

# Overcoming the Challenges to Achieve Lab Interoperability

Provided By:  
The National Learning Consortium (NLC)

Developed By:  
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# National Learning Consortium

- The National Learning Consortium (NLC) is a virtual and evolving body of knowledge and resources designed to support healthcare providers and health IT professionals working towards the implementation, adoption and meaningful use of certified EHR systems.
- The NLC represents the collective EHR implementation experiences and knowledge gained directly from the field of ONC's outreach programs ([REC](#), [Beacon](#), [State HIE](#)) and through the [Health Information Technology Research Center \(HITRC\)](#) Communities of Practice (CoPs).

*The material in this document was developed by Regional Extension Center staff in the performance of technical support and EHR implementation. The information in this document is not intended to serve as legal advice nor should it substitute for legal counsel. Users are encouraged to seek additional detailed technical guidance to supplement the information contained within. The REC staff developed these materials based on the technology and law that were in place at the time this document was developed. Therefore, advances in technology and/or changes to the law subsequent to that date may not have been incorporated into this material.*

# Description & Instructions

- The Overcoming the Challenges to Achieve Lab Interoperability PowerPoint is intended to aid providers and health IT implementers with achieving lab interoperability.

# Internal Medicine of Northern Michigan



- 11 Provider Internal Medicine Practice
- In house Physician Office Lab
- EMR Go Live –March 16, 2011

Located in Petoskey, Michigan overlooking Little Traverse Bay.



# Lab Challenges

- Medical Necessity/Frequency
- ABN (Advance Beneficiary Notice)
- Mapping Diagnosis to Testing
- Managing Insurance Based Lab Carve Outs
- Managing Multiple Lab Service Providers
- Managing Standing and Future Orders
- Tracking Result Completion
- Notifying Patients of Results
- Satisfying Courtesy Copies to other Providers

# Objectives

- Objective 1: I will show you how we have set up our orders and interfaces to make them easy to order, keep track of outstanding orders, and easily provide lab reports to colleagues and patients.
- Objective 2: Our practice owns a lab. I will show you how we've made it more efficient by minimizing Medicare and insurance write offs and streamlined the order completion process.
- Objective 3: Patient friendly lab reports keep our patients informed, more active in their care plans, and reduce the number of phone calls asking for lab results interpretation.
- Objective 4: I will show you how by investing in the right tools to assist our EMR function to meet the needs of our practice provided an overall savings of time and money.

# The Process

- Providers:
  - Order Tests
  - Map Diagnosis Codes to tests
  - Medical Necessity Checking
  - Provide Patient Demographic Information
- Phlebotomists:
  - Accurate Patient Identification
  - Review Order/Verify Correct Diagnosis
- Mapping:
  - Deal with Insurance Carve Out Rules
  - Obtaining the correct Specimen
  - Label specimens Correctly
  - Send Specimens to the correct lab
  - Get ABN signed
  - Provide completed requisitions to Reference Lab
  - Enter orders in LIS
- Results:
  - Matching Reports to Correct Patient Chart
  - Data Entry to Flowsheets
  - Tracking Result Completion
  - Patient Friendly Reporting
  - Sharing Reports with Colleagues

# The Beauty of Clean Lab Orders and Bi-directional Interfaces.

The screenshot displays a web browser window titled "EMR-Link Orders : FRED TEST - Windows Internet Explorer". The address bar shows the URL: <https://www.emr-link.com/labs/dlg/OrderComplete.aspx?view=agv81hHLXxta66%2byzBwW6p8rGwyM1>. The browser interface includes a menu bar (File, Edit, View, Favorites, Tools, Help), a Favorites bar, and a search bar.

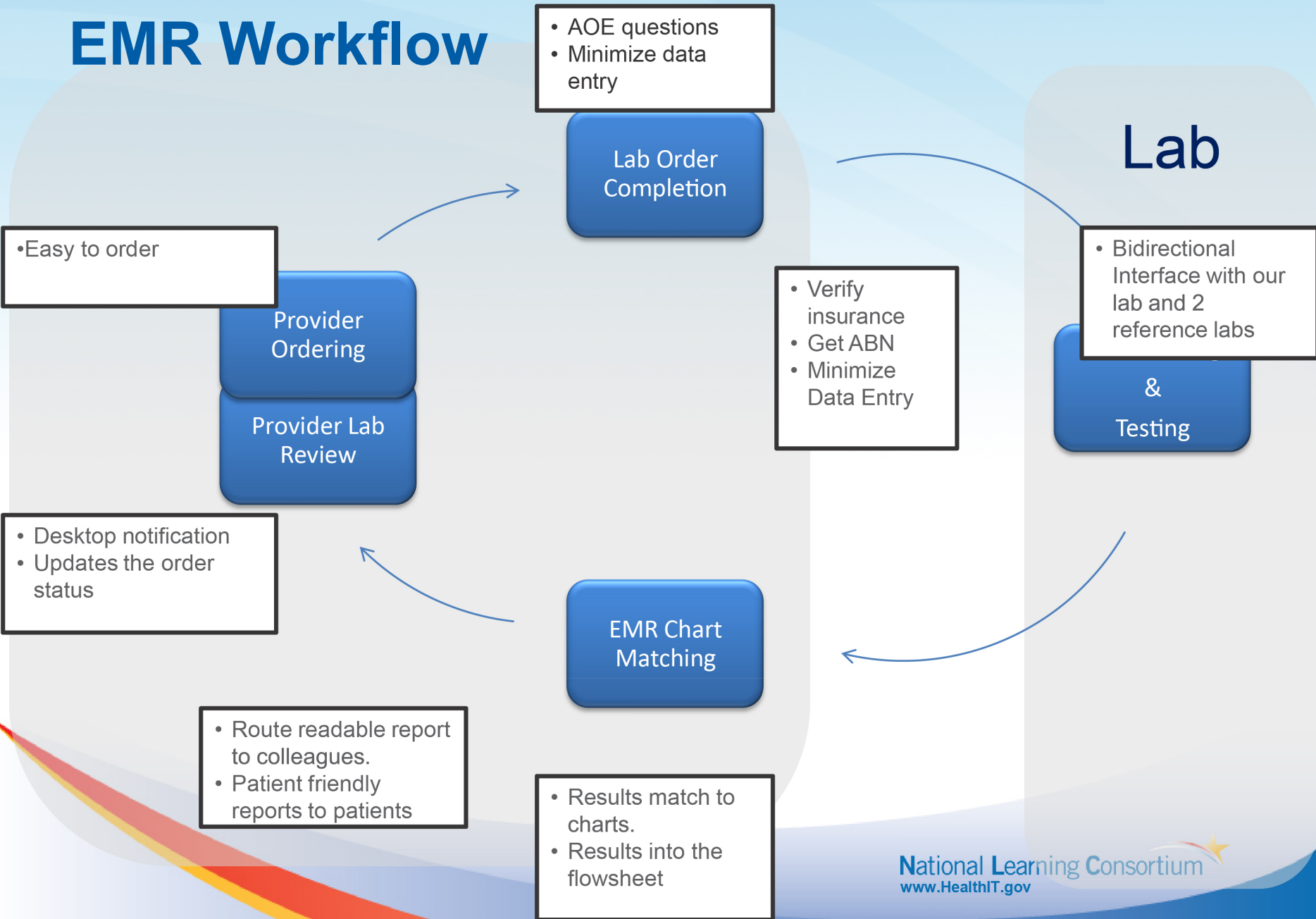
The main content area is divided into several sections:

- Service Provider Information:** Displays the logo for "Internal Medicine of Northern Michigan". The "Service Provider" is set to "IMNM Lab" and the "Account" is "IMNM: LAB".
- Order Details:** Contains a list of tests with their respective codes and prices:
  - COMP MET PANEL [011] Dx: 401.1 (Price: \$45.00)
  - LIPID PROFILE [014] Dx: 401.1 (Price: \$45.00)
  - PSA (Scr) [134] Dx: 401.1 (Price: \$64.00)
  - CBC (with autodiff) [021] Dx: 401.1The "Total Cost Estimation" is \$109.00. Diagnoses are listed as 401.1. The authorizing and owning provider is Terry Jackson DO (ID: 1932106234). A note indicates "(Results are routed to Owning Provider)".
- Printing Options:** Includes buttons for "Print Labels Only", "Print ABN Only", and "Print Options". The "Requisition Printer" and "Label Printer" are both set to "\\IMDC01\Lab". The "# of Labels" is set to 1. There are checkboxes for "Portrait Label" and "Show Print Dialog".

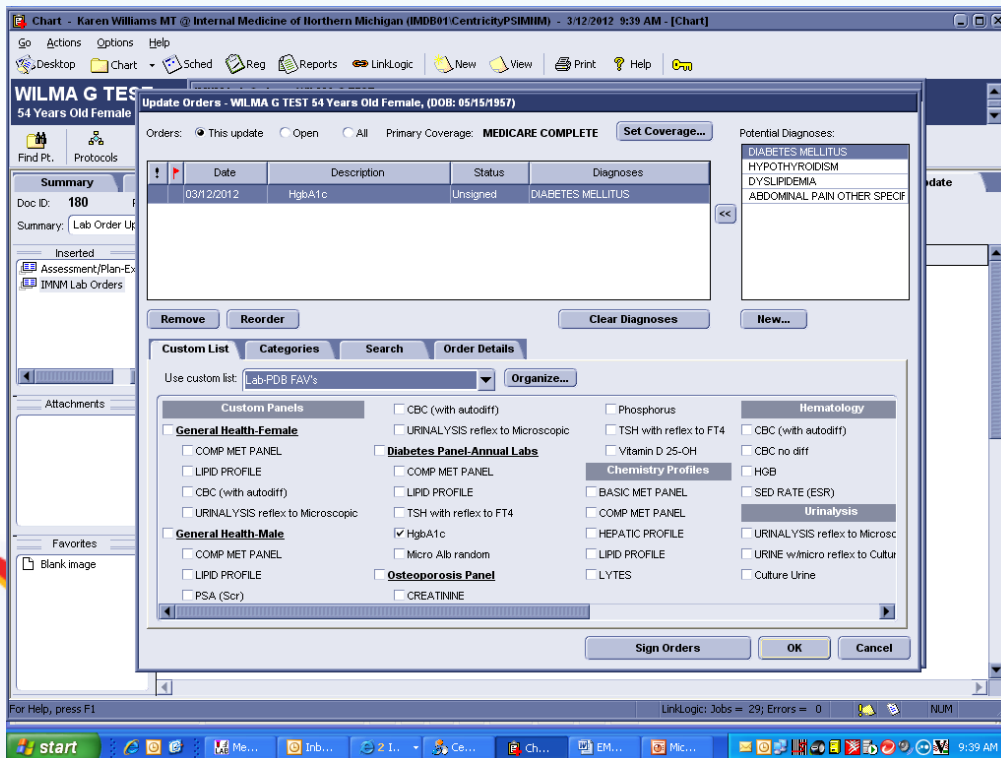
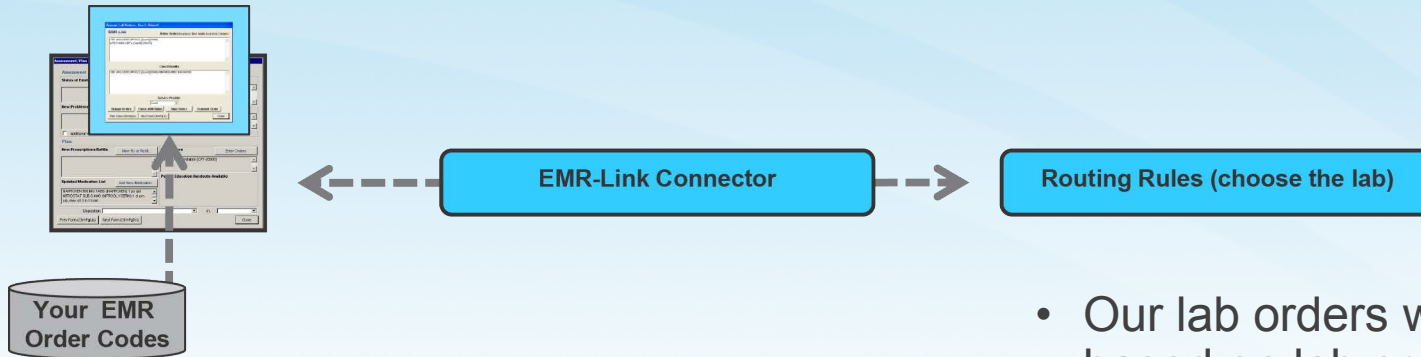
The Windows taskbar at the bottom shows the Start button, several open applications (Me..., Cal..., 3 I..., Ce..., Ch..., EM..., Mic...), and the system tray with the time 3:34 PM. A "Trusted sites" notification is visible in the bottom right corner of the browser window.



# EMR Workflow



# ORDER ENTRY



- Our lab orders were created based on lab order history.
- Our practice created names that made sense to us.
- Custom order lists and order sets are created.
- Created Lab Kits for our lab and reference lab.
- Created Routing Rules.
- Medical Necessity Checking based on Lab Rules.

# Medical Necessity Checking

The screenshot displays the EMR-Link interface for a lab order titled "WILMA G TEST" for a 54-year-old female. The window title is "Chart - Karen Williams MT @ Internal Medicine of Northern Michigan (IMDB01CentricityPSIMIM) - 3/12/2012 9:38 AM - [Chart]". The interface includes a menu bar (Go, Actions, Options, Help) and a toolbar with icons for Desktop, Chart, Sched, Reg, Reports, LinkLogic, New, View, Print, Help, and a key icon. The main content area is titled "IMNM Lab Orders: WILMA G TEST" and features a red warning banner: "There's a problem with the order. See 'Status Information' section for details." Below this, the "Active Orders" section shows "IMNM Labs: 03/12/2012 -- HgbA1c [CPT-83036] (unsigned) (Sent)" with insurance listed as "MEDICARE COMPLETE". The "Status Information" section contains a checked option "Include text translation in Chart Note" and lists two items: "041 -- HgbA1c -- ABN required due to diagnosis (CPT: 83036)" and "041 -- HgbA1c -- ABN may be required due to restrictions (CPT: 83036)". On the left side, there are buttons for "Edit Order...", "PAP Order Completion...", "Sign Order", "View All Requisitions...", and "Add Standing Orders...". An "Internal Note" field is present with an "Include this note in Chart" checkbox. At the bottom, there are buttons for "Prev Form (Ctrl+PgUp)", "Next Form (Ctrl+PgDn)", and "Close". The Windows taskbar at the bottom shows the start button, several open applications, and the system tray with the time "9:38 AM".

# ORDER COMPLETION

- Phlebotomist collects the specimen.
- Completes the order by sending order to lab.
- Labels/Requisition are designed to meet lab specifications.
- ABN are also available for printing

# Reporting Results/Lab to EMR

- Created our results mapping files.
- Created our flowsheet views (based on lab results).
- Mapped Reference Lab Compendium with EMR OBS Terms
- Auto-completion of order in EMR upon provider signature.

# Patient Friendly Reporting

- Create Patient Friendly Lab Reports that inform the patient about their lab tests by including an explanation not just a number.
- Reduce Calls from patients asking what the lab report means.

# HTML Enhanced Results

Viewer: 07/12/2011 - Lab Report: Pap Smear, Cholesterol, HgA1C

Patient name: Martha G. Clancy  
Properties: Lab Report at MHS on 07/12/2011 12:27 PM by Harry S. Winston MD  
Doc ID: 10

Patient: MARTHA CLANCY  
ID: NuLab 110-TEST011  
Note: All result statuses are Final unless otherwise noted.  
Patient Note: Source.....Cervical;Endocervical  
Patient Note: No. of containers..01 CYTC Thin Prep Vial

Tests: (1) Pap Smear (192005)  
Order Note: Clinical Information: DOC ATT CO-CPK2011-8700650

Source: "Result Below..."  
RESULT: Cervical;Endocervical  
Interpretation NIL \*1  
NEGATIVE FOR INTRAEPITHELIAL LESION AND MALIGNANCY.

DIAGNOSIS/CATEGORY NIL  
Negative for Intraepithelial Lesion

Adequacy: ENDO  
Satisfactory for evaluation. Endocervical and/or squamous metaplastic cells (endocervical component) are present.

Clinician provided ICD9:  
V72.31 ; Routine gynecological examination  
V73.81 ; Special screening examination, human papillomavirus [HPV]

Performed by: See report  
Betty Smith, Cytotechnologist (ASCP)

Note: PAFSMR  
The Pap smear is a screening test designed to aid in the detection of premalignant and malignant conditions of the uterine cervix. It is not a diagnostic procedure and should not be used as the sole means of detecting cervical cancer. Both false-positive and false-negative reports do occur.

Test Methodology: IGLPAP  
This liquid based ThinPrep (R) pap test was screened with the use of an image guided system.

### Result Report

Received on: 7/12/2011 9:31 PM

**CLANCY, MARTHA** DOB: 10/12/1962 Ordered by: WINSTON, HARRY  
Patient ID: 110-TEST011 Sex: F Provider ID: hwinston

Lab reference #: 087G9400650

Source.....Cervical;Endocervical  
No. of containers..01 CYTC Thin Prep Vial

Test	Value	Range	Flags	Status
Pap Smear [192005]	Collected on: 7/12/2011 12:27 Resulted on: 7/12/2011 14:38 [1]			
Clinical Information:	DOC ATT CO-CPK2011-8700650			
Source:	Cervical;Endocervical			F
Interpretation	NIL			F
	NEGATIVE FOR INTRAEPITHELIAL LESION AND MALIGNANCY.			
DIAGNOSIS/CATEGORY	NIL			F
	Negative for Intraepithelial Lesion			
Adequacy:	ENDO			F
	Satisfactory for evaluation. Endocervical and/or squamous metaplastic cells (endocervical component) are present.			

- The lab report we already know now includes a link that references the HTML enhanced report format
- It only took a few minutes to configure or “turn on”.
- HTML report stored on EMR-Link server, so no storage requirements.
- Forwarding functionality allows HTML report to be sent securely to a patient or other providers via email message.

# From this to...

Viewer: 03/09/2012 - Lab Report: BASIC METABOLIC, Hgb-A1c

Patient name: **WILMA G TEST**  
Properties: **Lab Report at ALL on 03/09/2012 2:36 PM by Paul D Blanchard MD**  
Doc ID: **178**

Attach

Patient: WILMA G TEST  
ID: MEDCOM 48068  
Note: All result statuses are Final unless otherwise noted.

Tests: (1) BASIC METABOLIC (012)

! FASTING-BMP	YES		
GLUCOSE	[H] 250 mg/dL	70-110	
BUN	15 mg/dL	7-18	
CREATININE	[H] 1.1 mg/dL	0.6-1.0	
BUN/CREATININE	13.6 RATIO	8.0-30.0	
SODIUM	140 mmol/L	136-145	
POTASSIUM	4.5 mmol/L	3.5-5.1	
CHLORIDE	102 mmol/L	98-107	
CO2	25 mmol/L	21-32	
CALCIUM	8.9 mg/dL	8.5-10.1	
GFR (nonblack)	[L] 55 ml/min	>60	
GFR (black)	67 ml/min	>60	

Tests: (2) Hgb-A1c (041)

Hgb-A1c	[H] 7.50 %	4.30-6.10	
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Note: An exclamation mark (!) indicates a result that was not dispersed into the flowsheet.  
Document Creation Date: 03/09/2012 3:25 PM

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(1) Order result status: Final  
Collection or observation date-time: 03/09/2012 14:36  
Requested date-time: 03/09/2012 15:08  
Receipt date-time: 03/09/2012 15:08  
Reported date-time: 03/09/2012 15:09:00  
Referring Physician:  
Ordering Physician: PAUL BLANCHARD MD (pblanchard)  
Specimen Source:  
Source: MEDCOM  
Filler Order Number: 5822753  
Lab site: Internal Medicine of Northern Michigan

Print  Print attached images (External attachments will not print) Close

start Medc... Inbox... 2 In... Centri... 2 M... EMR ... 9:32 AM



# ...THIS!

Centricity Practice Solution Browser:  
https://www.emr-link.com/labs/results/ResultViewer.aspx?rid=LMcq06/8t3mbC1gR/yvNs1S9FJKpKu8q

### Result Report

Received on: 3/9/2012 3:17 PM

**TEST, WILMA**      DOB: 5/15/1957      Ordered by: BLANCHARD MD, PAUL  
Patient ID: 48068      Sex: F      Provider ID: pblanchard

Lab reference #: 5822753

Test	Value	Range	Flags	Status
<b>BASIC METABOLIC [012]</b> Collected on: 3/9/2012 14:36    Resulted on: 3/9/2012 15:09    [1]				
FASTING-BMP	YES			F
GLUCOSE	250 mg/dL	70-110	△ H	F
BUN	15 mg/dL	7-18		F
CREATININE	1.1 mg/dL	0.6-1.0	△ H	F
BUN/CREATININE	13.6 RATIO	8.0-30.0		F
SODIUM	140 mmol/L	136-145		F
POTASSIUM	4.5 mmol/L	3.5-5.1		F
CHLORIDE	102 mmol/L	98-107		F
CO2	25 mmol/L	21-32		F
CALCIUM	8.9 mg/dL	8.5-10.1		F
GFR(nonblack)	55 ml/min	>60	△ L	F
GFR(black)	67 ml/min	>60		F
<b>Hgb-A1c [041]</b> Collected on: 3/9/2012 14:36    Resulted on: 3/9/2012 15:09    [1]				
Hgb-A1c	7.50 %	4.30-6.10	△ H	F

Performing location:  
[1] Internal Medicine of Northern Michigan

start | I.. | E.. | C.. | M.. | E.. | C.. | 4:02 PM

# EMR Link Results Report

**EMR Link**

Print   Print Options   Generate PDF   Forward

### Result Report

Received on: 7/12/2011 9:31 PM

<b>CLANCY, MARTHA</b> Patient ID: 110-TEST011	DOB: 10/12/1962 Sex: F	Ordered by: WINSTON, HARRY Provider ID: hwinston
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Lab reference #: 087G9400650

Source.....Cervical;Endocervical  
No. of containers..01 CYTC Thin Prep Vial

Test	Value	Range	Flags	Status
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**Pap Smear [192005]**   Collected on: 7/12/2011 12:27   Resulted on: 7/12/2011 14:38   [1]  
*Clinical Information: DOC ATT CO-CPK2011-8700650*

Source:	Cervical;Endocervical	F
Interpretation	NIL	F
<b>NEGATIVE FOR INTRAEPITHELIAL LESION AND MALIGNANCY.</b>		
DIAGNOSIS/CATEGORY	NIL	F
<i>Negative for Intraepithelial Lesion</i>		
Adequacy:	ENDO	F
<i>Satisfactory for evaluation. Endocervical and/or squamous metaplastic cells (endocervical component) are present.</i>		

# Patient Friendly Reporting

The screenshot shows a web browser window displaying a patient-friendly lab report. The browser's address bar shows the URL: <https://www.emr-link.com/?params=daBAoMeJtJohHj9GKkpaDPYoB2HgYakbXH84whUL0McPW0KMDGkZtg%3d%3d&p>. The page header includes the logo for Internal Medicine of Northern Michigan and the text "Prepared by Karen Williams MT" and "Ordered by BLANCHARD MD, PAUL on 3/9/2012". The main title is "Result Report".

**Patient Information:**  
Patient: TEST, WILMA  
DOB: 5/15/1957  
Sex: F  
Patient ID: 48068

**Message:**  
Here are your labs from your recent visit on March 9, 2012. Please note my remarks. I would like you to repeat these labs in 3 months. A lab order has been included in this correspondence. Please take that with you when you visit our lab.

**BASIC METABOLIC**  
Collected on: 3/9/2012 14:36  
Resulted on: 3/9/2012 15:09

**GLUCOSE**

Normal range in mg/dL: 70 - 110

Result: 250 High

**Message:**  
Your fasting glucose is still elevated. Please continue your diet and exercise regimen and recheck in 3 months.

**Hgb-A1c**  
Collected on: 3/9/2012 14:36  
Resulted on: 3/9/2012 15:09

Normal range in %: 4.3 - 6.1

Result: 7.50 High

**Message:**  
Your Hgb-A1c is elevated. Please continue your diet and exercise regimen and recheck in 3 months.

The interface includes a Windows taskbar at the bottom with the Start button and various application icons. The system clock shows 4:20 PM.

# Benefits

## Our Providers

- No change to our EMR ordering workflow
- Medical Necessity Checking
- Eliminate Duplicate Ordering
- Allows Standing Order/Future Order Set up
- Auto-completes the lab order status upon signing the result
- Supports all of your labs. EMR-Link routes orders to the correct lab (based on insurance or local rules)

## Our Lab

- Eliminates data entry for the lab order
- Eliminates lab call-backs
- Eliminates chart matching errors when results are returned
- Single connection through EMR-Link to all labs
- Clean and complete orders. Medical necessity validated. ABN generated when required
- Streamlined the Specimen collection process
- Streamlined the Lab reporting process

# Benefits

## To Lab Management

- Reduces or eliminates LIS Management
- Diagnosis updates
- Test Menu changes for reference labs
- Utilization Reporting
- Result Management

## To Our Practice

- Billing Department- reduced time spent correcting orders with missing diagnosis or lacking medical necessity
- Clinical Assistants-Auto completion reduces open order tracking saving valuable time.
- Results automatically enter the flowsheets making reporting for Quality Measure reports a breeze.

# Annual Lab Savings

	Hours	Dollars
Reduction of Data Entry	5760	\$69,120
Fewer Order Errors	288	\$4320
Reduction Correction Medicare Missing Dx	3240	\$38,880
Reduction in LIS Maintenance	24	\$600
Total Savings	9312	\$112,920

- 75% Lab Revenue from Medicare Patients with an average \$45/order
- Clean orders = Reduction in Medicare Write offs saving approximately \$60,000/yr

# Annual Practice Savings

	Hours	Dollars
Lab	9312	\$112,920
Medical Records Matching/Routing Errors	150	\$1,500
Clinical Staff- Result Tracking and Completion	480	\$7,200
Billing-Reduction of Tracking down DX	540	\$6,480
Total Savings	9312	\$128,100

# How you can help?

- Hear from everyone in the practice.
- Encourage practices to ask the tough questions to EMR vendors and do not accept “That is not possible.” response. Tell them what you want and need.
- Be familiar with third party products that can fill in the gaps.
- Be sure that all involved in the set up have a clear understanding of the goal and are all on the same page.