07/2025	MMR Vaccine	300	Power Failure	Dr. Ray Kim	Under Investi...	Approved
12/07/2025	Hepatitis B Vac...	400	Human Error	Dr. Ray Kim	Under Investi...	Approved

<< Back Process Report



Application Demo: State Role to CDC

State

Provider Coordinator

patricia.davis / State@2024!

Request Vaccine Allocation from CDC

The screenshot shows a Windows-style application window titled "Request Vaccine Allocation from CDC". In the center, there's a modal dialog box with the title "Request Submitted" and the message "Vaccine allocation request submitted to CDC!". It lists the details: Vaccine: Hepatitis B Vaccine, Quantity: 100, Priority: High. Below the modal, the main form has fields for "Allocation Request Details": Vaccine (dropdown menu showing "Hepatitis B Vaccine"), Quantity Requested (text input "100"), and Priority (dropdown menu). At the bottom, there's a "Request Justification" section with a text area containing "Test" and a "Submit Request" button.

Submit Request



CDC

Distribution Coord

robert.martinez / Cdc@2024!

Process Vaccine Shipments Requests

The screenshot shows a Windows-style application window titled "Distribution Coordinator - Robert Martinez". It displays a table of vaccine requests with columns: Request ID, Vaccine, Quantity, Priority, Status, and Date. One row is highlighted with a red border: Request ID Sat Dec 06, Vaccine COVID-19 mRNA Va..., Quantity 80000, Priority HIGH, Status Pending, Date Sat Dec 06 15:58:31... . Another row is also highlighted with a red border: Request ID Sat Dec 06, Vaccine Hepatitis B Vaccine, Quantity 100, Priority High, Status Sent, Date Sat Dec 06 15:59:20. At the bottom, there are buttons for "Approve Request", "Schedule Shipment", and "View Vaccine Inventory".

Request ID	Vaccine	Quantity	Priority	Status	Date
Sat Dec 06	COVID-19 mRNA Va...	50000	HIGH	Pending	Sat Dec 06 15:58:31...
Sat Dec 06	Influenza Vaccine	40000	HIGH	Pending	Sat Dec 06 15:58:31...
Sat Dec 06	MMR Vaccine	70000	MEDIUM	Pending	Sat Dec 06 15:58:31...
Sat Dec 06	Hepatitis B Vaccine	80000	MEDIUM	Completed	Sat Dec 06 15:58:31...
Sat Dec 06	COVID-19 mRNA Va...	80000	LOW	Completed	Sat Dec 06 15:58:31...
Sat Dec 06	Hepatitis B Vaccine	100	High	Sent	Sat Dec 06 15:59:20

Application Demo: CDC Roles

Epidemiologist

sarah.johnson / Cdc@2024!

The login screen for the Public Health Information Management System. It features a title bar 'Public Health Information Management System'. Below it is a large empty area for input. At the bottom, there are two text input fields: 'Username:' containing 'sarah.johnson' and 'Password:' containing '*****'. A 'Login' button is located at the bottom right.



Epidemiologist Work Area - Dr. Sarah Johnson

The Epidemiologist Work Area window for Dr. Sarah Johnson. The title bar says 'Epidemiologist Work Area - Dr. Sarah Johnson'. The main content is a table showing disease cases:

Request ID	Disease	Case Count	Location	Status	Date
Sat Dec 06	COVID-19	41	New York City, NY	Pending	Sat Dec 06 15:58:31...
Sat Dec 06	Influenza	18	Buffalo, NY	Pending	Sat Dec 06 15:58:31...
Sat Dec 06	Measles	21	Rochester, NY	Pending	Sat Dec 06 15:58:31...
Sat Dec 06	Tuberculosis	52	Albany, NY	Analyzed	Sat Dec 06 15:58:31...
Sat Dec 06	COVID-19	24	Syracuse, NY	Analyzed	Sat Dec 06 15:58:31...
Sat Dec 06	Influenza	43	Yonkers, NY	Analyzed	Sat Dec 06 15:58:31...

At the bottom of the window are four buttons: 'View Details', 'Analyze Trend', 'Issue Alert', and 'Refresh'.

Application Demo: CDC Roles

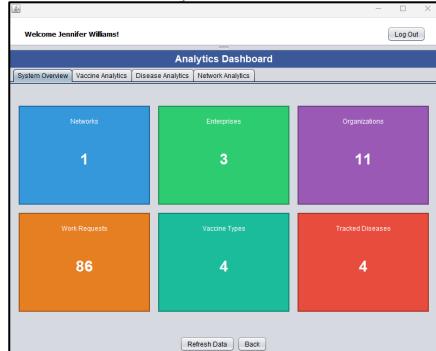
Data Analyst

jennifer.williams / Cdc@2024!

Public Health Information Management System

Username: jennifer.williams
Password: *****
Login

Analytics Dashboard



Data Analyst Work Area – Jennifer Williams

Welcome Jennifer Williams!

Data Analyst Work Area - Jennifer Williams

Log Out

View Data Analysis Requests
Generate Statistical Report
View Analytics Dashboard
Export Data
Process Pending Requests



View Data Analysis Requests

Welcome Jennifer Williams!

View Data Analysis Requests

Date	Analysis Type	Description	Status	Requested By
12/06/2025	Statistical Analysis	Request for health data...	Pending	sarah.johnson
12/06/2025	Statistical Analysis	Request for health data...	Completed	sarah.johnson
12/06/2025	Statistical Analysis	Request for health data...	Completed	sarah.johnson

Process Request View Details Refresh Back

Generate Statistical Report

Welcome Jennifer Williams!

Generate Statistical Report

Report Type: Vaccine Distribution Statistics Generate Report

VACCINE DISTRIBUTION STATISTICS
Generated: December 06, 2025 16:14

VACCINE INVENTORY ANALYSIS

Vaccine Type	Dose Count	Manufacturer
COVID-19 mRNA Vaccine	2	Pfizer-BioNTech
Influenza Vaccine	1	Sanofi Pasteur
MMR Vaccine	2	Merck
Measles M Vaccine	3	GSK SmithKline

Total Vaccine Types: 4

END OF REPORT

Export as CSV Back

Export Data

Welcome Jennifer Williams!

Export Data

Log Out

Export Options

Data Type: Work Requests
Export Format: CSV
Export Status: Export Process Started
Timestamp: 12/05/2025 16:19:13
Data Type: Work Requests
Format: CSV
File Name: Work_Requests_2025-12-05_000938.csv
Processing...
- Aggregating work requests from all organisations...
Export completed successfully!
File would be saved to: Work_Requests_2025-12-05_000938.csv

Clear Status Back

Process Pending Requests

Welcome Jennifer Williams!

Process Pending Requests

Log Out

Total: 3 Pending: 1 Processing: 0

Date	Description	Status	Priority
12/04/2025	Request for h...	Pending	Normal
12/04/2025	Request for h...	Completed	Normal
12/04/2025	Request for h...	Completed	Normal

Request Actions

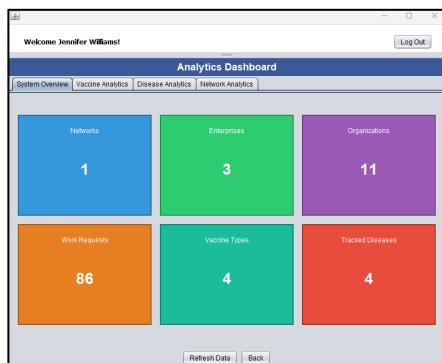
Start Processing
Mark Complete
Assign Priority
View Details
Refresh
Back

Application Demo: CDC Roles

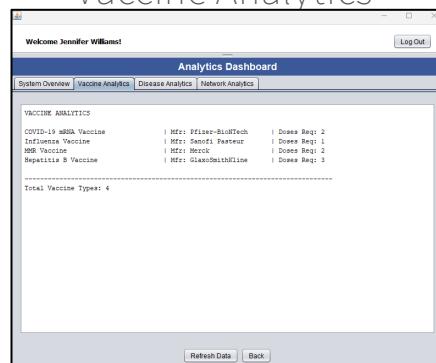
Analytic Dashboard

Data Analyst can view the Analytics Dashboard after logging in. They can switch between four screens using tabs (Overview, Vaccine Analytics, Disease Analytics, Network Analytics).

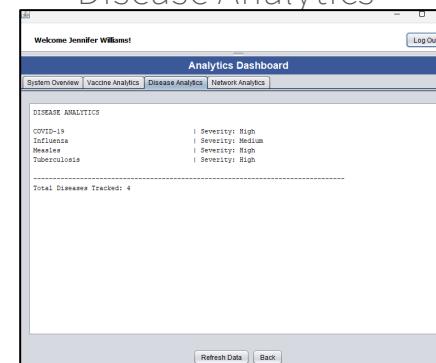
Overview



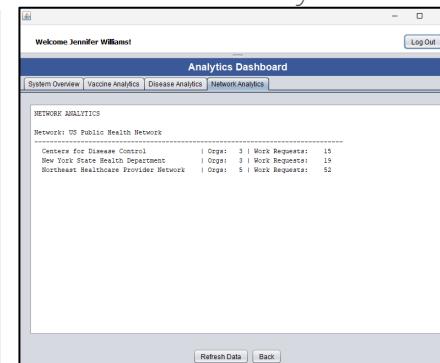
Vaccine Analytics



Disease Analytics



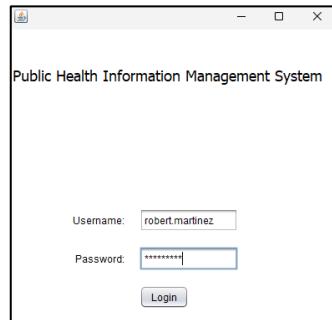
Network Analytics



Application Demo: CDC Roles

Distribution Coord

robert.martinez / Cdc@2024!



Distribution Coordinator - Robert Martinez

Welcome Robert Martinez!

Log Out

Request ID	Vaccine	Quantity	Priority	Status	Date
Fri Dec 05	COVID-19 mRNA Vaccine	40000	HIGH	Approved	Fri Dec 05 00:22:21 JST 2...
Fri Dec 05	Influenza Vaccine	10000	HIGH	Pending	Fri Dec 05 00:22:21 JST 2...
Fri Dec 05	MMR Vaccine	70000	MEDIUM	Pending	Fri Dec 05 00:22:21 JST 2...
Fri Dec 05	Hepatitis B Vaccine	100000	MEDIUM	Completed	Fri Dec 05 00:22:21 JST 2...
Fri Dec 05	COVID-19 mRNA Vaccine	70000	LOW	Completed	Fri Dec 05 00:22:21 JST 2...

Approve Request | Schedule Shipment | View Vaccine Inventory

This screenshot shows the Distribution Coordinator interface for Robert Martinez. The title bar says 'Distribution Coordinator - Robert Martinez'. The main area displays a table of vaccine requests with columns for Request ID, Vaccine, Quantity, Priority, Status, and Date. The status for most requests is 'Approved' or 'Completed', except for two pending requests. At the bottom are three buttons: 'Approve Request', 'Schedule Shipment', and 'View Vaccine Inventory'.

Application Demo: Supplemental Provider Roles

Laboratory Org – Lab Technician – Lab Test Work Request Flow

1. Clinic Manager (christopher.lee) submits lab test request:

1. Log in, click Request Lab Test button
2. Fill out request details
3. Click Submit New Request button

Date	Patient	Test Type	Status	Results
12/07/2025	Thomas Miller	COVID-19 PCR Test	Pending	-
12/07/2025	Jane Jones	Influenza Test	Pending	-
12/07/2025	Richard Williams	Complete Blood Co...	Completed	Test completed: N...

2. System routes request to Laboratory work queue.

3. Lab Tech (john.bob) sees the request to assign and process:

1. Log in, select request in the table
2. Click Assign To Me button if not automatically assigned
3. Click Process button

New Lab Test Request:

Patient Name:

Test Type:

Urgency:

Lab Technician Work Area									
Request ID	Test Type	Patient Info	Priority	Requested...	Assigned To	Status	Result Notes	Request D...	Actions
Patient ID: ...	COVID-19 ...	James Willi...	URGENT	Nurse Susa...	john.bob	Pending	-	Sun Dec 0...	<input type="button" value="Assign to me"/>
Patient ID: ...	COVID-19 ...	Patricia Will...	URGENT	Nurse Susa...	john.bob	Pending	-	Sun Dec 0...	<input type="button" value="Process"/>
Patient ID: ...	Influenza T...	David Gon...	Normal	Nurse Susa...	john.bob	Pending	-	Sun Dec 0...	<input type="button" value="Assign to me"/>
Patient ID: ...	Blood Culture	Robert Ro...	Normal	Nurse Susa...	john.bob	Completed	Test result...	Sun Dec 0...	<input type="button" value="Process"/>
Patient ID: ...	Complete ...	Thomas Br...	Normal	Nurse Susa...	john.bob	Completed	Test result...	Sun Dec 0...	<input type="button" value="Assign to me"/>
Patient: Th...	COVID-19 ...	Thomas Mi...	Normal	Dr. Christo...	john.bob	Pending	-	Sun Dec 0...	<input type="button" value="Process"/>
Patient: Jan...	Influenza T...	Jane Jones	Normal	Dr. Christo...	john.bob	Pending	-	Sun Dec 0...	<input type="button" value="Assign to me"/>
Patient: Ric...	Complete ...	Richard Wil...	Normal	Dr. Christo...	john.bob	Completed	Test compl...	Sun Dec 0...	<input type="button" value="Process"/>

4. Lab Tech enters test results to complete the request:

1. Enter test results in field
2. Click Submit Result button

Lab Test Result Submission

Assign to me

Process

Result:

5. Clinic Manager sees completed test results:

My Lab Test Requests				
Date	Patient	Test Type	Status	Results
12/07/2025	Thomas Miller	COVID-19 PCR Test	Pending	-
12/07/2025	Jane Jones	Influenza Test	Completed	Inconclusive?!

Application Demo: Supplemental Provider Roles

Pharmacy Org – Pharmacist Role – Prescription Fulfillment Request Flow

1. Hospital Administrator (amanda.garcia) submits prescription fulfillment request:

1. Log in, click Submit Prescription button
2. Enter request details
3. Click Submit New Request

2. System routes request to Pharmacy work queue.

3. Pharmacist (dan.man) sees request to fulfill:

1. Log in, select request in table
2. Enter prescription notes
3. Click Fulfill Prescription button

Pharmacist Work Area - Dan Man

Patient	Medication	Dosage	Quantity	Doctor	Status	Notes	Date
Mary Johnson	Penicillin	250mg	30	Dr. Amanda ...	Pending	-	Sun Dec 07 ...
Patricia Miller	Gabapentin	800mg	120	Dr. Amanda ...	Pending	-	Sun Dec 07 ...
Sarah Smith	Hydrocodone	5mg	15	Dr. Amanda ...	Pending	-	Sun Dec 07 ...
Richard Willi...	Alprazolam	1mg	60	Dr. Amanda ...	Fulfilled	Prescription f...	Sun Dec 07 ...
David Martinez	Atorvastatin	20mg	90	Dr. Amanda ...	Fulfilled	Prescription f...	Sun Dec 07 ...
Test Testerson	Alprazolam	100mg	100	Dr. Amanda ...	Pending	-	Sun Dec 07 ...

Fulfillment Notes (for selected Prescription):
Patient is to take one a day

Message
Prescription fulfilled
OK
Fulfill Prescription

4. Hospital Admin sees notes and status updates:

My Prescription Requests

Date	Patient	Medication	Dosage	Quantity	Status	Notes
12/07/2025	Mary Johnson	Penicillin	250mg	30 pills	Pending	-
12/07/2025	Patricia Miller	Gabapentin	800mg	120 pills	Pending	-
12/07/2025	Sarah Smith	Hydrocodone	5mg	15 pills	Pending	-
12/07/2025	Richard Willi...	Alprazolam	1mg	60 pills	Fulfilled	Prescription ...
12/07/2025	David Martinez	Atorvastatin	20mg	90 pills	Fulfilled	Prescription ...
12/07/2025	Test Testerson	Alprazolam	100mg	100 pills	Fulfilled	Patient is to t...

New Prescription Request:

Patient Name: Test Testerson Medication: Alprazolam

Dosage: 100mg Quantity: 100

Message
Prescription request submitted successfully!

Patient: Test Testerson
Medication: Alprazolam
Dosage: 100mg
Quantity: 100

OK

My Prescription Requests

Date	Patient	Medication	Dosage	Quantity	Status	Notes
12/07/2025	Mary Johnson	Penicillin	250mg	30 pills	Pending	-
12/07/2025	Patricia Miller	Gabapentin	800mg	120 pills	Pending	-
12/07/2025	Sarah Smith	Hydrocodone	5mg	15 pills	Pending	-
12/07/2025	Richard Willi...	Alprazolam	1mg	60 pills	Fulfilled	Prescription ...
12/07/2025	David Martinez	Atorvastatin	20mg	90 pills	Fulfilled	Prescription ...
12/07/2025	Test Testerson	Alprazolam	100mg	100 pills	Fulfilled	Patient is to t...

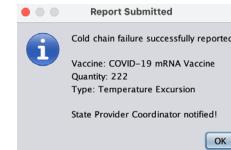
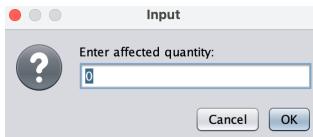
Application Demo: Supplemental Provider Roles

Pharmacy/Hospital Org – Vaccine Storage Specialist – Cold Chain Failure Work Request Flow

1. Vaccine Storage Specialist (ray.kim) monitors vaccine inventory for anomalies:

2. Storage Specialist reports cold chain failure:

1. Log in, click Report Cold Chain Failure button
2. Enter data in a series of several dialogs



3. System routes report to State Provider Coordinator.

4. Provider Coordinator (patricia.davis) reviews failure and updates its status:

1. Log in, click Process Cold Chain Failure Reports button
2. Select request from table, click Process Report button
3. Update report and replacement statuses in dialog boxes

5. Storage Specialist sees status updates:

My Cold Chain Failure Reports:						
Report Date	Vaccine	Affected Qty	Failure Type	Report Status	Replacement Status	
12/07/2025	COVID-19 mRNA...	200	Temperature Exc...	Pending Review	Pending	
12/07/2025	Influenza Vaccine	200	Equipment Malfun...	Pending Review	Pending	
12/07/2025	MMR Vaccine	300	Power Failure	Under Investigation	Approved	
12/07/2025	Hepatitis B Vaccine	400	Human Error	Under Investigation	Approved	
12/07/2025	COVID-19 mRNA...	3	Equipment Malfun...	Approved	In Transit	
12/07/2025	COVID-19 mRNA...	0	Temperature Exc...	Denied	More Info Needed	
12/07/2025	COVID-19 mRNA...	222	Temperature Exc...	Approved	Ordered from CDC	

Vaccine Storage Specialist Work Area - Dr. Ray Kim

Refresh

Vaccine Inventory:

Vaccine	Manufacturer	Quantity	Expiration Date	Storage Temp
COVID-19 mRNA Vac...	Pfizer-BioNTech	1000	12/07/2026	-70°C to -40°C
Influenza Vaccine	Sanofi Pasteur	1000	06/05/2026	2°C to 8°C
MMR Vaccine	Merck	1000	12/07/2027	2°C to 8°C
Hepatitis B Vaccine	GloboSmithKline	1000	12/06/2028	2°C to 8°C

My Cold Chain Failure Reports:

Report Date	Vaccine	Affected Qty	Failure Type	Report Status	Replacement Status
12/07/2025	COVID-19 mRNA ...	100	Temperature Exc...	Pending Review	Pending
12/07/2025	Influenza Vaccine	200	Equipment Malfun...	Pending Review	Pending
12/07/2025	MMR Vaccine	300	Power Failure	Under Investigation	Approved
12/07/2025	Hepatitis B Vaccine	400	Human Error	Under Investigation	Approved

Report Cold Chain Failure

Process Cold Chain Failure Reports

Refresh

Date	Vaccine	Affected Qty	Failure Type	Facility	Report Status	Replace...
12/07/2025	COVID-19 ...	100	Temperatur...	Dr. Ray Kim	Pending Rev...	Pending
12/07/2025	Influenza Va...	200	Equipment Malf...	Dr. Ray Kim	Pending Rev...	Pending
12/07/2025	MMR Vac...	300	Power Failure	Dr. Ray Kim	Pending Rev...	Pending
12/07/2025	Hepatitis B ...	400	Human Error	Dr. Ray Kim	Under Inves...	Approved
12/07/2025	COVID-19 ...	3	Equipment ...	Dr. Ray Kim	Pending Rev...	Pending
12/07/2025	COVID-19 ...	0	Temperature ...	Dr. Ray Kim	Pending Rev...	Pending
12/07/2025	COVID-19 ...	222	Temperature ...	Dr. Ray Kim	Pending Rev...	Pending

Update Report Status

<< Back

Process Report

Update replacement status:

- Not Ordered
- Ordered from CDC
- In Transit
- Delivered
- More Info Needed

| Q & A

1. Q: How does the system handle cross-organizational workflows and data consistency?

A: The system operates through work queue functionality which directs requests to specific organization queues according to receiver information. The system directs disease reports from clinics to the Public Health Services organization work queue and vaccine allocation requests from Provider Registry to the Vaccine Distribution organization work queue. The system allows users to access only requests which match their organizational role and work within their designated organization through separate work queues for each organization. The system design allows for exact data management functions and enables different organizations to work together.

| Q & A

2. Q: What security measures are implemented for user authentication and role-based access control?

A: The system implements role-based access control (RBAC) to distribute user accounts into three roles which include Epidemiologist and Nurse Practitioner and Distribution Coordinator. The system authenticates user credentials to generate a work area panel which shows only vital features and information based on user role assignments. The system allows Hospital Admins to access patient appointment information and compliance reports from their organization but Public Health Officers can view disease surveillance data from various regions. The system protects all user accounts through password encryption and administrators can activate or deactivate user accounts.

| Q & A

3. Q: How scalable is the system for handling a large number of organizations and users?

A: The system follows a hierarchical enterprise architecture (EcoSystem → Network → Enterprise → Organization → Users) which provides natural scalability. The Faker library generates authentic demo information to show the system operates with multiple organizations containing 6 to 15 staff members. The system design consists of modular components which allow developers to add new organization types and roles and enterprises without disrupting core business operations. The work queue pattern operates efficiently for request processing because each organization operates with its own dedicated queue.

| Q & A

4. Q: What are the key features that differentiate this system for different user roles?

A: Each role has tailored features:

- **Epidemiologists** analyze disease trends across regions with case counts and demographics
 - **Clinic Managers** schedule appointments, request vaccine shipments, and report disease cases
 - **Hospital Admins** view patient appointments and review compliance status
 - **Distribution Coordinators** approve vaccine allocation requests and manage inventory
 - **Nurses** administer vaccinations, schedule appointments, and report disease cases
 - **Public Health Officers** view compliance reports and disease surveillance data from multiple providers
 - **Provider Coordinators** process vaccine shipment requests from clinics
- This role-based specialization ensures users have focused, efficient interfaces for their specific responsibilities.

| Q & A

5. Q: How does the system handle data validation and error prevention?

A: The system implements multiple layers of validation:

- **Input validation:** Required fields are checked before submission (e.g., patient name, vaccine selection)
 - **Business logic validation:** Checks like username uniqueness, duplicate prevention, and status validation (e.g., can't approve already-approved requests)
 - **Type safety:** Strong typing ensures only valid work request types are processed in each queue
 - **User feedback:** Clear error messages and warnings guide users when validation fails
 - **Demo data integrity:** ConfigureABusiness uses consistent relationships and proper object references to ensure all demo data is valid and interconnected
- Additionally, the system uses try-catch blocks with ValidationException handling to gracefully manage errors and provide user-friendly messages rather than system crashes.

Thank You

Public Health Information Management System

Akira Hanada, Maxwell Sowell

Northeastern University