The MIIS:
One Key to Practice Improvement

Using the Massachusetts Immunization Information System to Improve Your Data Quality

Presented by:
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I, Tricia Charles, have been asked to disclose any significant relationships with commercial entities that are either providing financial support for this program or whose products or services are mentioned during this presentation.

I have no relationships to disclose.

I may discuss the use of vaccines in a manner not approved by the U.S. Food and Drug Administration, but in accordance with ACIP recommendations.
OBJECTIVES FOR TODAY

THE MIIS
- OVERVIEW
- MIIS PROGRESS REPORT
- LEGISLATION, REGULATIONS AND COMPLIANCE TIMELINE
- EVIDENCE-BASED STRATEGIES FOR IMPROVING VACCINATION RATES AT THE PRACTICE LEVEL - HOW THE MIIS CAN HELP IMPROVE VACCINATION RATES

HOW WELL DO YOU KNOW YOUR DATA?
- WHAT IS DATA QUALITY?
- REAL LIFE DATA QUALITY CONCERNS
- HOW CAN THE MIIS HELP?
- SO YOU THINK YOU HAVE DATA QUALITY ISSUES

FINAL THOUGHTS
- ENHANCEMENTS – COMING SOON!
When our body is infected with a virus or bacterium, our immune system will identify, target and often prevent the invading organism from flourishing and making us ill.

While our biological immune system fights off infections to keep us healthy, our nation is also defending against disease outbreaks and keeping us as a population protected. Our nation’s immune system, however, is not biologic, it is electronic and it has a name: Immunization Information System (IIS).

http://shotofprevention.com/tag/immunization-information-system/
1. THE MIIS

OVERVIEW
Overview – For a single patient

MIIS

Vital Records

Adult Provider

Pharmacy

Pediatric Records

School & College
Overview

- Secure, confidential web-based system capable of electronic data exchange and direct data entry
- Consolidates immunization records over lifespan
- Assists providers with clinical decisions
  - Helps identify due or overdue immunizations
  - Prevents over/under immunization
- Includes practice management tools
  - Patient immunization and vaccine usage reports
  - Tracks over 3.2 million doses of vaccine distributed by MDPH annually
- Provides infrastructure for tracking essential information during public health emergencies
48,668,309
Total Shots in the MIIS

6,413,969
Total Patient Records in the MIIS

2,280
Total Provider Sites Live with the MIIS!
MIIS Progress Report - Data over time…

2011
- Sites: 9
- Patients: 3,902
- Shots: 69,505

2012
- Sites: 55
- Patients: 815,928
- Shots: 3,371,434

2013
- Sites: 341
- Patients: 1,539,629
- Shots: 7,303,293

2014
- Sites: 532
- Patients: 2,370,194
- Shots: 13,597,285

2015
- Sites: 1,121
- Patients: 4,427,623
- Shots: 33,334,571

2016
- Sites: 1,970
- Patients: 5,770,424
- Shots: 40,464,697

2017
- Sites: 2,238
- Patients: 6,324,789
- Shots: 47,534,720

2018*
- Sites: 2,280
- Patients: 6,413,949
- Shots: 48,668,309

*As of March 2018
3. THE MIIS

LEGISLATION, REGULATION, COMPLIANCE TIMELINE
Legislation

• Legislation passed in June 2010, charging MDPH to establish an immunization registry (M.G.L. c. 111, s.24M)
• Mandatory reporting of all immunizations administered in MA
• Provider’s Duty to Inform patients about the MIIS
• Patient’s Right to Object to Data Sharing across providers

Regulations

The purpose of 105 CMR 222.000 is to facilitate and promote the use of the Massachusetts Immunization Information System (MIIS) to help improve immunization coverage among all individuals in the Commonwealth.

105 CMR 222.000 outlines requirements including (but not limited to):
- Data elements to be reported
- Timeliness of reporting
- Duty to inform patients
- Patient right to object to sharing data
- System access and confidentiality

Compliance Timeline

• As of today, all providers should be reporting to the MIIS.
5. Evidence Based Strategies

How the MIIS can Help Improve Vaccination Rates
Evidence-Based Strategies to Increase Immunization Rates

What Providers Can Do:

- Assess and vaccinate at every visit
- Standing Orders
- Immunization Champion
- Assessment and feedback
- Use reminder/recall systems

TASK FORCE ON COMMUNITY PREVENTIVE SERVICES RECOMMENDATIONS

www.thecommunityguide.org/vaccines/index.html
5. HOW WELL DO YOU KNOW YOUR DATA?

WHAT IS DATA QUALITY?
Data quality refers to the condition of a set of values of qualitative or quantitative variables.
When is Data of High Quality?

Data are of high quality if they are “Fit for Use” in their intended operational, decision-making and other roles.
Who Does Poor Data Quality Impact?

EVERYONE!

➢ Every Patient
➢ Provider Practices
➢ State/Local levels
➢ National level
Two Types of Data Quality Issues

Clinical Data Quality

- Data entry errors
- Missing data
- Internal workflow errors

Technical Data Quality

- Mis-mapped data
- Missing data
- EHR limitations
5. HOW WELL DO YOU KNOW YOUR DATA?

REAL LIFE DATA QUALITY CONCERNS
Scenario:
Nurse Jane has administered Hepatitis B and HPV vaccine to a 20 year old patient.

She enters the vaccine information into the patient’s record in her EHR.

There is a list of vaccines to choose from. Jane is unsure which one to pick, so she picks something that looks about right - Hep B peds and HPV (state supplied).
Clinical Data Quality – Data Entry Errors

What has actually occurred

Jane selected a pediatric Hepatitis B vaccine in the EHR, but she administered an adult Hep B shot.

The HPV vaccine she administered is privately purchased, not state-supplied.
Clinical Data Quality – Data Entry Errors

**Downstream effects:**
The patient record is incorrect in your \textit{EHR}.
This can cause issues:
- If the patient ever has an adverse event
- If the vaccine administered or recorded is recalled
- Patient’s immunization record could be considered incomplete or not valid (NV)
Clinical Data Quality – Data Entry Errors

Downstream effects:
The patient record is incorrect in the **MIIS**. This can cause issues:

- This is showing as an incorrect immunization on a patient record
- If the vaccine administered or recorded was recalled the MIIS would not recognize (or incorrectly recognize) this patient as needing a revaccination (if required)
- Patient immunization record could be considered incomplete or Not valid
- Could effect the forecasting for this patient and forecast for additional doses causing over immunizing and unnecessary additional costs to the state or provider site
- Interferes with vaccine accountability/decrementing for your vaccine manager

**This is flagged in the MIIS Vaccine Management Module as fraudulent use of federally funded vaccine and your practice could be required to pay restitution for administering VFC vaccine to an adult**
Clinical Data Quality – Data Entry Errors

How to avoid these issues:

- Educational moment for staff about vaccines and the nuance between vaccines in the same vaccine group
- Opportunity to clean up data tables in your EHR
- Vaccine Manager/Medical Director should work closely with staff to discuss VFC guidelines and the differences between state supplied and privately purchased vaccines

“Success is in the details.”

Anonymous
Scenario:
Your site has successfully completed onboarding, and you are now live with the MIIS!

Your EHR has a button that must be pressed by the clinician in order for each patient immunization administration to be sent to the MIIS.

Your practice has been trained to press this button as part of the MIIS workflow. However, new habits can be hard to start and there has been some staff transition since the training and not everyone is pressing the button that submits the records to the MIIS.
Clinical Data Quality – Missing Data

What has actually occurred

Only 80% of records are being sent to the MIIS
Clinical Data Quality – Missing Data

**Downstream effects:**

Because only 80% of patient immunizations are being sent to the MIIS:

- Your site is out of compliance with state legislation that outlines all vaccines must be reported to the MIIS.
- Reports run from the MIIS for your practice will be inaccurate (including coverage reports, reminder recall, patients vaccinated etc…)
- AFIX quality assurance reviews will be impacted as MIIS Coverage reports are utilized for these calls.
- Vaccine inventory will be off and will cause reconciliation difficulties for your practice’s vaccine manager.
Clinical Data Quality – Missing Data

**Downstream effects:**
The patient records are incorrect in the *MIIS*. This can cause issues:

- If the vaccine administered or recorded was recalled the MIIS would not recognize these patients as needing a revaccination (if required)
- Patient immunization records could be considered incomplete or not valid
- Patient records in the MIIS will be missing important vaccination information that will have a negative impact on provider clinical decision support
- May lead to over immunizing patients and lead to extra costs for the state or medical providers
How to avoid these issues:

Clinical Champions should ensure that periodic re-trainings are implemented via all staff meetings, emails, or one on one check-ins

MIIS workflows are incorporated into new hire orientation process

Clinician’s can perform a shot count comparison by receiving an automated HL7 weekly summary from the MIIS against their EHR to make sure that all vaccination events are being sent
Clinical Data Quality – Internal Workflow Errors

Set Up:

Your practice/organization consists of multiple locations. The MIIS assigns your sites individual PIN’s for more accurate reports and tracking purposes.

Often physicians work at more than one location week to week.

The EHR triggers patient immunization events to the MIIS once a physician has signed off on a patient's record.
MIIS Adult Medical Group

Shared data in EHR systems

MIIS Adult Locations

- MIIS Adult – Location A
- MIIS Adult – Location B
- MIIS Adult – Location C

MIIS Receives Data

- MIIS Adult – Location A
- MIIS Adult – Location B
- MIIS Adult – Location C
Clinical Data Quality – Internal Workflow Errors

Scenario:

On Monday, Dr. Jones administered an HPV vaccine to Patient A at Location A.

On Tuesday, Dr. Jones works at Location B. He then logs into the EHR and selects Location B as his logged in location and reviews and signs off on Patient A’s record.
Clinical Data Quality – Internal Workflow Errors

What has actually occurred:

Patient A’s immunization event has been sent to the MIIS as being administered at Location B.
Clinical Data Quality – Internal Workflow Errors

Downstream effects:

Patient A’s record is not associated as a patient at Location A and therefore will not appear on Location A’s reports (ex. Coverage reports, Reminder Recall, Practice population report etc…)

Vaccine inventory will likely be off at both locations! Will cause reconciliation difficulties for your practice’s vaccine managers.
Clinical Data Quality – Internal Workflow Errors

How to avoid these issues:

◇ Physicians will need to ensure that they are logging in at the site in which the patients were seen. This is typically a drop down selection upon logging into the EHR.

◇ Vaccine Manager should monitor any discrepancies in their vaccine usage and quickly address the issue with staff.

◇ Clinician’s can do a shot count comparison by receiving an automated HL7 weekly report from the MIIS against their EHR to make sure that all vaccination events are being sent.
Technical Data Quality – Mis-mapped data

**Scenario:**
Your practice has been live with the MIIS for a couple of years. You recently undergo an EHR upgrade. During the upgrade many technical things are happening in the background of your EHR and sometimes unforeseen changes occur.
Technical Data Quality – Mis-mapped data

What has actually occurred

In this scenario, all the patients who were immunized with Tdap are being sent over to the MIIS as being immunized with Anthrax
Technical Data Quality – Mis-mapped data

**Downstream effects:**
The patient record is incorrect in the MIIS. This can cause issues:

- This is showing as an incorrect immunization on a patient record
- If the vaccine administered or recorded was recalled the MIIS would not recognize (or incorrectly recognize) this patient as needing a revaccination (if required)
- Patient immunization record could be considered incomplete or Not valid
- Could effect the forecasting for this patient and forecast for additional doses causing over immunizing and unnecessary additional costs to the state or provider site
- Interferes with vaccine accountability/decrementing for your vaccine manager
Technical Data Quality – Mis-mapped data

How to avoid these issues:

◇ Perform quarterly data review checks this will help to catch any issues quickly
Technical Data Quality – Missing data

**Scenario:**
Your practice is looking for ways to improve immunization coverage.

You run a coverage report from the MIIS. You notice that your coverage report is showing erratic rates; some vaccines are very high and some are very low. You know that your practice takes pride in their high immunization rates and you feel that what you are seeing can not be correct.
Technical Data Quality – Missing data

What has actually occurred:

After some research it has been discovered that during your onboarding with the MIIS your site sent over a historical load of data but your EHR vendor missed certain data and many shots didn’t get sent with the historical load.
Technical Data Quality – Missing data

**Downstream effects:**

◇ Reports run from the MIIS for your practice will be inaccurate (including Coverage reports, reminder recall, patients vaccinated etc…)
◇ Patient immunization records could be considered incomplete or Not valid
◇ Patient records in the MIIS will be missing important vaccination information that will have a negative impact on provider clinical decision support
◇ May lead to over immunizing patients and lead to extra costs for the state or medical providers
Technical Data Quality – Missing data

How to avoid these issues:

◇ Perform quarterly data review checks. This will help to identify any issues early
◇ Use the MIIS to run reports that monitor patient information (Coverage Reports, Practice Population, Patient Vaccinated etc…)
Technical Data Quality – EHR limitations

Limitations:

The following are real limitations for various EHR's:

◇ Cannot send funding source (state vs privately funded)
◇ Cannot send historical data or limited amount of historical data
◇ Cannot trigger immunizations automatically (requires manual trigger)
◇ Cannot subdivide data by site location
◇ Cannot send deletes
◇ Cannot filter baby names
◇ Shots may not trigger – based on patient encounter type
◇ Cannot send real-time data
◇ No alert system or monitor in place if the feed to the MIIS stops sending data
Technical Data Quality – EHR limitations

What has actually occurred:

◇ Cannot send funding source – **Vaccine inventory will not decrement**

◇ Cannot send historical data or limited amount of historical data – **incomplete patient records, inaccurate forecast, inaccurate reports**

◇ Cannot trigger immunizations automatically (requires manual trigger) – **relies on clinician to send immunizations – not 100% reliable**

◇ Cannot subdivide data by site location – **multiple sites in an organization, all patient data will be sent as one location. Vaccine inventory will not decrement correctly, patient reports will be inaccurate**
Technical Data Quality – EHR limitations

What has actually occurred:

◇ Cannot send deletes – If your site deletes an immunization in their EHR they will also need to log into the MIIS and manually delete these shots
◇ Cannot filter baby names – A site can not go live with the MIIS if they are unable to filter out baby names (ex. Baby Smith)
◇ Shots may not trigger – based on patient encounter type – if a patient is seen outside of a well visit, the encounter type will not send the information to the MIIS
◇ Cannot send real-time data – patient information will not be visible in the MIIS in real-time. Will affect being able to print out certificates for your patients during point of care.
◇ No alert system or monitor in place if the feed to the MIIS stops sending data – Data from your practice is not getting to the MIIS leaving patient records incomplete.
Technical Data Quality – EHR limitations

How to avoid these issues:

◇ Be an active participant in the MIIS roll-out process
◇ Ask questions!
◇ Know your EHR
◇ Many EHRs can fix these limitations if their paying customers request change!
6. HOW WELL DO YOU KNOW YOUR DATA?

HOW CAN THE MIIS HELP?
Use the MIIS!

The MIIS can help as a data review tool for your EHR. The more you use the MIIS the better it will work for you!
## Reports

<table>
<thead>
<tr>
<th>Report Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Coverage Reports</td>
<td>Allows you to assess the coverage for your practice</td>
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<tr>
<td>Invalid Dose</td>
<td>Provides output of immunizations the MIIS deems invalid</td>
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<tr>
<td>Patients Vaccinated</td>
<td>List of patients you have vaccinated</td>
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<tr>
<td>Practice Population</td>
<td>List of your patients that are considered active status at your practice</td>
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<tr>
<td>Reminder / Recall</td>
<td>Letters, postcards or mailing labels of patients due or overdue for immunizations</td>
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<tr>
<td>System Usage Dashboard</td>
<td>Dashboard to provide you more information about your practice’s data, users &amp; patients</td>
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<tr>
<td>Data Quality Dashboard</td>
<td>Dashboard scores your data on timeliness, accuracy and completeness</td>
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<tr>
<td>Inventory Decrementing Tool</td>
<td>Tool displays any shots reported to the registry that have no decremented from your inventory</td>
</tr>
</tbody>
</table>
7. HOW WELL DO YOU KNOW YOUR DATA?

SO YOU THINK YOU HAVE DATA QUALITY ISSUES…
So You Think You Have Data Quality Issues?

❖ **Right Now**
- Perform a data review check
- Review Inventory Decrementing Tool
- Call the MIIS Helpdesk to request to receive weekly HL7 Summary email
- Understand your EHR and its limitations (if any)
- Once problems have been identified, reach out to your EHR vendor to explain the issues

❖ **Ongoing**
- Perform a data review check quarterly
- Review HL7 Summary email each week
- Establish a relationship with your IT department or your EHR vendor
## Data Quality Checks in MIIS Production

### Instructions
1. Log into the MIIS through the Virtual Gateway.
2. Click the Immunization Registry Module.
3. Search for the patient in the MIIS. Click on the patient name to open up the record in the MIIS.
4. Compare the patient record in the MIIS to the record in your electronic system.
5. Record the requested information for each patient checked. Indicate "yes" if information matches. Please remember to give vaccine details on any discrepancies or missing information.
6. Send completed worksheet to the MIIS Help Desk by Fax to: (617) 983-4301 **Please call the MIIS Help Desk (617-983-4335) prior to sending the fax.**

### MIIS module and where to find data is listed here:

<table>
<thead>
<tr>
<th>MIIS module</th>
<th>Immunization Registry Module: Patient Demographics</th>
<th>Immunization Registry Module: Immunization Tab</th>
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</thead>
<tbody>
<tr>
<td>EHR MRN#</td>
<td>Patient ID#</td>
<td>Patient Last Name</td>
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### Example Data:

<table>
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<tr>
<th></th>
<th>EHR MRN#</th>
<th>MIIS ID#</th>
<th>Patient Last Name</th>
<th>Patient record found in MIIS (Y/N)</th>
<th>Verified Patient Demographics (gender, race, phone, email, insuror, VFC eligibility)</th>
<th>Verified Patient Address and address type (home, mailing etc.)</th>
<th>Verified Caregiver (guardian) and Caregiver Address</th>
<th>Administered vaccines found in MIIS? (Y/N) If missing, please give vaccine name and date.</th>
<th>All details of Immunizations correct in MIIS (dose, route, admin by etc.)? If a &quot;No&quot; is indicated in any previous column, please list the imm details that are incorrect or missing, (vaccine, date of admin and/or description of fields that do not match for each shot).</th>
<th>&quot;Entered from Inventory&quot; checkbox checked* for a vaccine currently in your inventory (Y/N)</th>
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<tr>
<td>1</td>
<td>Example: XXXXX</td>
<td>XXXXX</td>
<td>Doe</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N - DTAP given 12/12/15 missing</td>
<td>Y</td>
<td>N - Hep B 7/1/15: Site of Admin in MIIS is Left Arm, it should be Right Arm</td>
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8. FINAL THOUGHTS

ENHANCEMENTS COMING SOON!
General UI Improvements

★ More contrast on screen
★ Increased font size
★ Improved performance
★ Re-designed navigation
★ Improve usability
★ Continue improvements through 2019 - including School module, Immunization Registry and remaining Vaccine Management module.
Vaccine Management Module

Storage & Handling Problem

★ New wizard layout for improved usability

★ Consolidated workflow - integrated returns!
Vaccine Management Module

New Orders & Transfers

★ New wizard layout for improved usability
★ Simplistic design
★ Suggested dose amounts to reduce time it takes to complete an order
Need Help?

MIIS HelpDesk
Phone: 617-983-4335

Email: miishelpdesk@state.ma.us

Hours: Monday – Friday: 8:00am – 5:00pm
Questions?