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Request Results

Create Manifest

Create Lab Order

Login

NMRS-LIMS

Integration User Guide



February 2021

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Training Objectives

- Guide participants through the process of ordering lab tests on the NMRS
- Show participants how to generate and send a manifest from NMRS to LIMS
- Show participants how to request results from LIMS on the NMRS

Overview of the EMR-LIMS Exchange Module

- UMB has partnered with CHAI to enable the interoperability of the Laboratory Information Management System (LIMS) with EMRS (NMRS and LAMIS).
- The goal is to allow feedback between facility laboratories and reference laboratories (PCR Labs)
- The integration between the two systems leverages on an Application Programming Interface (API) to allow exchange of both sample logging Information from EMRs to LIMS and return of results from LIMS to EMRs.

Conclusion

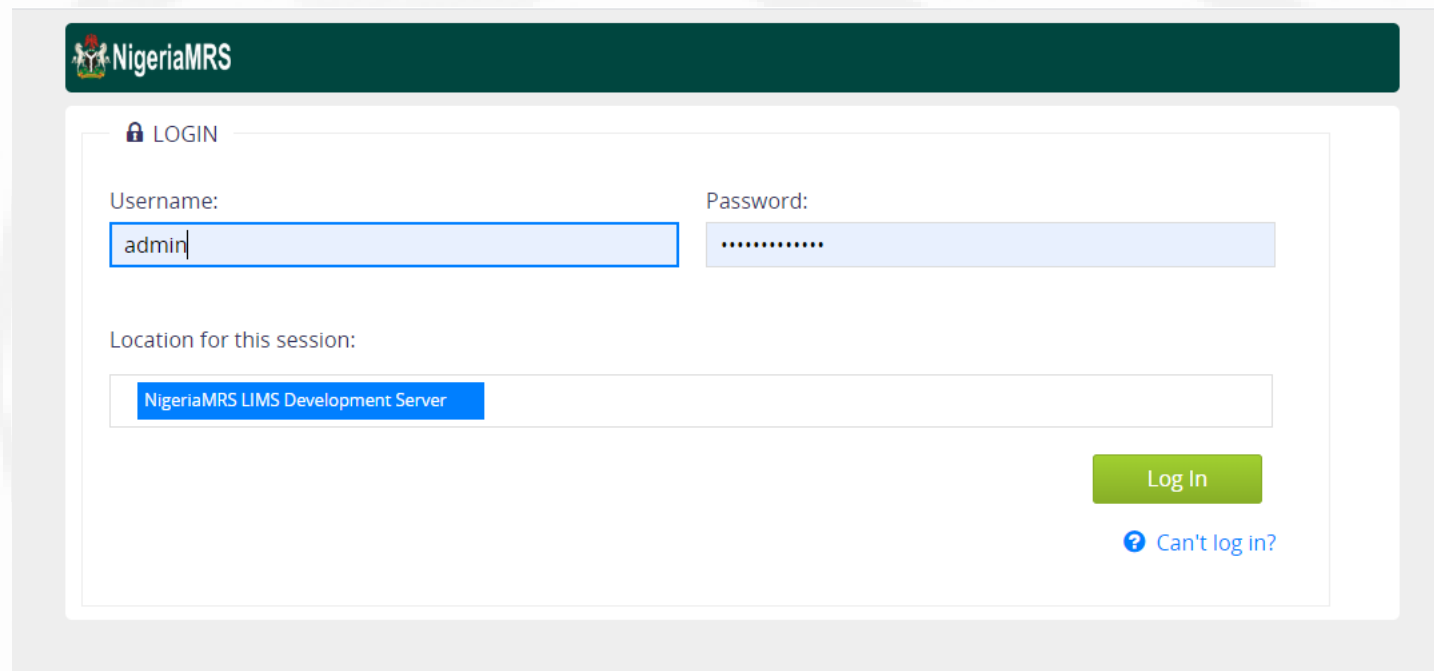
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Getting Started

Enter username and password to access the NMRS instance



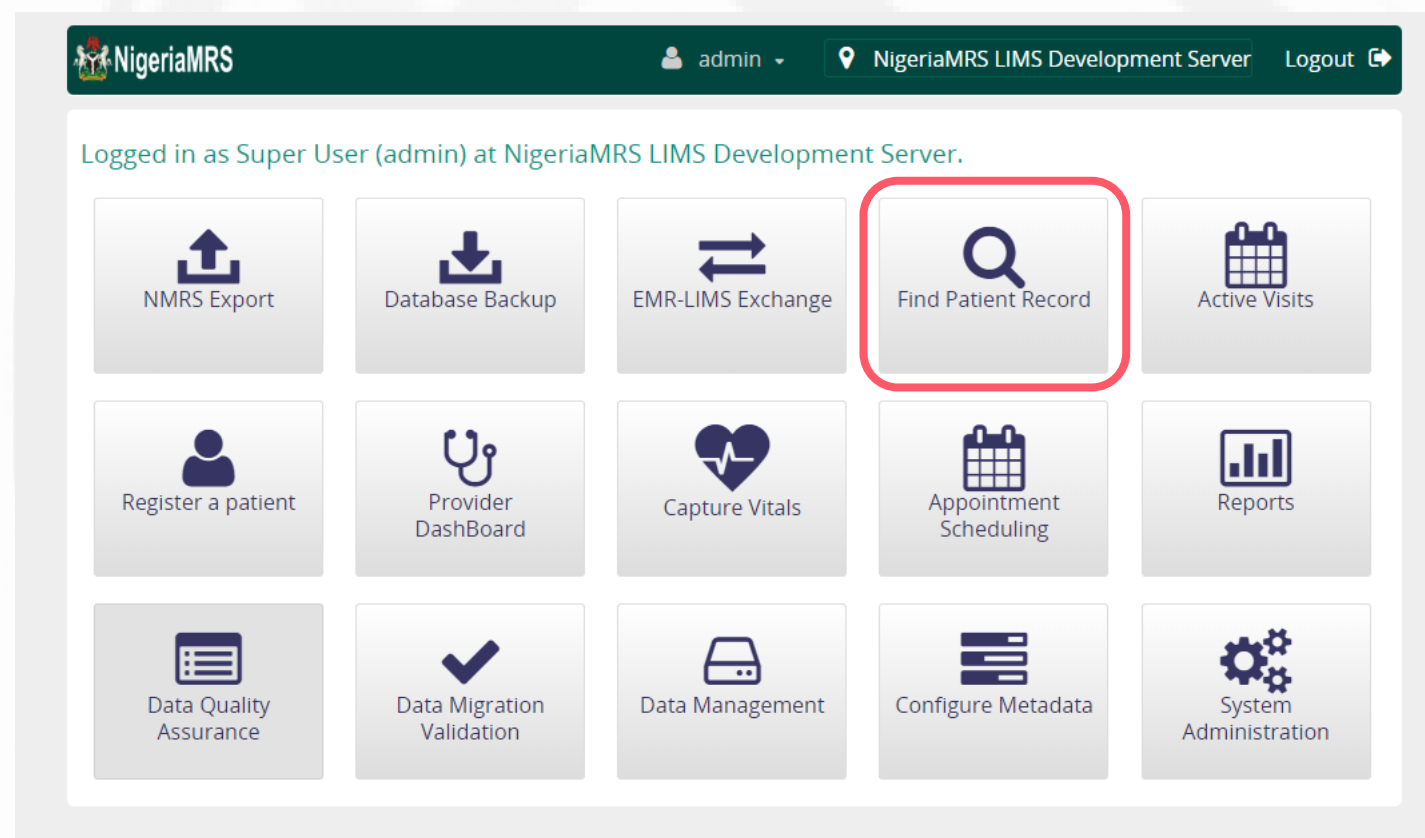
The screenshot shows the NigeriaMRS login page. At the top is a dark green header with the NigeriaMRS logo and name. Below this is a white box titled 'LOGIN' with a lock icon. It contains three input fields: 'Username:' with 'admin' entered, 'Password:' with masked characters, and 'Location for this session:' with 'NigeriaMRS LIMS Development Server' selected from a dropdown. A green 'Log In' button is at the bottom right, with a link 'Can't log in?' below it.



Login

Lab Order Request Process

From the landing page, select the [Find Patient Record](#) Module



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Selecting a Patient for Sample Collection

NigeriaMRS admin NigeriaMRS LIMS Development Server Logout

Find Patient Record

Search by ID or Name

Identifier	Name	Gender	Age	Birthdate
105WC Recent	Chukwuma Soludo CBN	M	55	16.Jul.1965
105X0 Recent	David Ekeh Frank	M	20	06.Jun.2000
105Y9 Recent	Test Evans	M	5	~ 01.Aug.2015
105XH Recent	Denko Isaac Istifanus	M	29	~ 01.Jan.1992
105XG Recent	mary JOEL	F	36	03.Feb.1985
105WF Recent	Bisola Segiola Evans	F	22	12.May.1998
105WP Recent	Muhammadu Buhari	M	82	28.Nov.1938
105WK Recent	Duke Bassey	M	35	24.Mar.1985
112897 Recent	Elina Anda	F	31	09.May.1989
105XR Recent	MARY USMAN MICHEAL	F	26	21.Jul.1994
TP/202 Recent	Pat Demo	F	32	11.Feb.1989
105XP Recent	Bala manela ora	M	28	21.Jul.1992
105Y0 Recent	Mary John john	F	39	10.Feb.1982
105VN Recent	Mike Henry Uduak	M	12	12.Feb.2009
105Y8 Recent	Test Ade	F	31	~ 01.Jan.1990



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Selecting a Care Cascade

 NigeriaMRS

admin

NigeriaMRS LIMS Development Server

Logout

> Chukwuma Soludo CBN

Chukwuma Soludo CBN

Male 55 year(s) (16.Jul.1965)

Edit Show Contact Info

Patient ID 105WC

ART Number UMB1234567

DIAGNOSES

None

N-MRS DATA QUALITY CHECKS

None

LATEST OBSERVATIONS

None

HEALTH TREND SUMMARY

None

WEIGHT GRAPH

Weight (kg)

91.0

90.5

90.0

89.5

89.0

03.Jun.2020

VITALS

None

APPOINTMENTS

None

ENROLL PATIENT IN PROGRAMS

HIV Treatment Services 17 Jul 2020 - Current

RECENT VISITS

None

FAMILY

None

CONDITIONS

ALLERGIES

Unknown

Patient Flags

General Actions

Complete Patient Session

Send patient to service area

Start Visit

Add Past Visit

Biometric Capture

Clinical Management

Merge Visits

Chart Search

ART (antiretroviral therapy) Programs

HTS Programs


Program Enrollment


Schedule Appointment

Request Appointment

Mark Patient Deceased

Delete Patient

 UNIVERSITY
of MARYLAND
SCHOOL OF MEDICINE

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GLOBAL
improving the human
condition globally

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Ordering Lab Tests and Sample Collection














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> Chukwuma Soludo CBN > ART (antiretroviral therapy) Programs

Chukwuma Soludo CBN Male 55 year(s) (16.Jul.1965) [Edit](#) [Show Contact Info](#)

Given Middle Family Name Patient ID 105WC ART Number UMB1234567

ART Program forms

 Hiv enrollment	 Care Card	 Lab forms	 Pharmacy Order	 Adult Initial Clinical Evaluation
 Pediatric Initial Clinical Evaluation	 Presumptive TB Screening	 Transfer Form	 Client Referral Form	 Enhanced Adherence Counselling
 ART Commencement	 Client Tracking and Termination	 Operation Triple Zero (OTZ) Service		



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Laboratory Order and Result Form

The screenshot displays the NigeriaMRS LIMS interface. At the top, the header includes the NigeriaMRS logo, a user profile for 'admin', the server name 'NigeriaMRS LIMS Development Server', and a 'Logout' button. Below the header, the breadcrumb trail shows 'Chukwuma Soludo CBN' > 'Laboratory Forms'. The main content area displays patient information for 'Chukwuma Soludo CBN', including 'Male 55 year(s) (16.Jul.1965)', 'Patient ID 105WC', and 'ART Number UMB1234567'. Under the heading 'Select Laboratory Form', there are two buttons: 'Sample Collection' and 'Lab Order form'. The 'Lab Order form' button, which features a truck icon, is highlighted with a red rectangular border.



Create Lab Order

Login

Note: Make use of the Lab Order Form only.

Ordering Viral Load Test

- From the Lab order form, (PCR Sample No, Sample Type, Indication for Viral Load, Sample Collection, Name of Clinician & Date ordered) are required to be filled to avoid errors.

NigeriaMRS admin - NigeriaMRS LIMS Development Server Logout

Chukwuma Soludo CBN > Laboratory Order and Result form

Chukwuma Soludo CBN Male 55 year(s) (16 Jul. 1965) Edit Show Contact info Patient ID 105WC ART Number UMB1234567

Laboratory Order & Result Form

Visit Date 04/03/2021 (dd/mm/yyyy)

Order	Results	Order	Results
<input type="checkbox"/> CD4+ cell count (cells/mm ³)		<input type="checkbox"/> CD4 (%)	
<input type="checkbox"/> WBC (x10 ⁹ c/L)		<input type="checkbox"/> Polymorphs (%)	
<input type="checkbox"/> Polymorphs (/mm ³)		<input type="checkbox"/> Lymphocytes (%)	
<input type="checkbox"/> Lymphocytes (/mm ³)		<input type="checkbox"/> Monocytes (%)	
<input type="checkbox"/> Monocytes (/mm ³)		<input type="checkbox"/> Eosinophil (%)	
<input type="checkbox"/> Eosinophils (/mm ³)		<input type="checkbox"/> Basophils (%)	
<input type="checkbox"/> Basophils (/mm ³)		<input type="checkbox"/> PCV/Hb (g/dl)	
<input type="checkbox"/> PCV/Hb (%)		<input type="checkbox"/> HBSAG	
<input type="checkbox"/> Platelets (x 10 ⁹ c/L)		<input type="checkbox"/> Creatinine (μmol/l)	
<input type="checkbox"/> HCV antibody		<input type="checkbox"/> ALT/SGPT (mmol/L)	
<input type="checkbox"/> VDRL		<input type="checkbox"/> ALT/SGOT (μ/L)	
<input type="checkbox"/> ALT/SGPT (U/l)		<input type="checkbox"/> Alk. Phosphate (U/l)	
<input type="checkbox"/> AST/SGOT (μ/L)		<input type="checkbox"/> Na+ (mmol/L)	
<input type="checkbox"/> Alk. Phosphate (U/l)		<input type="checkbox"/> Total Bilirubin (μmol/l)	
<input type="checkbox"/> Na+ (mmol/L)		<input type="checkbox"/> K+ (mmol/L)	

Viral Load

☒ Viral Load Test

PCR Lab Sample No. FMC/JAKI/21

Sample collection date 02/03/2021 (dd/mm/yyyy)

Sample Type Whole Blood/Plasma

Indication for Viral Load Routine (every 12 months)

Date sample sent to PCR Lab (dd/mm/yyyy)

Date sample received at PCR Lab (dd/mm/yyyy)

Viral Load test result (copies/ml)

Date result was sent from PCR Lab (dd/mm/yyyy)

Date result was received at the facility (dd/mm/yyyy)

Signatures

Name of Clinician Super User

Date Ordered 02/03/2021 (dd/mm/yyyy)*

Reported By Choose...

Date Reported (dd/mm/yyyy)

Checked By Choose...

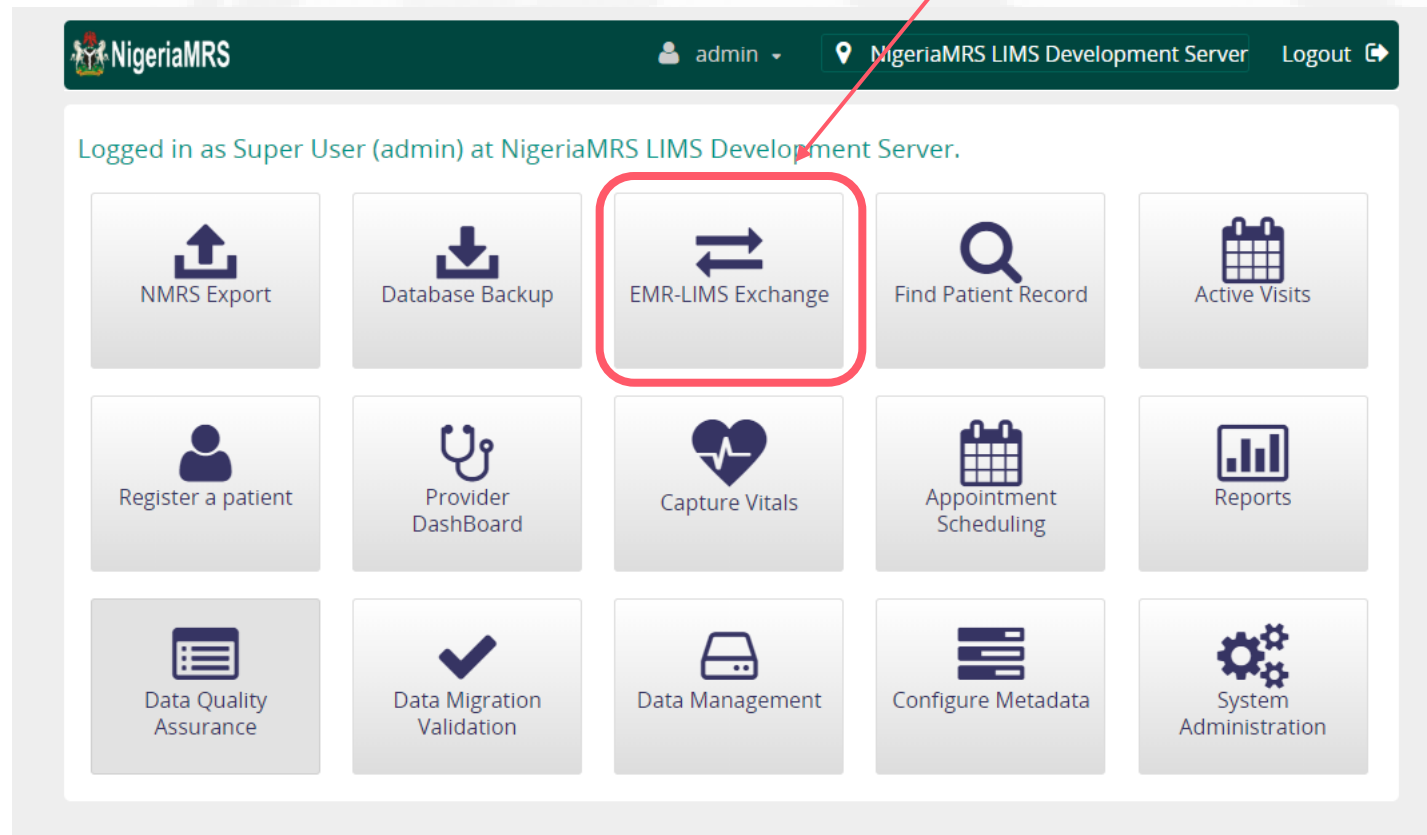
Date checked (dd/mm/yyyy)

Facility NigeriaMRS LIMS Develc

Enter Form

Getting Started

From the landing page, select the **EMR-LIMS Exchange** Module
This directs you to a page where you can either generate a manifest, view manifests or request results from the LIMS



Create Manifest

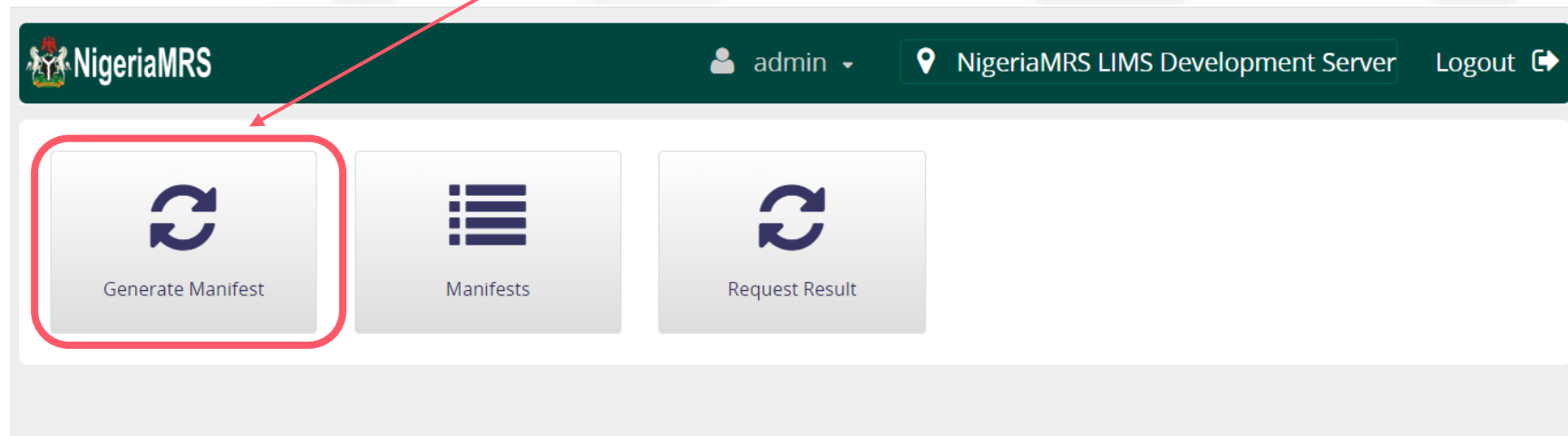
Create Lab Order

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LIMS Module Dashboard

Select **Generate Manifest** to create a new manifest

The manifest contains the details of all the samples to be sent to the reference lab for testing



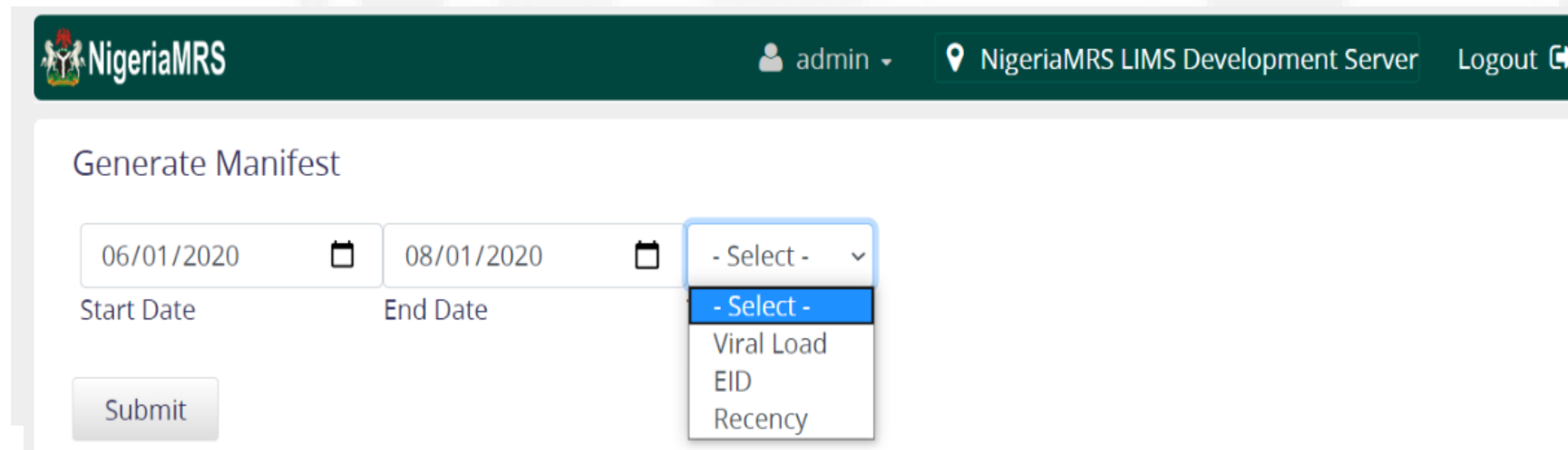
Create Manifest

Create Lab Order

Login

Generate Manifest

- Enter a **date range (Start and End Date)** to retrieve the lab sample requests within the period
- Next, select the **test type** for the samples being sent. Test types options are Viral Load; EID; or Recency.



The screenshot shows the NigeriaMRS LIMS Development Server interface. At the top, there is a dark green header bar with the NigeriaMRS logo, the user 'admin', the server name 'NigeriaMRS LIMS Development Server', and a 'Logout' button. Below the header, the main content area is titled 'Generate Manifest'. It contains two date input fields: 'Start Date' with the value '06/01/2020' and 'End Date' with the value '08/01/2020'. To the right of these fields is a dropdown menu for 'Test Type' with the following options: '- Select -', '- Select -', 'Viral Load', 'EID', and 'Recency'. A 'Submit' button is located below the date fields.






Create Manifest

Create Lab Order

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Samples Validation (1)

- From the sample list, select the samples to be added to the manifest or select all if the entire list is to be added to the manifest and click [Validate Samples](#)

 admin  NigeriaMRS LIMS Development Server Logout 

Select samples or pick all to initiate manifest



<input type="checkbox"/>	Sample ID	First Name	Last Name	Age	Order Type
<input checked="" type="checkbox"/>	gfhdkdd76	Chukwuma	CBN	55	WB
<input checked="" type="checkbox"/>	gdhsjsg8	David	Frank	20	WB
<input checked="" type="checkbox"/>	gdhsjsg8	David	Frank	20	WB
<input checked="" type="checkbox"/>	Sample ID	First Name	Last Name	Age	Order Type

Save Manifest

Validate Samples

Samples Validation (2)

- After Clicking “**Validate Samples**” a page pops up with the sample validation result. This helps to decipher errors.

 Samples Validation Result 

VALIDATION RESULT

S/N	Patient ID	Sample ID	Validation Error
1	[PatientID{idNumber=UMB10132456 idTypeCode=HOSPITALNO}]	gfhdckdd76	null#: 6 schema violations found#/sampleID: expected minLength: 10, actual: 9#/sampleOrderedBy: expected type: String, found: Null#/artCommencementDate: expected type: String, found: Null#/sampleCollectedBy: expected type: String, found: Null#/pregnantBreastFeedingStatus: null is not a valid enum value#/drugRegimen: null is not a valid enum value
2	[PatientID{idNumber=7011 idTypeCode=CLIENTID}]	gdhsjs8	null#: 5 schema violations found#/patientID/0/idNumber: expected minLength: 5, actual: 4#/sampleID: expected minLength: 10, actual: 8#/sampleOrderedBy: expected type: String, found: Null#/sampleCollectedBy: expected type: String, found: Null#/pregnantBreastFeedingStatus: null is not a valid enum value
3	[PatientID{idNumber=7011 idTypeCode=HOSPITALNO}]	gdhsjs8	null#: 5 schema violations found#/patientID/0/idNumber: expected minLength: 5, actual: 4#/sampleID: expected minLength: 10, actual: 8#/sampleOrderedBy: expected type: String, found: Null#/sampleCollectedBy: expected type: String, found: Null#/pregnantBreastFeedingStatus: null is not a valid enum value

Ok



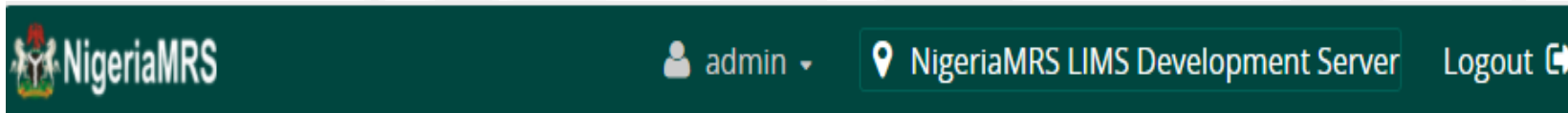
Create Manifest

Create Lab Order

Login

Generate Manifest (2)

- From the sample list, select the samples to be added to the manifest or select all if the entire list is to be added to the manifest and click [Save Manifest](#)



Select samples or pick all to initiate manifest


<input type="checkbox"/>	Sample ID	First Name	Last Name	Age	Order Type
<input type="checkbox"/>	gfhdidd76	Chukwuma	CBN	55	WB
<input type="checkbox"/>	gdhsjsg8	David	Frank	20	WB
<input checked="" type="checkbox"/>	gdhsjsg8	David	Frank	20	WB
<input type="checkbox"/>	Sample ID	First Name	Last Name	Age	Order Type

Save Manifest

Validate Samples

Generate Manifest (3)

- Fill in manifest details including facility demographics, sender's details, date of pickup, schedule pickup, temperature at time of pickup, rider's details and PCR Lab name

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Manifest Details

Facility State	Abia	Facility LGA	
Sender's Name	George Glory	Sender's Mobile	07064637711
Date of Pickup	04/03/2021	Time of Pickup	07:04
Schedule Pickup	03/03/2021	Timely Pickup	<input type="checkbox"/>
Total Number of Samples	3	Temp at Pickup	-5

Rider Information

Rider Name	George Chinyere	Rider Phone Number	07063
PCR Laboratory Name	Ahmadu Bello University Teaching H		
Save Manifest			




Create Manifest

Create Lab Order

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Generate Manifest (4)

- After Clicking on “[Save Manifest](#)”, wait till a notification bar pops up stating that “[Samples successfully registered in Lab](#)”

 NigeriaMRS

lmsnmrs.mgic-nigeria.org says
Samples successfully registered in Lab

OK

Development Server Logout

Manifest Details

Facility State	Abia	Facility LGA	Aba North
Sender's Name	George Glory	Sender's Mobile	07064637711
Date of Pickup	04/03/2021	Time of Pickup	07:04
Schedule Pickup	03/03/2021	Timely Pickup	<input type="checkbox"/>
Total Number of Samples	3	Temp at Pickup	-5

Rider Information

Rider Name	George Chinyere	Rider Phone Number	07063
PCR Laboratory Name	Ahmadu Bello University Teaching H		
Save Manifest			




Create Manifest

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Generate Manifest (5)

- Once the manifest has been saved the details of the samples are sent to LIMS where it is logged in preparation for testing and result entry
- On successful submission to LIMS, the manifest summary is generated for printing and given to the rider during sample transportation.

 **NigeriaMRS**

admin - NigeriaMRS LIMS Development Server Logout

NISRN TRANSPORTATION MANIFEST



Manifest Created by: admin

Date created: Tue, 02 Mar 2021 12:09:10 GMT

PCR Details
Destination
Ahmadu Bello University
Teaching Hospital (ABUTH)
PCR Lab Code
LIMS190001

Courier Details
Courier Name
George Chinyere
Courier Contact
07063627711
Pickup Date
2021-03-03

Manifest Details
Manifest ID
8184A60-0CBF-4
Total Sample
3
Test type
VL
Result Status
pending

S/No	Sample ID	Patient ID	Date Collected	Sample Type
------	-----------	------------	----------------	-------------

Print



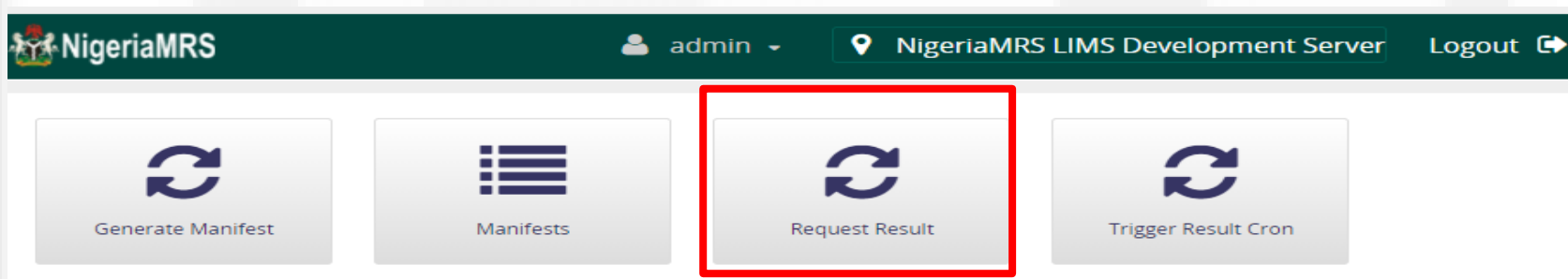
Create Manifest

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Request Results from LIMS

Select **Request Result** to view results available for manifests sent to the reference lab for testing Manually.



Request Results


Create Manifest

Create Lab Order











Login

Request Results from LIMS (2)

Select **Check and Update Result** to check results available on each manifest and automatically update on patient's record.

 NigeriaMRS admin NigeriaMRS LIMS Development Server Logout

List of Manifest Result

S/N	Manifest ID	PCR Lab Name	PCR Lab Code	Test Type	Total Sample	Result Status	Date Created	Action
1	072ACB9-4132-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	4	pending	2020-08-05	  Check & Update Result
2	1ED0915-7861-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	4	pending	2020-08-05	 
3	C6215AB-7E3B-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	4	pending	2020-08-06	 
4	BB240F5-065D-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	0	pending	2020-08-06	 
5	C46B3F2-6662-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	1	pending	2020-08-06	 



Request Results

Create Manifest

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Login

Request Results from LIMS (3)

Select **View Result** to view results available on each manifest.

NigeriaMRS admin NigeriaMRS LIMS Development Server Logout

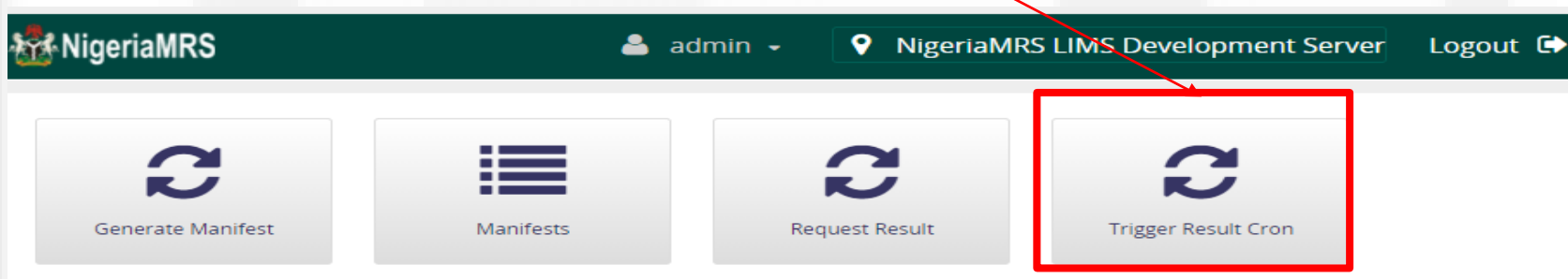
List of Manifest Result

S/N	Manifest ID	PCR Lab Name	PCR Lab Code	Test Type	Total Sample	Result Status	Date Created	Action
1	072ACB9-4132-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	4	pending	2020-08-05	 
2	1ED0915-7861-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	4	pending	2020-08-05	 
3	C6215AB-7E3B-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	4	pending	2020-08-06	 
4	BB240F5-065D-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	0	pending	2020-08-06	 
5	C46B3F2-6662-4	National Reference Laboratory Gaduwa (NRL) Abuja	LIMS150002	VL	1	pending	2020-08-06	 

View Result

Request Results from LIMS

Select **Trigger Result Cron** to automatically check all results available on all manifests and update to patient's records.



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THANK YOU

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