Improving Immunization Data Exchange Interface in Wisconsin

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Wisconsin Department of Health Services

SHINE Strengthening Health Systems through Interprofessional Education

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Wisconsin Immunization Registry (WIR)

- Wisconsin's IIS established in 1999
- Serves healthcare providers across Wisconsin
- 15,870 active users and 3,275 participating providers as of March 2016
- Voluntary immunization reporting for children and adults
- Requires Vaccines for Children Program (VFC) providers to use WIR

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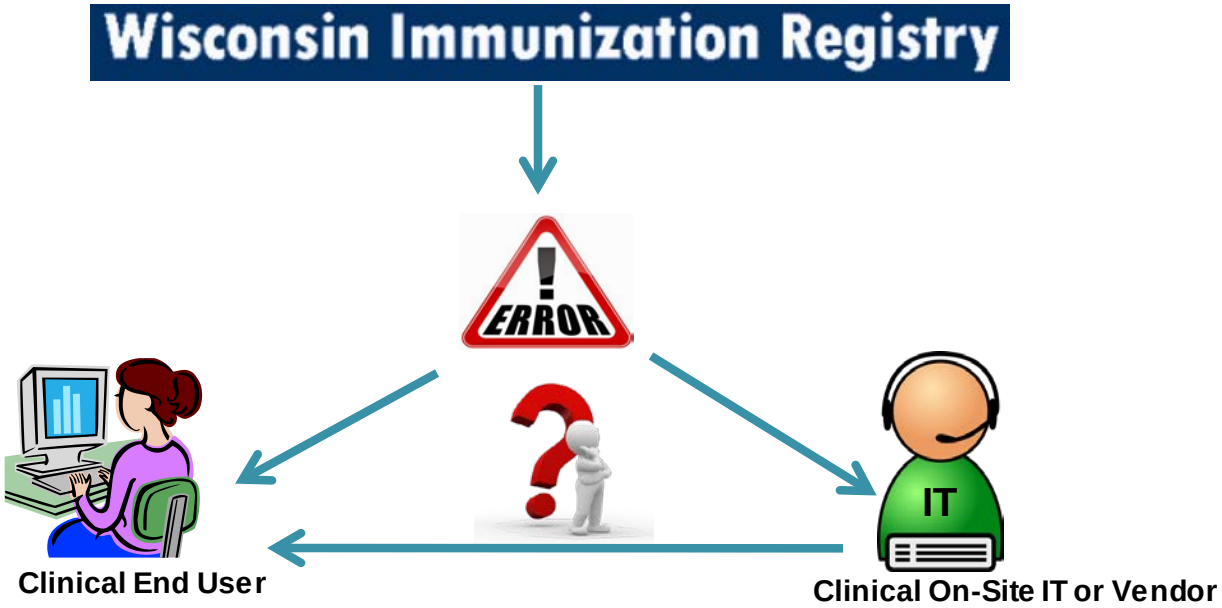
Problems

- Healthcare providers do not always respond to reported errors within ACKs from WIR in a timely manner
  - Who receives and resolves error messages? On-site IT staff or vendor? Or clinical EHR end users?



Problems

- Challenges identifying potential factors contributing to data quality issues
  - Human errors
    - Typos in data entry
    - Inconsistent documentation
  - Technical errors
    - Incompatible data submission format
    - Message content lost in processing

Objectives

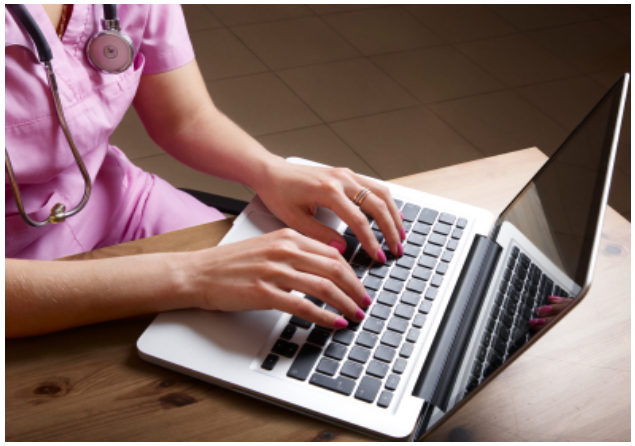
- To identify potential data interface and workflow challenges that compromise data exchanged between EHRs and Wisconsin's IIS
- To address these challenges with immediate and long-term solutions to improve data exchange and end user experience

Methods

- Step 1: Prepared a questionnaire
  - Patient-related
  - Vaccine-related
    - Administered and historical immunizations
  - Data submission format
  - Clinical workflow
- Step 2: Reached out to providers
- Step 3: Conducted on-site interviews
  - Nurses, Nurse Managers, Inventory Coordinators
  - IT Managers, System Analysts, Clinical Specialists, Trainers

Key Findings - Workflow Challenges

- Inconsistent documentation practices
  - Pre-documenting vaccines prior to appointments
  - More common among larger multiple-site facilities
- Not collecting and/reporting certain fields due to confusion
  - Funding source (VFC) and dose eligibility

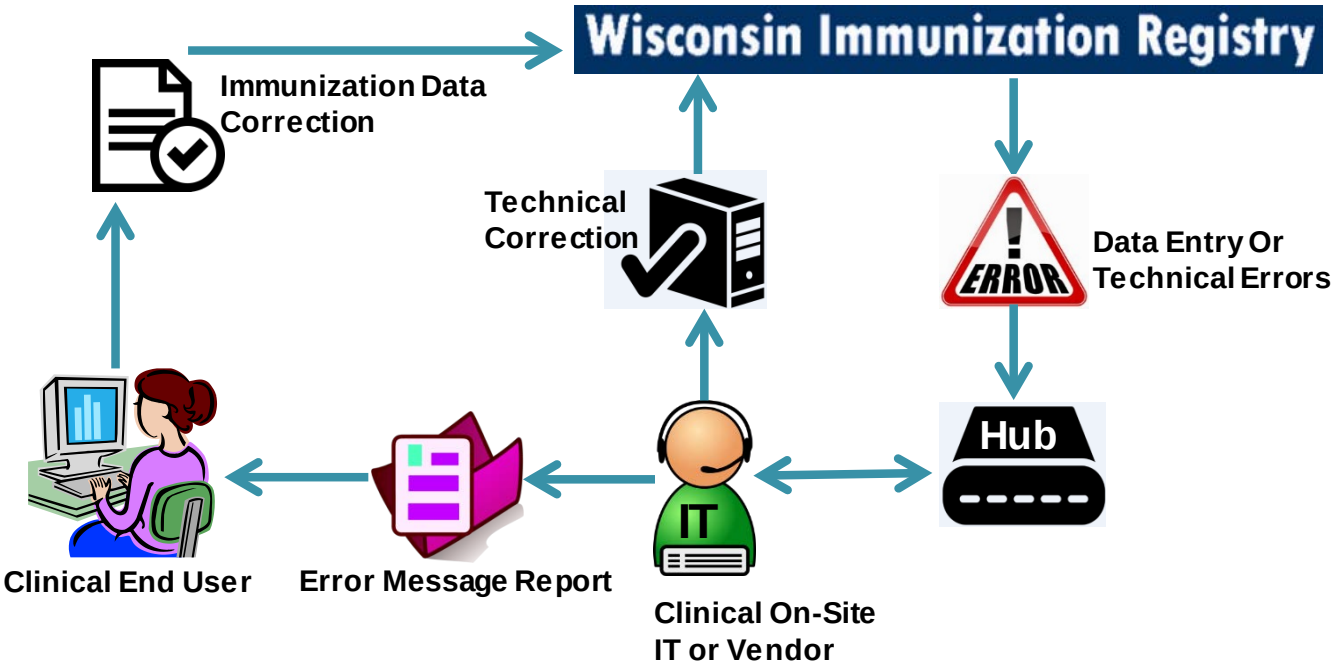


Key Findings – Interface Challenges

- WIR does not always accept immunization data in the format built in EHRs
  - EHRs accept non-conventional names
    - “Baby Smith”, “T”, and “K.”
  - WIR considers one-letter first and last names, and non-conventional names as inaccurate entries
- Vendors are not always familiar with WIR
  - Core/optional data elements of WIR
- Various pathways for handling error messages from WIR

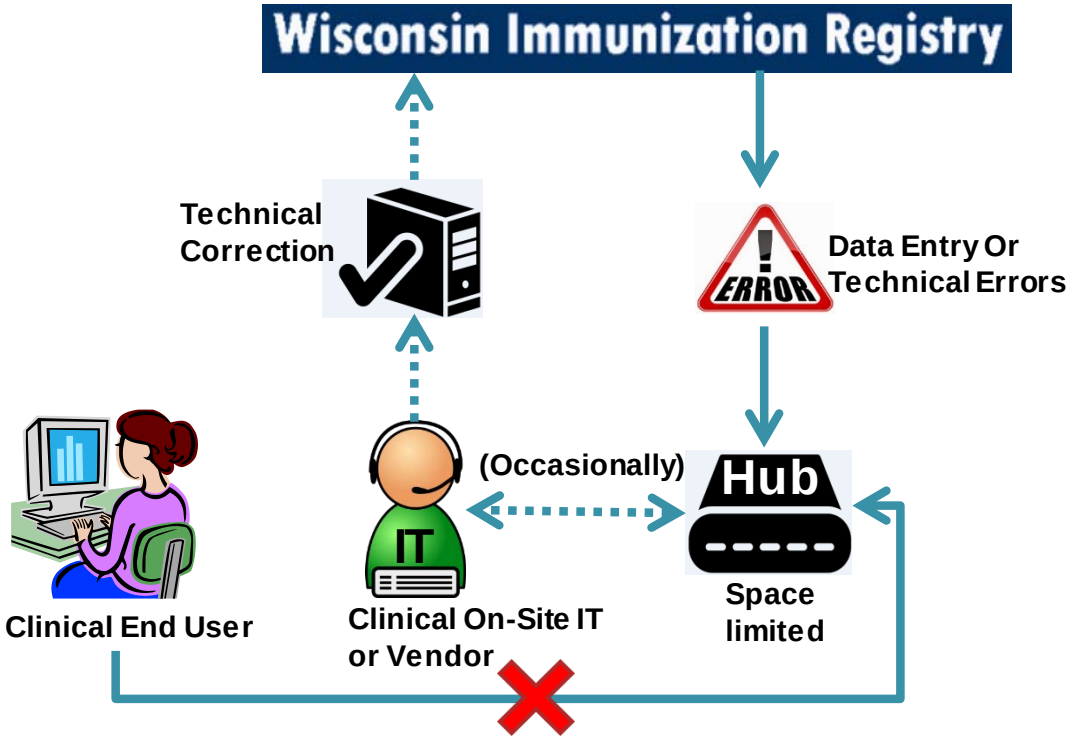
Interface Challenges – Various Pathways for Handling Error Messages

- **Scenario 1:** Functional pathway relays error messages (most common)
  1. Establish a hub to routinely receive error messages
  2. Clinical IT application staff or vendor gets access, translates and reports error messages to clinical EHR end users for data correction. If technical errors, IT or vendor directly resolves them.
  3. EHR end users submit correction or updates to Wisconsin IIS
  4. Errors in immunization records are resolved



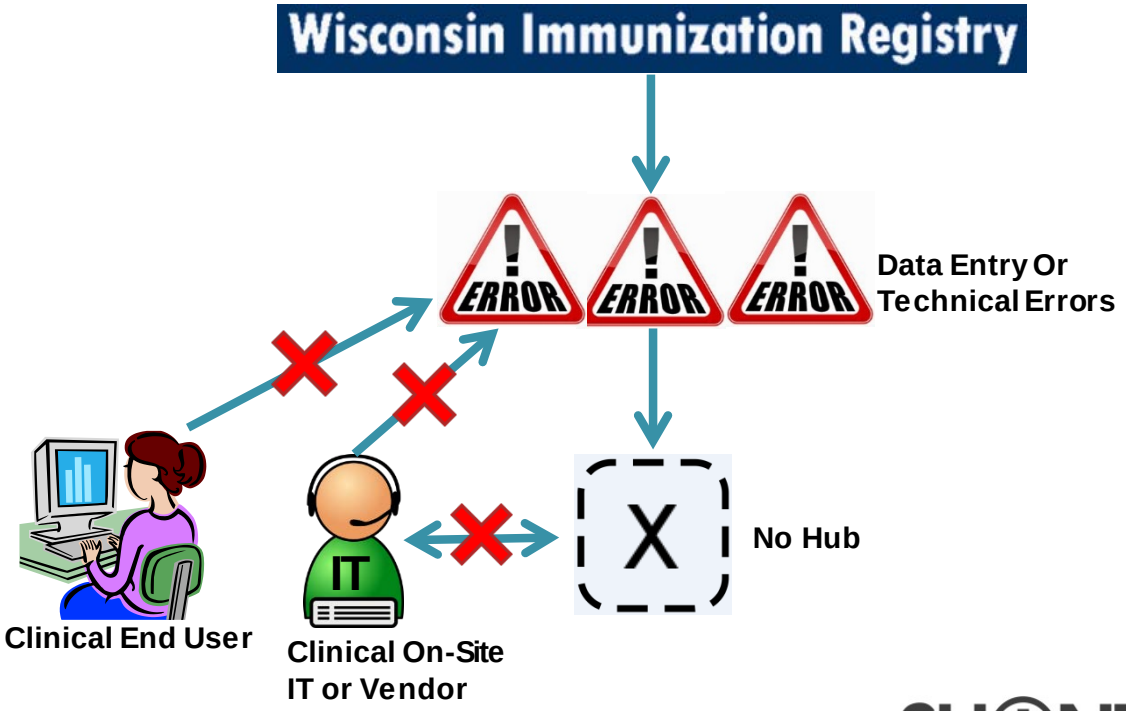
Interface Challenges – Various Pathways for Handling Error Messages

- **Scenario 2:** A space-limited working hub to receive error messages
  - IT staff or vendor checks error messages on and off and attempts to resolve errors
    - Hub may delete messages before being opened and read by IT
  - Clinical EHR end users have no access to the hub



Interface Challenges – Various Pathways for Handling Error Messages

- **Scenario 3:** IT staff or vendor doesn't know it is their responsibilities to collect, translate, and report the error messages to clinical EHR end users
  - Willing to perform this task
- **Scenario 4:** IT staff or vendor perceives it is **not** their responsibilities to receive, interpret, and report the error messages to clinical EHR end users



Immediate Solutions

- Extend in-person WIR user training to EHR end users
  - Reinforce the importance of following consistent documentation practices and standard data entry
- Host quarterly webinars
  - Address data exchange interface or data quality concerns
- Continue to apply and utilize provider report cards and watch tool
  - Monitor providers' reporting performance

Immediate Solutions – Current Efforts

- In early 2015, WIR implemented a provider report card to:
  - Examine data quality and evaluate provider reporting performance
  - Allow providers to assess their timeliness, completeness, and accuracy

Dose Timeliness

Indicates the delay between the date an immunization was given and when it was added to WIR.

Immunizations given during assessment period: **181**

Timeframe Received	Count	Percentage
Within 1 day	169	93.37%
2-7 days	3	1.66%
8-14 days	0	0.00%
15-30 days	9	4.97%
31+ days	0	0.00%

Data Completeness (Immunizations)

Indicates the data included with each immunization record aded to WIR.

Immunizations given during assessment period: **181**

Data Field	Count	Percentage
Vaccine Product Type Administered	181	100.00%
Vaccine Administration Date	181	100.00%
Vaccine Manufacturer Name	174	96.13%
Vaccine Trade Name	174	96.13%
Vaccine Lot Number	174	96.13%
Vaccine Expiration Date *	174	96.13%
Vaccine Dosage	174	96.13%
Vaccine Site of Administration	154	85.08%
Vaccine Route of Administration	170	93.92%
Vaccine Ordering Provider Name	174	96.13%
Vaccine Administering Provider Name	170	93.92%
Vaccine Administering Provider Title/Suffix	167	92.27%
Dose Level Eligibility	174	96.13%

* Only immunizations entered using the WIR Inventory Module retain this data.

Data Completeness (Patients)

Indicates the data currently available on each patient updated during the assessment period.

Clients updated during assessment period: **216**

Data Field	Count	Percentage
Patient Name: Last	216	100.00%
Patient Name: First	216	100.00%
Patient Name: Middle	135	62.50%
Mother's Maiden Last Name	109	50.46%
Mother's First Name	119	55.09%
SSN	161	74.54%
Gender	216	100.00%
Birth Date	216	100.00%
County	209	96.76%
Country of Birth	216	100.00%
Chart Number	35	16.20%
Ethnicity	198	91.67%
Race	177	81.94%
Provider-PCP	6	2.78%
Responsible Person: Primary Designated *	18	8.33%
Responsible Person: Last Name	207	95.83%
Responsible Person: First Name	206	95.37%
Responsible Person: Middle Name	98	45.37%
Responsible Person: Phone	192	88.89%
Responsible Person: E-mail	18	8.33%
Responsible Person: Address/P.O. Box	210	97.22%
Responsible Person: City	211	97.69%

* WIR uses the address of the primary responsible person for each patient as the contact address for that patient. If no primary responsible person is designated, WIR selects one using the best information available

Discontinued Vaccines

Indicates counts of immunizations administered during the reporting period that have been discontinued.

Vaccine	Count

Invalid Doses

Indicates doses administered outside of schedule recommendations during the assessment period. Unless otherwise determined, clients follow the ACIP schedule. A single dose that is invalid for multiple reasons will only count once under the 'total' column.

Vaccine Group	Age	Interval	Group	Size	Other	Total	Count	Percentage
HepB	1	1	0	0	0	2	22	9.09%

Unexpected Doses

Indicates specific immunization cases which may be valid, but should not occur frequently.

Case	Count	Total	Percentage

VFC

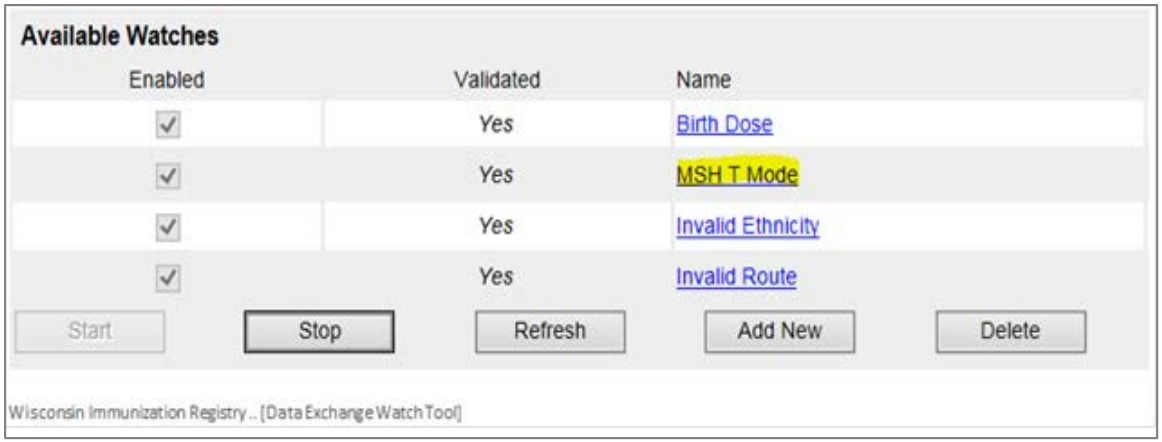
Indicates counts of patients eligible for VFC (Vaccines for Children) and other programs. Individual patients may have more than one eligibility.

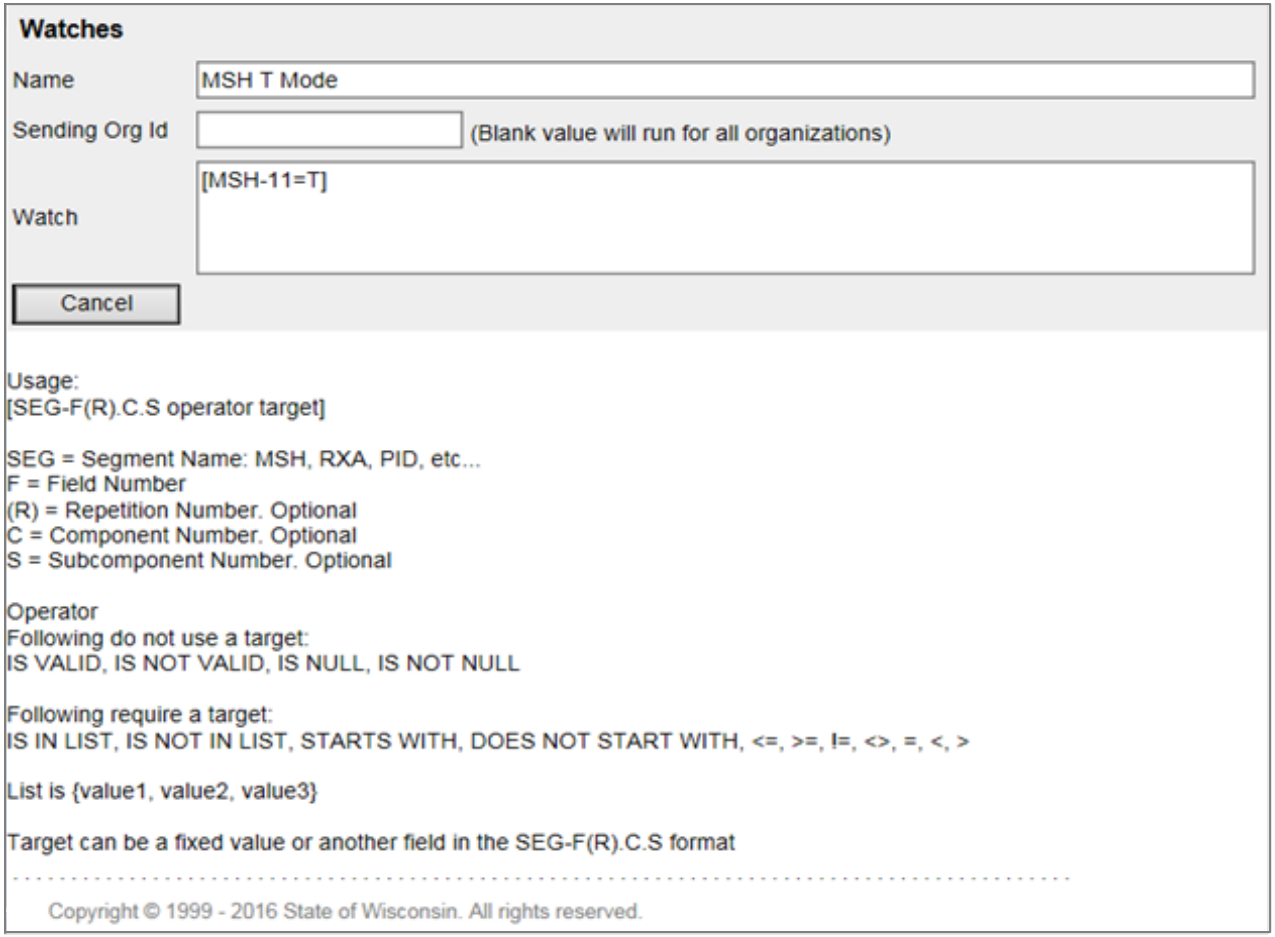
Patients aged 18 years or younger during assessment period: **82**

Eligibility	Count	Percentage
Not Determined/Unknown	3	3.66%
Insured	8	9.76%
No Insurance	34	41.46%
Native American/Alaskan Native	0	0.00%
Badger Care	8	9.76%
Medicare	0	0.00%
Medical Assistance	31	37.80%
Insurance, No vaccine	3	3.66%

Immediate Solutions – Current Efforts

- WIR has an ongoing monitoring system called watch tool
  - Monitor and assess unprocessed immunization data as they are submitted




Watches
Name
MSH T Mode
Sending Org Id
(Blank value will run for all organizations)
Watch
[MSH-11=T]
Cancel
Usage:
[SEG-F(R).C.S operator target]
SEG = Segment Name: MSH, RXA, PID, etc...
F = Field Number
(R) = Repetition Number. Optional
C = Component Number. Optional
S = Subcomponent Number. Optional
Operator
Following do not use a target:
IS VALID, IS NOT VALID, IS NULL, IS NOT NULL
Following require a target:
IS IN LIST, IS NOT IN LIST, STARTS WITH, DOES NOT START WITH, <=, >=, !=, <>, =, <, >
List is {value1, value2, value3}
Target can be a fixed value or another field in the SEG-F(R).C.S format
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Provider Report Card

Report Name: **Unknown Name**
Reporting Period: **Unknown Range**

Watches for Organization

Watch Name - The name of the Watch being assessed by the report.

Watch Occurrences - The total number of times the watch returned "true" during the reporting period; i.e. a field (or fields) in the message exactly matched the conditions in the watch.

Total Watches Evaluated - The total number of times the watch was evaluated during the reporting period.

% Watch Occurrences - The overall rate at which the Watch returned "true", as measured by "Watch Occurrences"/"Total Watches Evaluated"

Jobs Matching Watch - The number of jobs processed by the watch during the reporting period where the watch returned true at least once.

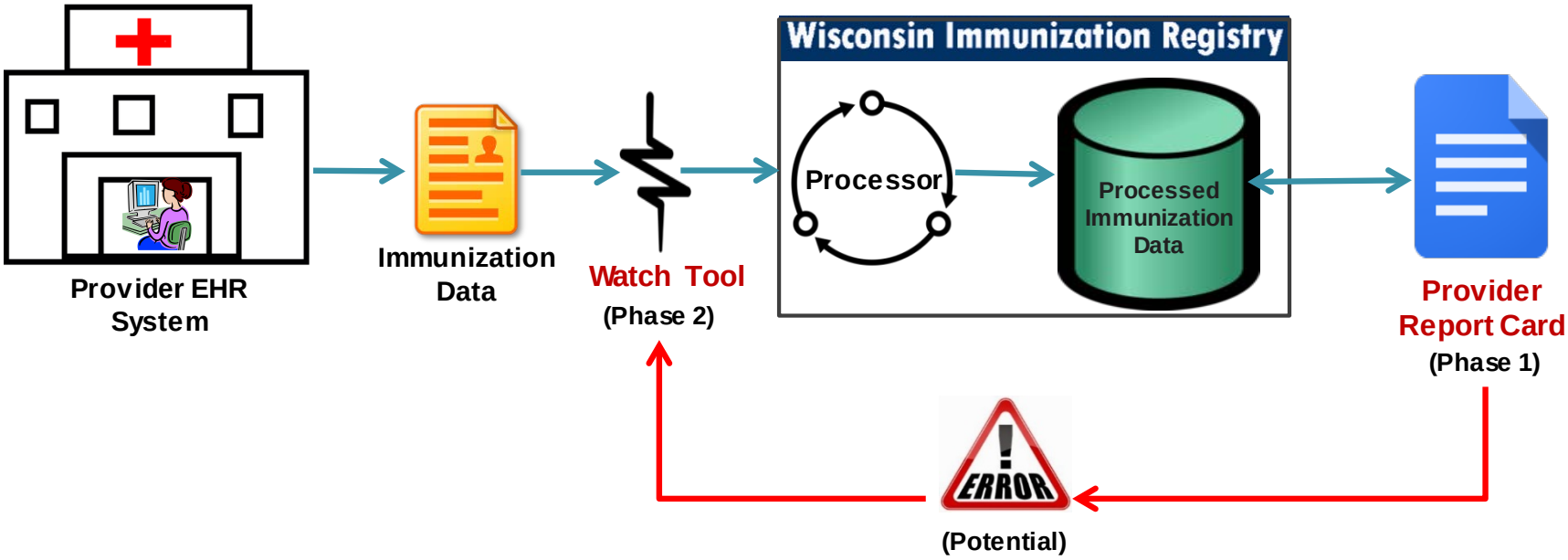
Total Jobs Processed - The total number of jobs processed by the watch during the reporting period.

% Jobs Matching Watch - The rate at which jobs were processed that contained instances of the Watch returning "true", as measured by "Jobs Matching Watch"/"Total Jobs Processed"

Watch Name	Watch Occurrences	Total Watches Evaluated	% Watch Occurrences	Jobs Matching Watch	Total Jobs Processed	% Jobs Matching Watch
Invalid Ethnicity	9	1840	.49%	9	1840	.49%
Invalid Route	0	6406	0%	0	1834	0%
MSH T Mode	1840	1840	100%	1840	1840	100%

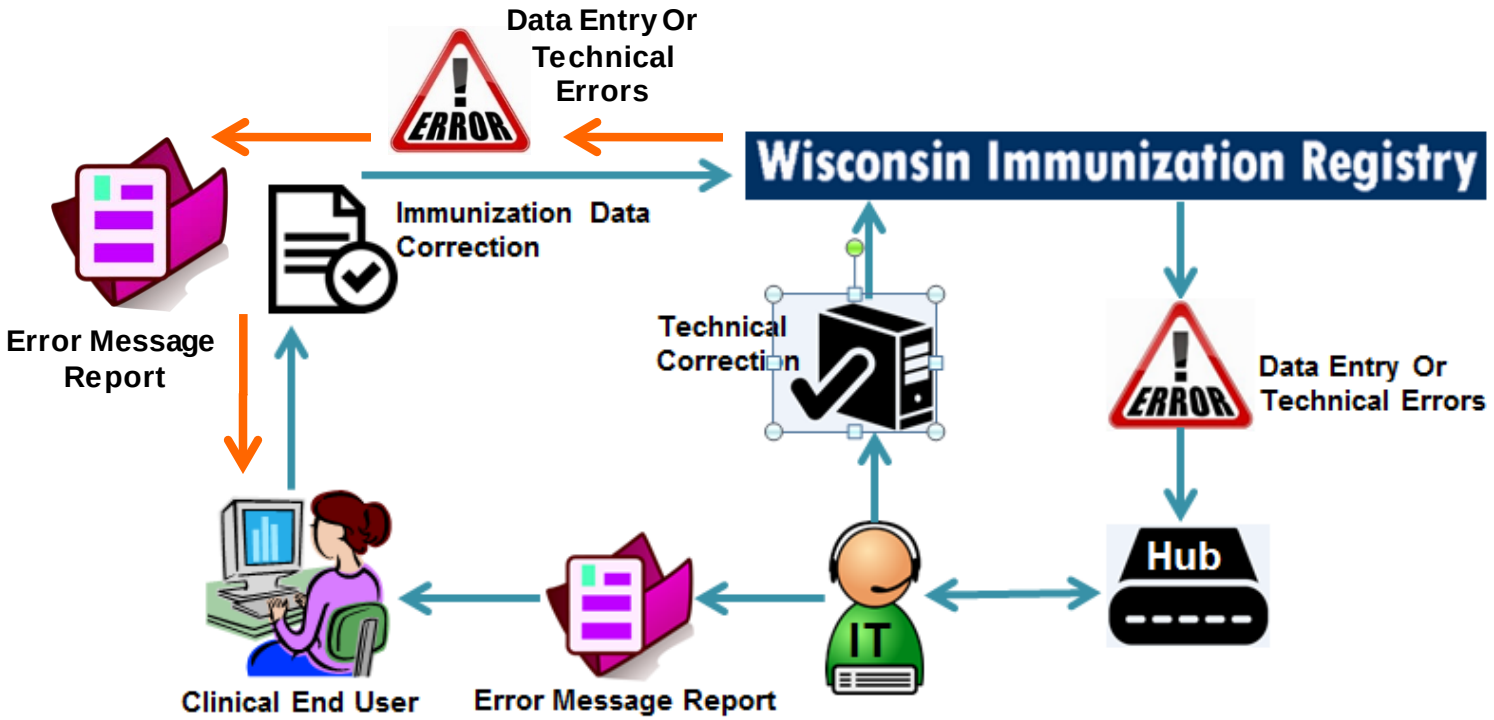
Immediate Solutions – Current Efforts

- How do the provider report card and watch tool work together?



Long-Term Solutions

- WIR encouraging providers to communicate with vendors and use best practices and guidelines for handling error messages from WIR in a meaningful way to EHRs



Long-Term Solutions

- Arrange routinely on-site visits to touch base with IIS partners if time and resources permit
  - Enhance clinical practice efficiency
    - Coordinate consistent documentation practices
  - Advance interoperability between EHRs and IIS
  - Increase the value of immunization data
- To achieve these, collaborative efforts are needed to promote and sustain on-going communication and collaboration with IIS partners.

Conclusions

- Benefits
  - Effective in facilitating an engaging conversation in person
    - Gain different perspectives from multiple key players involving in data exchange
  - Opportunity to provide information on:
    - Benefits of collecting and reporting optional fields to WIR
    - WIR's Help Desk for technical assistance
  - Foster partnership between healthcare providers and WIR

Acknowledgements

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Thank You!

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