

MDSS – Updates & Messaging

Matthew Buck, Health Informaticist, MDHHS

Today

- ▶ 2016 MDSS Stats
- ▶ Plans for MDSS in 2017
- ▶ ELR Messaging

The MDSS Informatics Team

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- ▶ Your Regional Epidemiologists

MDSS 2016

By the Numbers



2016 Stats - ELR Trends

- ▶ ELRs increased to approximately 150,000 in 2016
 - ▶ Up by ~25,000 over 2015 (~20% increase)
 - ▶ More than Double 2012 ELR Counts
- ▶ Growth in ELR use from Hospital message senders
 - ▶ Hospital ELRs now account for roughly 2/3 of all ELRs received
 - ▶ hospitals = 64.72% (up from <50% in 2014)
 - ▶ commercial labs = 22.82%
 - ▶ public labs = 12.5%
 - ▶ We expect this hospital ELR trend to continue in 2017, as we work to onboard the last remaining large hospital systems
- ▶ [ELR Trends Graph](#)

2016 Stats - Transactions and Referrals

- ▶ Referrals - both case report generating and non-case report - have remained relatively stable between 2011 and 2016
- ▶ Proportion of case report generating referrals and non-case report referrals has remained relatively stable
- ▶ Transactions increased to roughly 2.5 million in 2016
 - ▶ Almost double the 2014 Transaction counts
 - ▶ Servers have adequate remaining storage to accommodate for future increases
- ▶ [Transactions and Referrals Graph](#)

MDSS in 2017

- ▶ MDSS v4.5 - February, 2107
- ▶ MDSS v4.5.1 - Next Week
- ▶ MDSS v4.6 - ~August, 2017
- ▶ MDSS 5.0 - By the End of the Year

MDSS v4.5

- ▶ Included items like:
 - ▶ Conditional Hep C Dedup Queue Bypass
 - ▶ Search page now defaults to include MDOC cases
 - ▶ Add browser details in page footer
 - ▶ Important when notifying of issues

MDSS v4.5.1 Patch

- ▶ Bug fix
- ▶ Allow closure of Lyme Disease cases as 'suspect' - in line with recent case definition changes
- ▶ Onset and diagnosis date fix at case merge of manually entered cases.

MDSS v4.6

- ▶ ETA around August
- ▶ Creation of latest HCV RNA field
- ▶ HIV lab and case data entry changes
- ▶ Aggregate search by 'type
- ▶ OMS
- ▶ And others

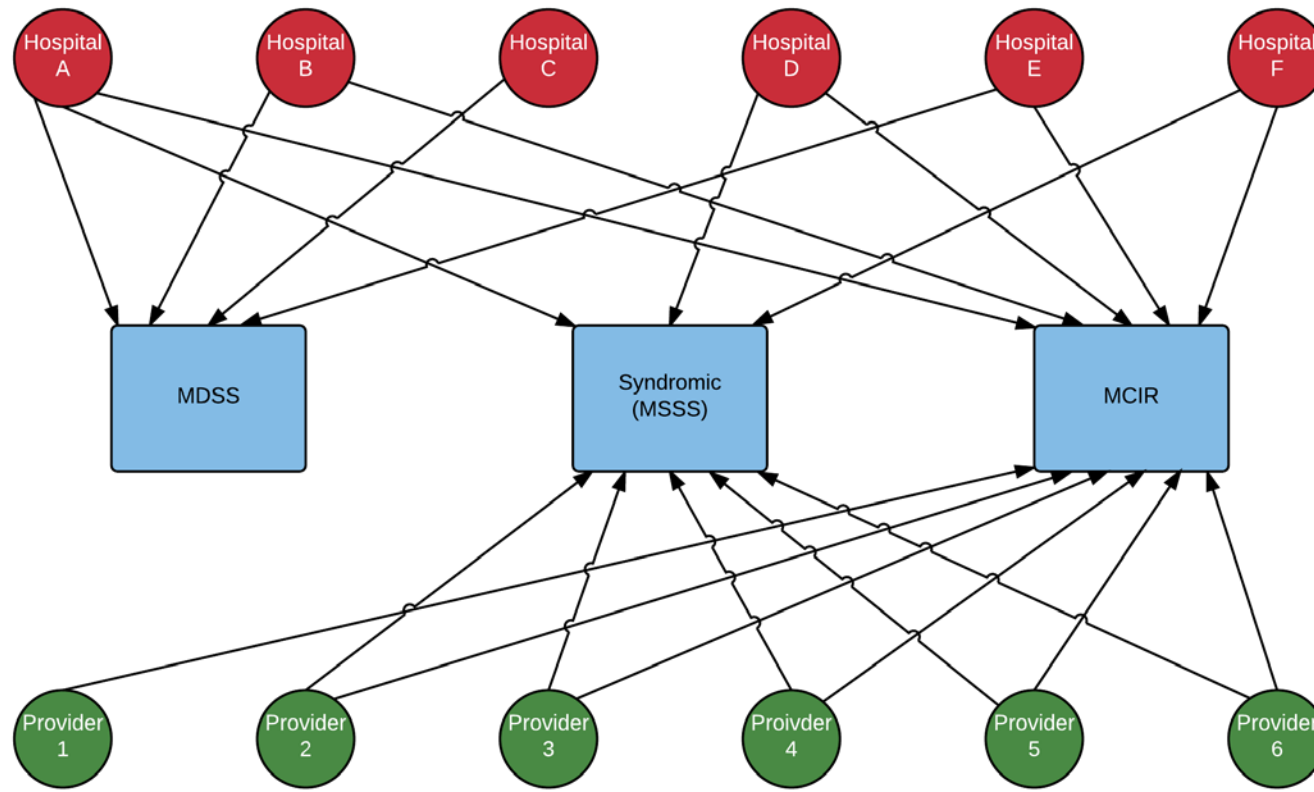
MDSS v5.0

- ▶ ETA by the end of the year
- ▶ Will focus on updating the middleware between the java script and SQL databases.

ELR Messaging:

Demystifying The HL7 Message

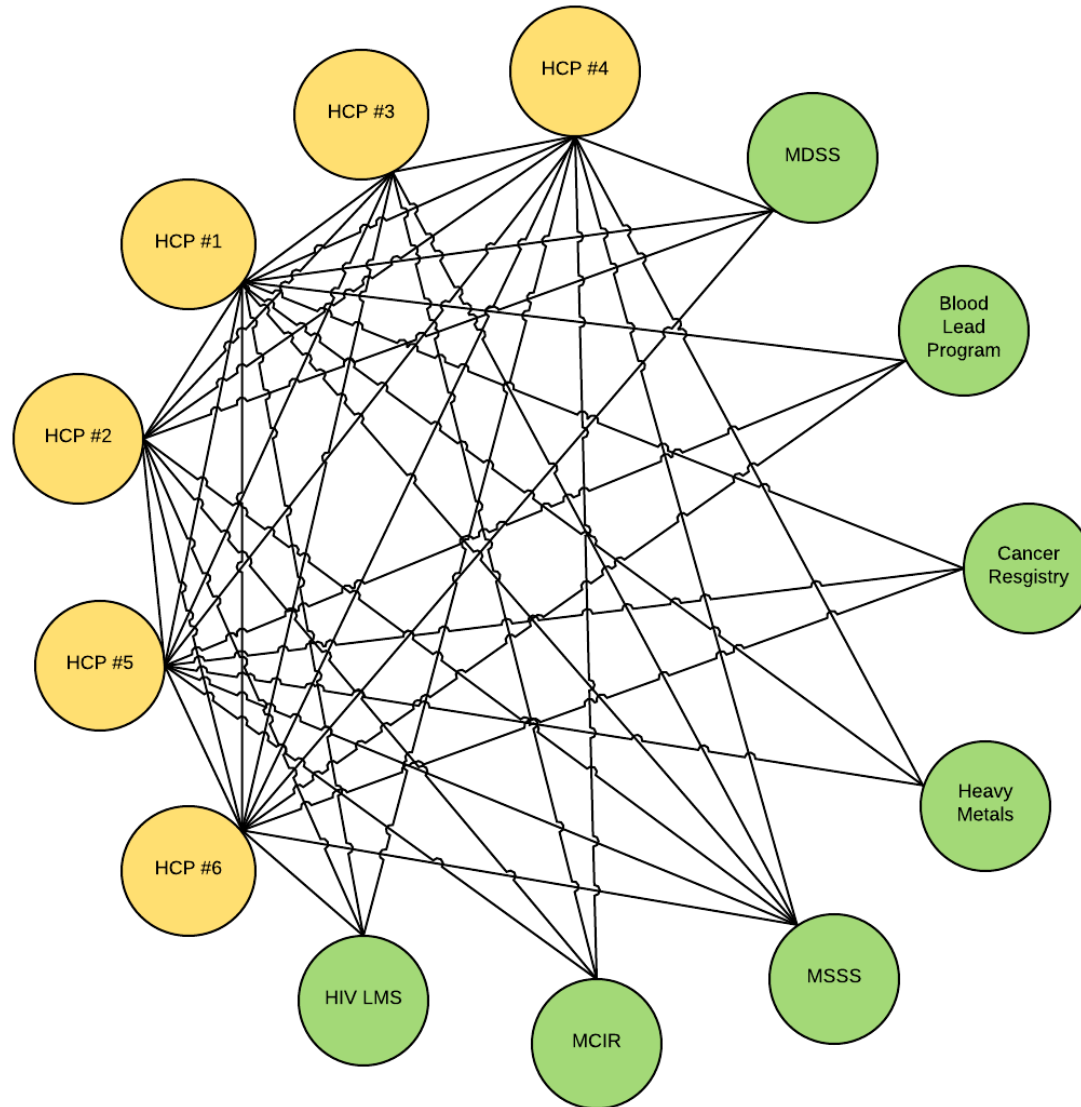
The Old Way



Old Way - Several Problems

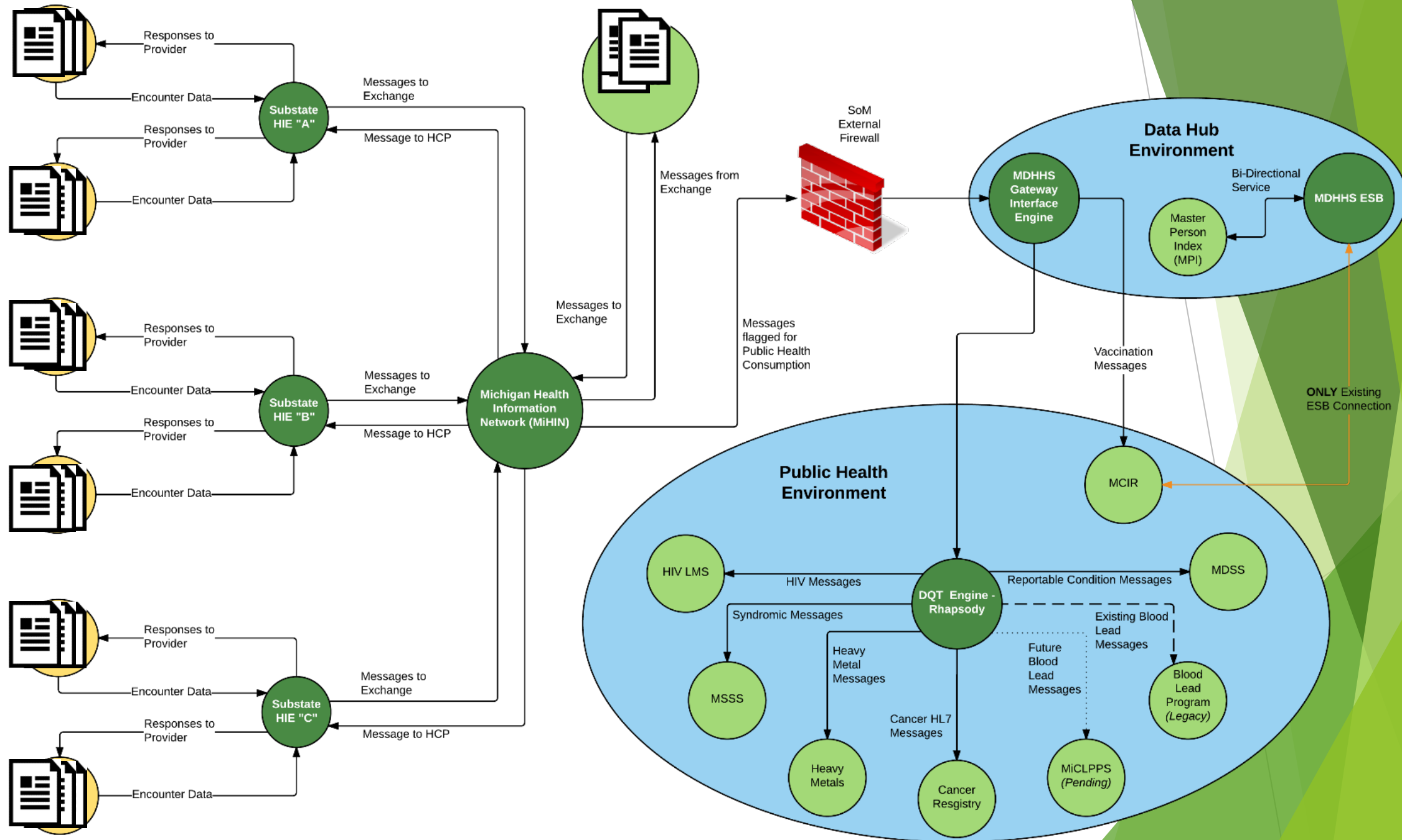
- ▶ No centralized, organized authority
- ▶ Each connection is 'new', even if the same sender has onboarded with another State system
- ▶ Variability and Inconsistency risks increase
- ▶ Triaging issues becomes major constraint on system

The Old Way - How It Would Look Today



The HIE Way - "Hub and Spoke"





HIE Model

- ▶ Adds central authority (MiHIN) into model
- ▶ Preserves regional autonomy through substate HIEs
- ▶ Provides for one connection for senders and receivers
- ▶ All routing occurs at the HIEs
 - ▶ As long as the sender has 'addressed' the message correctly, HIEs route messages like switches on a track
- ▶ Receipt of messages is virtually instantaneous
- ▶ Supports a variety of transport protocols for senders and receivers

The ELR Picture

- ▶ The ELR is the primary automated mechanism that drives communicable disease reporting
- ▶ At a high level, it's initiated in the following manner:



Mechanism (HL7 Message)

- ▶ When the result is flagged as “reportable”, the LIMS (or EHR) generates an HL7 message.
- ▶ So, what is HL7?
 - ▶ An organization that develops various messaging standards (2.3.1, 2.5.1, CDA, FHIR, etc)
 - ▶ We use (mostly) v2.5.1 for ELR
 - ▶ Key: v2.5.1 is a standardized message model - a heuristic
 - ▶ It follows an 80/20 approach - 80% defined, 20% flexible
 - ▶ It is flexible/not rigid... but flexibility means variability
 - ▶ “Everyone is sending an HL7 v2.5.1 message. But, no one is sending the same v2.5.1 message.” - Andrey Yeatts

v2.5.1 ELR Content (1)

- ▶ What CAN we get in ELR?
 - ▶ Name
 - ▶ Demographics
 - ▶ Pregnancy Status
 - ▶ Next of Kin (could also include employer)
 - ▶ Provider & Lab Info
 - ▶ Lab Order & Result
 - ▶ Specimen Info
- ▶ Do we get everything?
 - ▶ No...

v2.5.1 ELR Content (2)

- ▶ What ELR Lacks
 - ▶ Treatment Info
 - ▶ Clinical Information
 - ▶ Epidemiologic Information
 - ▶ Hospitalization
- ▶ The intent was always to send the lab order/result and basic info on the sender and patient
 - ▶ It is event-based
 - ▶ It lacks a longitudinal view

Basic Message Structure

► Parent segments (MSH, PID, OBR, OBX) & child segments

MSH - the 'Envelop' address

PID - Patient Information

NK1 - Next of Kin Information

ORC - Common Order

OBR - Observation Request (Order)

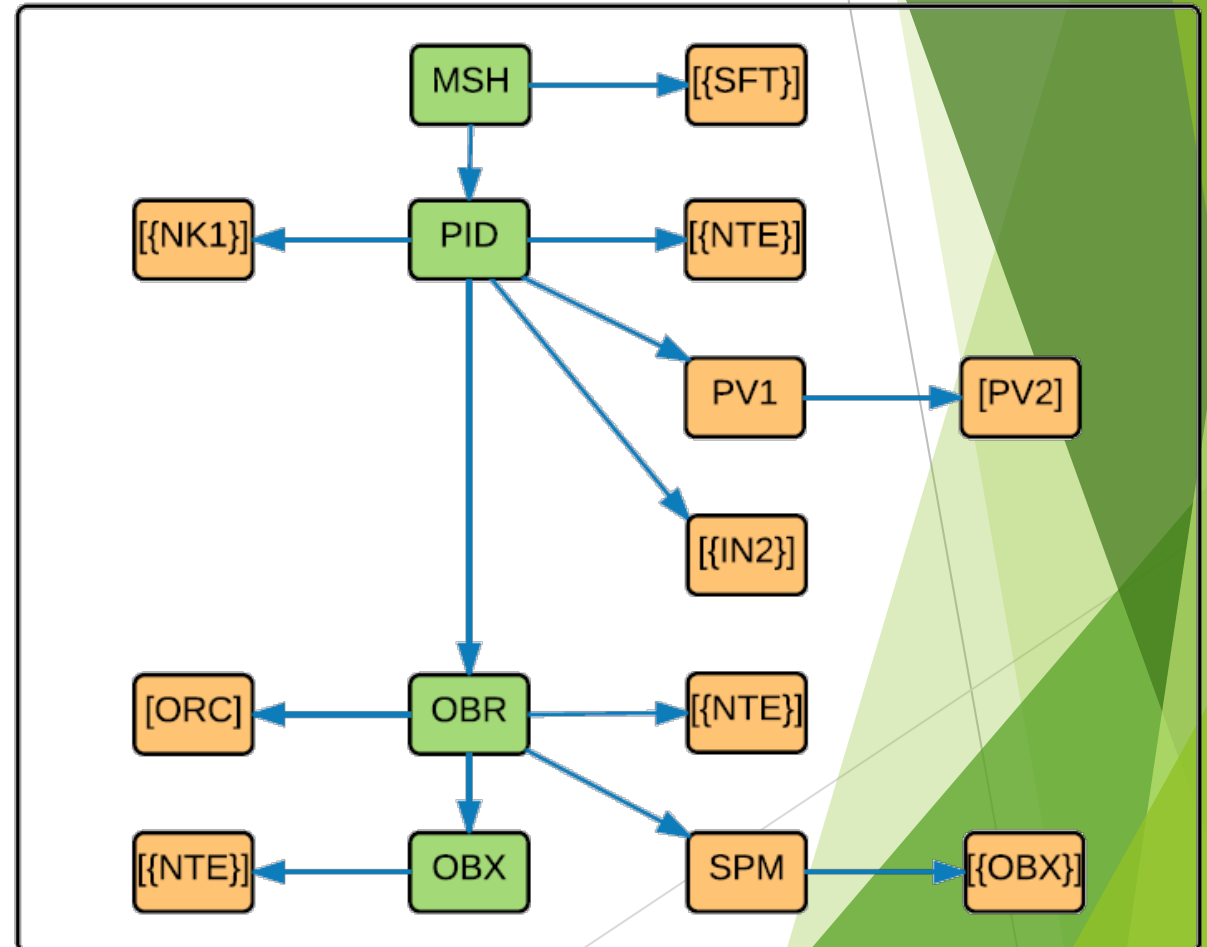
OBX|1| - Observation/Result

OBX|2| - Observation/Result

NTE|1| - Note

NTE|2| - Note

SPM - Specimen Information



Example Message

```
MSH|^~\&|SOFTLAB^2.16.840.1.113883.3.3013.77.1^ISO|Fake
Laboratory^23D055555^CLIA|MDSS^2.16.840.1.114222.4.3.2.2.3.161.1.6377^ISO|MDCH^2.16.840.1.114222.4.3.2.2.3.161.1^ISO|20170424150200-0
500||ORU^R01^ORU_R01|987654321_3|T|2.5.1|||NE|NE||||PHLabReport-NoAck^HL7^2.16.840.1.113883.9.11^ISO

PID|1||123456^^^MR||ANDROPOV^PIKUP^^^^L||19800921|M||2106-3^WHITE^HL70005|1259 TEST STREET^^ROYAL
OAK^MI^48073^USA||^PRN^^^^248^5551000||||741852963^^^^ANON|||||||||N|N||201704221256

ORC|RE|A40000705BL0999901^^^|852200063^SoftLab_orders^2.16.840.1.113883.3.3013.25.43^ISO|A40000705BL0999901^^^||||201704221414|||9638
52741^BLAND^CARL^^^DR^MD^^^L^^^NPI||^WPN^^^^248^5553642~^ORN^FX^^^248^5553694|||||||3789 W. SUNSHINE ROAD^^ROYAL
OAK^MI^48073^^B|^WPN^^^^248^5552822|3789 W. SUNSHINE^^ROYAL OAK^MI^48073

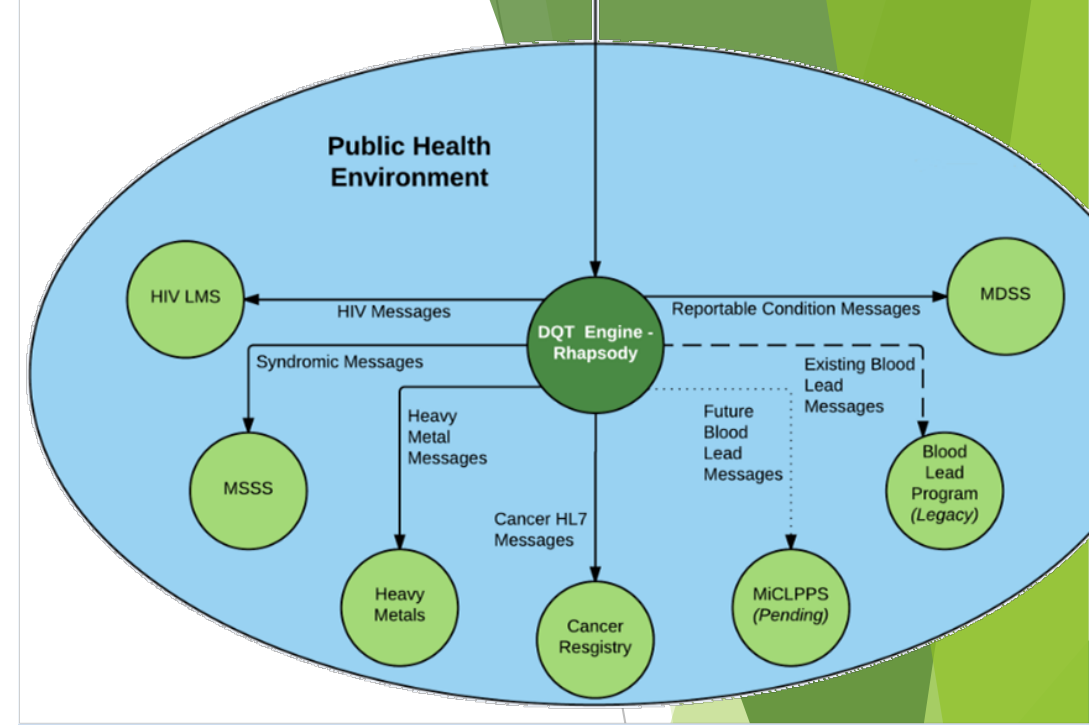
OBR|1|A40000705BL0999901^^^|852200063^SoftLab_orders^2.16.840.1.113883.3.3013.25.43^ISO|21613-5^Chlamydia trachomatis DNA [Presence]
in Unspecified specimen by Probe and target amplification method^LN^131M2^MDCH- Chlamydia trachomatis DNA^L^2.50^NA^MDCH- Chlamydia
trachomatis
DNA|||201612221414-0500||||L||||1963852741^BLAND^CARL^^^DR^MD^^^L^^^NPI|^WPN^^^^248^5553642~^ORN^FX^^^248^5553694|||||201704241347-05
00|||F|

OBX|1|CWE|21613-5^Chlamydia trachomatis DNA [Presence] in Unspecified specimen by Probe and target amplification
method^LN^131MS^MDCH-Chlamydia trachomatis
DNA^L||10828004^Positive^SCT|||||F|||201704241347-0500|23D0667009|||201704241347-0500|||FAKE LAB^L^^^Fake
Laboratory&23D055555&CLIA^XX^^^ROLB|3789 W. SUNSHINE^^ROYAL OAK^MI^48073^US^B^^Oakland|537942168^MYWORD^MARK^^^MD^^^L^^^NPI

SPM|1|^321654987&SoftLab_orders&2.16.840.1.113883.3.3013.25.43&ISO||123037004^URINE^SCT|||||||-0.01^mL&MilliLiter [SI Volume
Units]&UCUM&mL&milliliter&L&1.1&NA&MilliLiter [SI Volume Units]|||||201704241347-0500|201704241347-0500
```


Arrival to MDSS

- Received by MDHHS Data Hub
- Passed on to DQT / Rhapsody
- Rhapsody:
 - Validates according to type (ORU for MDSS, ADT for MSSS)
 - Figures out who sent it and routes it to a standardizer
 - Standardizes the message to v2.5.1
 - Cleans up the message a bit - a number of small things, race codes, message dates, phone numbers, bad data types, etc.
 - Determines if it's a Lead, Heavy Metal, or HIV message
 - Determines if the message is heading to Prod or Test
 - Drops it at MDSS's doorstep, rings the doorbell, and runs away



Patient Information (1)

- [PID-0] PID
- [PID-1] 1
- [PID-2]
- [PID-3] 123456****MR
- [PID-4]
- [PID-5] ANDROPOV*PIKUP****L
- [PID-6]
- [PID-7] 19800921
- [PID-8] M
- [PID-9]
- [PID-10] 2106-3**WHITE^HL70005
- [PID-11] 1259 TEST STREET**ROYAL OAK**MI^48073**USA
- [PID-12]
- [PID-13] ^PRN****248^5551000
- [PID-14]
- [PID-15]
- [PID-16]
- [PID-17]
- [PID-18] 741852963****ANON
- [PID-19]
- [PID-20]
- [PID-21]
- [PID-22]
- [PID-23]
- [PID-24]
- [PID-25]
- [PID-26]
- [PID-27]
- [PID-28]
- [PID-29]
- [PID-30] N
- [PID-31] N
- [PID-32]
- [PID-33] 201704221256

| Case Reporting | Address History | Demographics | Referrer | Lab Reports | Notes | Map | Audit | Person History | Field Record | Interview Record |
|--|-----------------|--|-------------------|--|---------------------------------------|---|-------------------------------------|----------------|--------------|------------------|
| Patient ANDROPOV, PIKUP | | | | | | | | | | |
| Reportable Condition* : Chlamydia (Genital) <input type="button" value="Detail"/> | | Case Status* : Unknown | | | Investigation Status* : New | | | | | |
| Patient Information | | | | | | | | | | |
| Patient Status* : OutPatient | | Patient Status Date* (mm/dd/yyyy) : 04/24/2017 | | | | | | | | |
| First* : PIKUP | | Last* : ANDROPOV | | | Middle : | | | | | |
| Onset Date (mm/dd/yyyy) : | | | MMWR : 17-2017 | | | Patient Id : 10109139032 | | | | |
| Diagnosis Date (mm/dd/yyyy) : | | | | | | | | | | |
| Investigation Address | | | | | | | | | | |
| Street : 1259 TEST ST | | | | Geocode Source : MDSS Zip Code * | | | | | | |
| City : ROYAL OAK | | County : | | Oakland | | State : Michigan | | Zip : 48073 | | |
| Jurisdiction : Oakland County | | | | <input type="checkbox"/> State Prison Case | | | | | | |
| Investigation Information | | | | | | | | | | |
| Outbreak Y/N : <input type="checkbox"/> U | | Outbreak Name : | | | | | | | | |
| Referral Date (mm/dd/yyyy) : 04/25/2017 | | | | Case Entry Date (mm/dd/yyyy) : 04/25/2017 | | | | | | |
| Investigation ID : 10109137497 | | | NETSS ID : 755090 | | | Assigned to : BLANEY, KAYLEIGH J / Oakland County | | | | |
| | | | | | <input type="button" value="Cancel"/> | | <input type="button" value="Help"/> | | | |

Patient Information (2)

[PID-0] PID
[PID-1] 1
[PID-2]
[PID-3] 123456****MR
[PID-4]
[PID-5] ANDROPOV^PIKUP****L
[PID-6]
[PID-7] 19800921
[PID-8] M
[PID-9]
[PID-10] 2106-3^WHITE^HL70005
[PID-11] 1259 TEST STREET^^ROYAL OAK^MI^48073^USA
[PID-12]
[PID-13] ^PRN****248^5551000
[PID-14]
[PID-15]
[PID-16]
[PID-17]
[PID-18] 741852963****ANON
[PID-19]
[PID-20]
[PID-21]
[PID-22]
[PID-23]
[PID-24]
[PID-25]
[PID-26]
[PID-27]
[PID-28]
[PID-29]
[PID-30] N
[PID-31] N
[PID-32]
[PID-33] 201704221256

Case Reporting Address History Demographics Referrer Lab Reports Notes Map Audit Person History Field Record Interview Record

Patient ANDROPOV, PIKUP

Sex*:

Race:

Hispanic Ethnicity*:

Arab Ethnicity:

Home Phone (### ### ####): Ext:

Other Phone (### ### ####): Ext:

Date of Birth / Age

Date of Birth (mm/dd/yyyy): Age at Onset (if DOB unknown): Age Unit:

Parent/Guardian (required if under 18)

First: Last: Middle:

Work / Occupation or School / Grade

Worksites / School:

Occupations / Grade:

Patient Identifiers

MDOC ID:

Reset Cancel Help

[OBR-0] OBR
 [OBR-1] 1
 [OBR-2] A40000705BL0999901^^^
 [OBR-3] 852200063^SoftLab_orders^2 16.840 1 113883 3 3013 25.43^ISO
 [OBR-4] 21613-5^Chlamydia trachomatis DNA [Presence] in Unspecified specimen by P
 [OBR-5]
 [OBR-6]
 [OBR-7] 201612221414-0500
 [OBR-8]
 [OBR-9]
 [OBR-10]
 [OBR-11] L
 [OBR-12]
 [OBR-13]
 [OBR-14]
 [OBR-15]
 [OBR-16] 1963852741^BLAND^CARL^^^DR^MD^^L^^NPI
 [OBR-17] <<repeating field>> ^WPN^^248^5553642^^ORN^FX^^248^5553694
 [OBR-18]
 [OBR-19]
 [OBR-20]
 [OBR-21]
 [OBR-22] 201704241347-0500
 [OBR-23]
 [OBR-24]
 [OBR-25] F
 [OBR-26]

Case Reporting Address History Demographics Referrer Lab Reports Notes Map Audit Person History Field Record Interview Record

Patient ANDROPOV, PIKUP

Lab Order Information

Test Name*: Chlamydia trachomatis DNA [Presence] in Unspecified specimen by Probe and target amplification method

Lab Report Date (mm/dd/yyyy): 04/24/2017

Ordering Provider

First: CARL Last: BLAND

Street: 3789 W SUNSHINE

City: ROYAL OAK County: Oakland State: Michigan Zip: 48073

Phone number: 248-555-3642 Ext:

Laboratory Information

Lab Name*: Fake Laboratory

Street: 3789 W. SUNSHINE ROAD Geocode Source:

City: ROYAL OAK County: Oakland State: Michigan Zip: 48073

Phone number: 248-555-3642

Specimen Information

Specimen Collection Date (mm/dd/yyyy): 04/24/2017

Specimen Source: URINE

Specimen Site:

Specimen Site Text:

Specimen ID: 321654987

Results

Reported Test Name: Chlamydia trachomatis DNA [Presence] in Unspecified specimen by Probe and target amplification method/MDCH-Chlamydia trachomatis DNA

| | |
|------------------|----------|
| Coded Result: | Positive |
| Numeric Result: | |
| Reference Range: | |
| Comments: | |

[OBX-0] OBX
 [OBX-1] 1
 [OBX-2] CWE
 [OBX-3] 21613-5^Chlamydia trachomatis DNA [Presence] in Unspecified speci
 [OBX-4]
 [OBX-5] 10828004^Positive^SCI
 [OBX-6]
 [OBX-7]
 [OBX-8]
 [OBX-9]
 [OBX-10]
 [OBX-11] F
 [OBX-12]
 [OBX-13]
 [OBX-14] 201704241347-0500
 [OBX-15] 23D0667009
 [OBX-16]
 [OBX-17]
 [OBX-18]
 [OBX-19] 201704241347-0500
 [OBX-20]
 [OBX-21]
 [OBX-22]
 [OBX-23] FAKE LAB^L^^^^Fake Laboratory&23D0555555&CLIA^XX^^^^ROLB
 [OBX-24] 3789 W. SUNSHINE^^ROYAL OAK^^MI^48073^US^B^^Oakland
 [OBX-25] 537942168^MYWORD^MARK^^MD^^L^^NPI

[Case Reporting](#)
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[Field Record](#)
[Interview Record](#)

Patient ANDROPOV, PIKUP

Lab Order Information

Test Name*: Chlamydia trachomatis DNA [Presence] in Unspecified specimen by Probe and target amplification method

Lab Report Date (mm/dd/yyyy): 04/24/2017

Ordering Provider

First: CARL Last: BLAND

Affiliation: Street: 3789 W SUNSHINE

City: ROYAL OAK County: Oakland State: Michigan Zip: 48073

Phone number: 248-555-3642 Ext:

Laboratory Information

Lab Name*: Fake Laboratory

Street: 3789 W. SUNSHINE ROAD Geocode Source:

City: ROYAL OAK County: Oakland State: Michigan Zip: 48073

Phone number: 248-555-3642

Specimen Information

Specimen Collection Date (mm/dd/yyyy): 04/24/2017

Specimen Source: URINE

Specimen Site:

Specimen Site Text:

Specimen ID: 321654987

Results

Reported Test Name: Chlamydia trachomatis DNA [Presence] in Unspecified specimen by Probe and target amplification method/MDCH-Chlamydia trachomatis DNA

Coded Result: Positive

Numeric Result:

Reference Range:

Comments:

Cancel Help

Questions?