



Pennsylvania  
Department of Health

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# Improving Data Quality Provider Report Card Pilot

**LeeMarie Fisher, M.Ed.**  
**Registry Specialist Supervisor**  
**Bureau of Immunizations**

# Hope You Enjoyed Pennsylvania!



Source: worldatlas.com, Pennsylvania is the 33rd-largest state in the U.S.



# Cool things about Pennsylvania Food Edition!

Snack Capital of the World!

Chips – Utz, Herr's, Wise, Martin's, Middleswarth, Hartley's, and MORE!

Pretzels – Utz, Sturgis, Martin's, Snyders of Hanover

Hershey

Cheesesteaks

Primanti Bros sandwich – Pittsburgh Salad

Whoopie Pie/Gob

Mushrooms

Scrapple

# Background

- Pennsylvania updated its IIS to Envision's WebIZ, PIERS (**P**ennsylvania **I**mmunization **E**lectronic **R**egistry **S**ystem) in January 2024
- Multiple Quality Assurance (QA) initiatives, including implementing Provider Report Cards
- At this time there wasn't a viable vendor solution available to utilize – many discussions on how to create/what to include.



# Provider Level (Mass) IQIP

- Quality Improvement Process started with mid-sized health system – 388 clinics all HL7 senders (65 VFC providers).
- Leverage the IIS was chosen as an organizational level strategy, which included PIERS/HL7 messages.
- IQIP to be reviewed and worked on in phases over a one-year time frame.



# Opportunity to Design, Develop, and Distribute a Provider Report Card

## Metrics and Resources:

- AIRA-IIS Data Quality Practices
- Web-IZ Dashboards/Analytics
- Examples of other Jurisdiction's report cards.



# Data Quality Indicators Evaluated

## Completeness:

- Patient Demographic Information
- Vaccination Information



## Validity:

Patient Names containing:  
Baby, Test, Dup, etc.

# Provider Report Card – Top Page

Report Criteria				Within Target Range
Provider Id = 5096, Clinic Id = 0, From Date = 04/01/2025, Through Date = 04/09/2025				Needs Attention
<b>Total Reporting Score</b>	<b>89.98%</b>			Below Target Range
<b>Total Patient Count</b>	<b>447</b>			
Total Messages Sent	57926			
Successful AA messages	52122			
<b>Snapshot of HL7 Errors</b>				
<b>Error Type</b>	<b>Error Count</b>			
NK1	403			
RXA	5092			
PID	54			
QPD	87			
RXR	168			
<b>Snapshot of Data Quality Percentage Scores</b>				
	<b>Score</b>	<b>Target Percentage</b>	<b>Priority Level</b>	
Patient First Name	100%	100%	High	
Patient Last Name	100%	100%	High	
Patient Date of Birth	100%	100%	High	
Vaccine Manufacturer (for administered vaccines)	100%	100%	High	
Vaccine Lot Number	100%	100%	High	
<b>Total # of VXU messages missing ethnicity</b>	<b>63.76%</b>	<b>95-100%</b>	<b>Medium</b>	
<b>Total # of VXU messages missing phone number</b>	<b>81.88%</b>	<b>90-95%</b>	<b>Medium</b>	
Mother's First Name (Minor) (VFC)	4.03%	90%	High	
Mother's Last Name (Minor) (VFC)	4.03%	90%	High	
Mother's Maiden Name (Minor) (VFC)	4.03%	90%	High	
Total # of VXU messages missing email	47%	90%	Low	
Route of Injection	97.72%	90%	Medium	
Site of Administration	85.23%	90%	Medium	
Patient Address Street	99.60%	85-95%	High	
Patient Address City	99.60%	85-95%	High	
Patient Address State	99.60%	85-95%	High	
Patient Address Zip	99.60%	85-95%	High	
Patient Middle Name or Initial	28.86%	75-80%	High	
Mothers Middle Name (Minor) (VFC)	4.03%	75-80%	High	
<b>Baby Names</b>	<b>36.10%</b>	<b>0%</b>	<b>High</b>	
<b>Summary for Resolution</b>				
<b>Phase 1</b>				
Addressing Categories Below Target Range				
>>>Prioritize Baby Names, Missing Ethnicity, and Mother information for VFC patients				
>>>Then address remaining categories below target range				
<b>Phase 2</b>				
Addressing Categories Needing Attention				
>>>Site of Administration, Vaccine Eligibility at Dose Level, Missing Phone #				

- **Report Criteria**

- Initially limited to one week of data due to vendor reporting limitations

- **Snapshot of HL7 Errors**

- Broken down by segment error type

- **Snapshot of Data Quality Percentage Scores**

- Highlighting the Provider Score, Target Percentage, and Priority Level

- **Summary for Resolution**

- Phase 1 and Phase 2 Priorities



# HL7 Error Summary

HL7 Facility Code	HL7 ACK Code	Severity Of Error	Segment	HL7 Field Position	HL7 Field Name	Error Code	User Message	Total Errors	Action
PA016409	AE	W	RXA	RXA.20.	CompletionStatus	Required observation missing	If RXA-20 is valued "CP" or "PA" and the first occurrence of RXA-9.1 (Administration Note code) is valued "00" then	4576	
PA016409	AE	E	NK1	NK1.4.	Address	Required observation missing	NK1-4 (Address[1]): Is missing a required element [XAD]. Value will not load. Expectation: value is an incomplete	367	
PA016409	AE	W	RXR	RXR.1.	Route	Illogical Value error	Internal Parser Error: Required field missing	155	
PA016409	AE	W	RXA	RXA.7.1	AdministeredUnits	Invalid value	RXA-7 (AdministeredUnits): Unrecognized/unsupported units [MCG]. Dose amount will not load. Expectation: value	147	
PA016409	AE	W	RXA	RXA.20.	CompletionStatus	Invalid value	If RXA-20 is valued "CP" or "PA" and the first occurrence of RXA-9.1 (Administration Note code) is valued "00" then	139	
PA016409	AE	W	RXA	RXA.11.4	AdministeredAtLocation	Required observation missing	RXA-11 (AdministeredAtLocation): Has a conditionally required element [Facility]. Expectation: value is populated	59	
PA016409	AE	W	PID	PID.15.1	PrimaryLanguage	Table value not found	PID-15 (PrimaryLanguage): Unrecognized/unsupported value [NEP]. Expectation: value must be one of the following	40	
PA016409	AE	W	RXA	RXA.11.4	AdministeredAtLocation	Table value not found	RXA-11 (AdministeredAtLocation): Unrecognized/unsupported value [PA029969]. Expectation: value exists in table	38	
PA016409	AE	W	RXA	RXA.15.	SubstanceLotNumber	Required observation missing	RXA-15 (SubstanceLotNumber): Has a conditionally required element [SubstanceLotNumber]. Expectation: value	18	
PA016409	AE	W	RXA	RXA.16.	SubstanceExpirationDate	Required observation missing	RXA-16 (SubstanceExpirationDate): Has a conditionally required element [SubstanceExpirationDate]. Expectation: value	18	
PA016409	AE	I	RXA	RXA.6.	AdministeredAmount	Illogical Value error	RXA-6 (AdministeredAmount): The value [999] (unknown) was found for an administered/new immunization.	17	
PA016409	AE	W	RXA	RXA.11.4	AdministeredAtLocation	Table value not found	RXA-11 (AdministeredAtLocation): Unrecognized/unsupported value [PA037601]. Expectation: value exists in table	14	
PA016409	AE	W	RXA	RXA.7.1	AdministeredUnits	Invalid value	RXA-7 (AdministeredUnits): Unrecognized/unsupported units [Units]. Dose amount will not load. Expectation: value	14	
PA016409	AE	W	RXR	RXR		Illogical Value error	RXR-1 (Route) and RXR-2 (AdministrationSite) contradict each other for the given Vaccine Type in RXA-5 (Administered)	13	
PA016409	AE	W	RXA	RXA		Invalid value	The following error occurred trying to update the vaccination: Execution Timeout Expired. The timeout period elapsed prior to completion of the operation or the server is not responding.	11	
PA016409	AE	W	QPD	QPD.8.1	PatientAddress	Illogical Value error	Internal Parser Error: Field too short: 3 < 4	10	
PA016409	AE	W	QPD	QPD.8.1	PatientAddress	Invalid value	QPD-8 (PatientAddress[1]): Unrecognized/unsupported value [PA]. Value will not load. Expectation: value must	10	
PA016409	AE	W	QPD	QPD.8.1	PatientAddress	Invalid value	QPD-8 (PatientAddress[1]): Unrecognized/unsupported value [PA]. Value will not load. Expectation: value must	10	
PA016409	AE	W	QPD	QPD.8.1	PatientAddress	Invalid value	QPD-8 (PatientAddress[1]): Unrecognized/unsupported value [USA]. Value will not load. Expectation: value must	10	
PA016409	AE	W	QPD	QPD.8.14	PatientAddress	Invalid value	QPD-8 (PatientAddress[1]): Unrecognized/unsupported value [USA]. Value will not load. Expectation: value must	10	
PA016409	AE	W	QPD	QPD.8.2	PatientAddress	Illogical Value error	Internal Parser Error: Field too short: 1 < 2	10	
PA016409	AE	E				Invalid value	Not processing order group, the following error occurred: 1 or more segments in the ordered group contains error	10	
PA016409	AE	W	RXA	RXA.10.	AdministeringProvider	Required observation missing	RXA-10 (AdministeringProvider): Has a conditionally required element [AdministeringProvider]. Expectation: value	9	
PA016409	AE	E	RXA	RXA.11.4	AdministeredAtLocation	Invalid value	RXA-11 (AdministeredAtLocation): Invalid value [PA007724]. Could not find a parent Facility in MSH allowed to	8	
PA016409	AE	W	NK1	NK1.15.	AdministrativeSex	Table value not found	NK1-15 (AdministrativeSex): Unrecognized/unsupported value [ND]. Expectation: value must be one of the following	6	Leave this field in blank
PA016409	AE	W	PID	PID.10.1	Race	Table value not found	PID-10 (Race[2]): Unrecognized/unsupported value [U]. Expectation: value must be one of the following: (is null	6	
PA016409	AE	W	RXA	RXA.3.1	DateTimeStartOfAdministration	Illogical Value error	RXA-3 (DateTimeStartOfAdministration): Patient's age on this date should not be before the minimum patient age	6	
PA016409	AE	W	RXA	RXA.6.	AdministeredAmount	Invalid value	RXA-6 (AdministeredAmount): Unrecognized/unsupported value [0]. Expectation: value must be one of the following	6	
PA016409	AE	W	NK1	NK1.4.3	Address	Table value not found	NK1-4 (Address[1]): Unrecognized/unsupported value [MT WOLF]. Expectation: value must be one of the following	5	
PA016409	AE	W	RXA	RXA.11.4	AdministeredAtLocation	Table value not found	RXA-11 (AdministeredAtLocation): Unrecognized/unsupported value [PACV0390]. Expectation: value exists in table	5	
PA016409	AE	W	NK1	NK1.4.3	Address	Table value not found	NK1-4 (Address[1]): Unrecognized/unsupported value [AIRVILLR]. Expectation: value must be one of the following	4	
PA016409	AE	W	NK1	NK1.4.9	Address	Table value not found	NK1-4 (Address[1]): Unrecognized/unsupported value [PHILADELPH]. Expectation: value must be one of the following	4	
PA016409	AE	W	NK1	NK1.4.3	Address	Table value not found	NK1-4 (Address[1]): Unrecognized/unsupported value [PALMAYRA]. Expectation: value must be one of the following	3	
PA016409	AE	W	PID	PID.11.	PatientAddress	Required observation missing	PID-11 (PatientAddress[1]): Is missing a required element [XAD]. Value will not load. Expectation: value is an incomplete	3	
PA016409	AE	W	NK1	NK1.15.	AdministrativeSex	Table value not found	NK1-15 (AdministrativeSex): Unrecognized/unsupported value [X]. Expectation: value must be one of the following	2	Leave this field in blank
PA016409	AE	W	NK1	NK1.20.1	PrimaryLanguage	Table value not found	NK1-20 (PrimaryLanguage): Unrecognized/unsupported value [NEP]. Expectation: value must be one of the following	2	Leave this field in blank



# Provider Communication Plan



# Provider Report Card – Midpoint Review

Report Criteria								
Provider Id = 5096, Clinic Id = 0, From Date = 10/09/2025, Through Date = 11/04/2025								
		Within Target Range						
		Needs Attention						
		Below Target Range						
Snapshot of HL7 Errors								
Error Type	Error Count							
NK1	1989							
RXA	43901							
ORC	2							
PD1	3							
PID	97							
QPD	179							
RXR	82							
Timeouts/Misc	180							
<b>Total Amount of Errors</b>	<b>46433</b>							
Snapshot of Data Quality Percentage Scores		Score	Target Percentage	Priority Level	Change from April-June 2025	Change from June-Sept 2025	Change from Sept-Nov 2025	Aggregate Change over Time
Patient First Name	100%	100%	High	N/A	N/A	N/A	N/A	
Patient Last Name	100%	100%	High	N/A	N/A	N/A	N/A	
Patient Date of Birth	100%	100%	High	N/A	N/A	N/A	N/A	
Vaccine Manufacturer (for administered vaccines)	99.99%	100%	High	N/A	0.01%	N/A	0.01%	
Vaccine Lot Number	99.95%	100%	High	N/A	0.01%	0.04%	0.05%	
Vaccine Eligibility at Desc Level (VFC)	99.73%	100%	High	1.56%	0.33%	0.18%	1.05%	
Total # of VXU messages containing ethnicity	86.33%	95-100%	Medium	19.92%	2.24%	4.89%	22.57%	
Vaccine Expiration Date (for administered vaccines)	98.78%	90-100%	High	1.59%	0.31%	0.22%	1.06%	
Total # of VXU messages containing phone number	98.48%	90-95%	Medium	17.40%	1.60%	0.80%	16.60%	
Mother's First Name (Minor) (VFC)	10.00%	90%	High	22.26%	7.93%	8.36%	5.97%	
Mother's Last Name (Minor) (VFC)	10.00%	90%	High	22.26%	7.93%	8.36%	5.97%	
Mother's Maiden Name (Minor) (VFC)	10.33%	90%	High	22.26%	7.87%	8.09%	6.30%	
Total # of VXU messages containing email	66.93%	90%	Low	15.18%	4.92%	9.67%	19.93%	
Route of Injection	98.78%	90%	Medium	1.59%	0.31%	2.53%	3.81%	
Site of Administration	89.73%	90%	Medium	1.60%	1.00%	1.90%	4.50%	
Patient Address Street	99.13%	85-95%	High	0.38%	1.11%	1.02%	0.29%	
Patient Address City	99.13%	85-95%	High	0.38%	1.11%	1.02%	0.29%	
Patient Address State	99.13%	85-95%	High	0.38%	1.11%	1.02%	0.29%	
Patient Address Zip	99.13%	85-95%	High	0.38%	1.11%	1.02%	0.29%	
Patient Middle Name or Initial	53.93%	75-80%	High	18.23%	6.19%	0.85%	25.27%	
Mother's Middle Name (Minor) (VFC)	9.73%	75-80%	High	21.32%	9.25%	7.37%	4.70%	
Messages containing Baby Names	12.13%	0%	High	19.26%	0.06%	4.77%	23.97%	



# Lessons Learned

1. Easier to work on data quality issues at the Provider level.
2. Strong collaborative approach – shared decision making. The health system was active in partnership to resolve data reporting practices.
3. Scheduling with a health system can be challenging (in our case they were also going through an acquisition at the time).
4. Not inclined to review error messages and are sometimes missing the errors that indicate a message was rejected and did not post.



# Moving Forward

1. Plan on continuing Mass IQIP process with providers
2. Vendor has a solution available for provider report cards, which we'll be using in the future due to automation and ease of provider/clinic access.



Microsoft Excel  
Worksheet



# Many Thanks!

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# Discussion and Questions

**LeeMarie Fisher (leemfisher@pa.gov)**