Public Health Case Reporting Using Consolidated Clinical Data Architecture (C-CDA) Pilot

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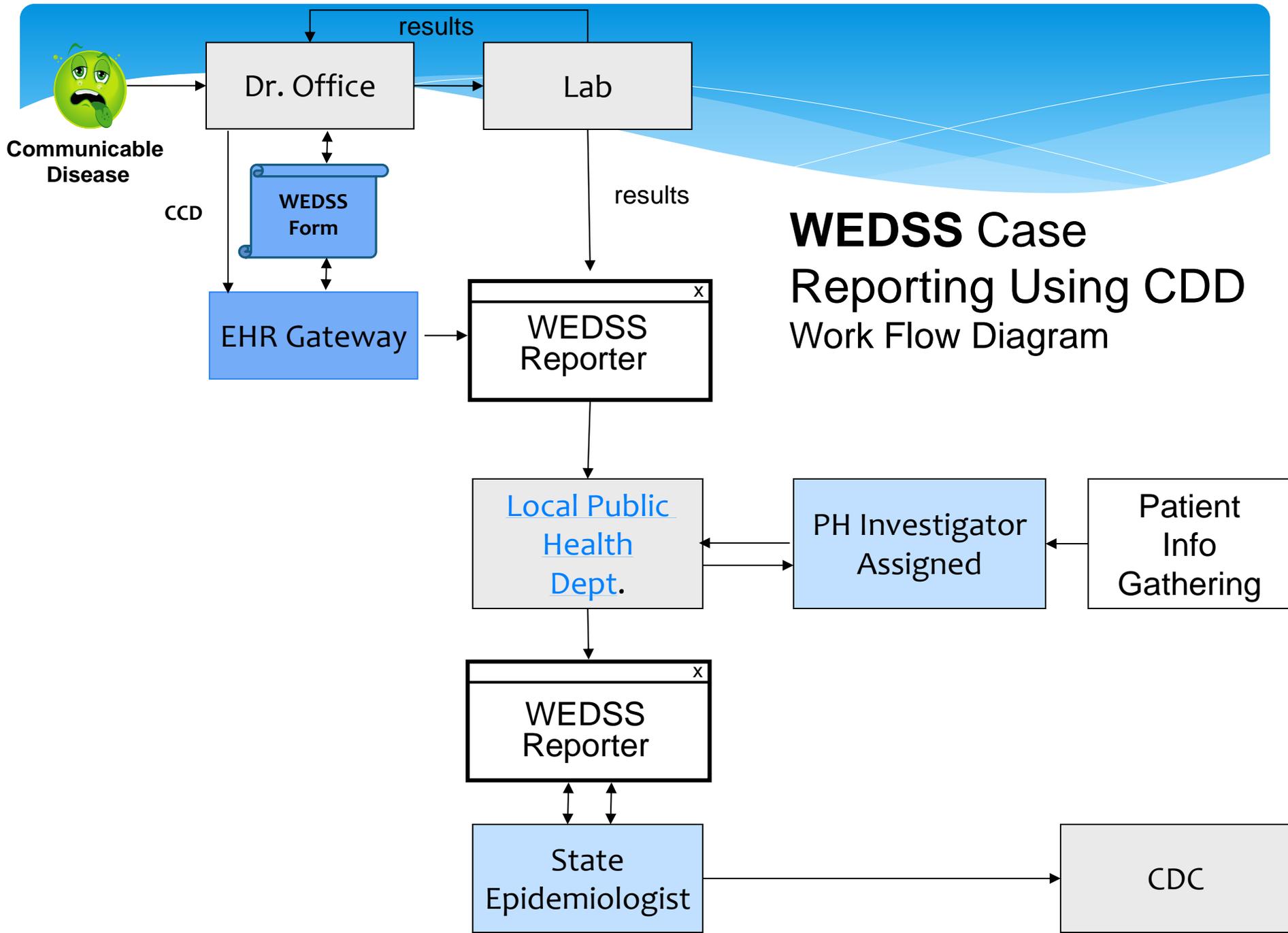john.gelletta@wisonsin.gov

Electronic Communicable Disease Reporting in Wisconsin

* In 2007 Wisconsin went live with the Wisconsin Electronic Disease Surveillance System (WEDSS) in five local jurisdictions.

* By 2009 all local health departments in the state were reporting all communicable diseases (with the exception of HIV) to the state and CDC through WEDSS.

* Today over 450 medical professionals from 250 hospitals, clinics, small hospital laboratories and correctional facilities utilize WEDSS through a web based provider portal to collect patient communicable disease information.

* WEDSS also receives electronic lab reports (ELR) from over 49 hospital, clinic system and reference laboratories via an HL7 feed through the Wisconsin State Lab of Hygiene (WSLH).

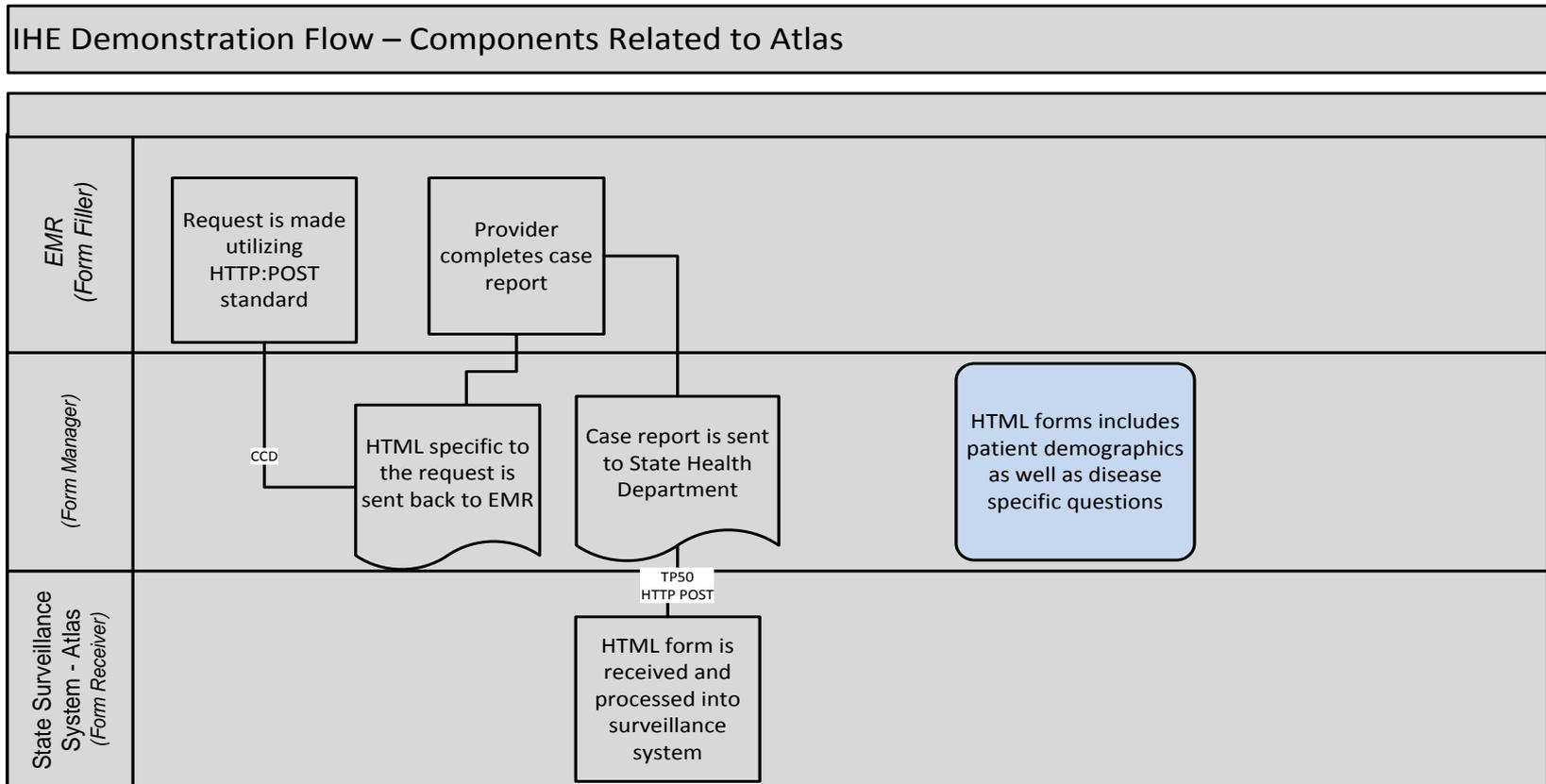# Current Process for Providers to Report Communicable Disease

* Providers are able to log into WEDSS and manually enter data.

* Providers have the ability to search WEDSS for ELRs submitted by their facility and generate a case report from them, reducing the amount of typing, however in most cases the Infection Preventionists are transcribing information from their Electronic Health Record (EHR) into WEDSS.

* Local public health reviews the data submitted and completes the investigation. State epidemiologists reviews the entire case and flags the case for submission to the CDC via NETSS or NEDSS

* Early in the process of implementing WEDSS providers began requesting the ability to report directly from their EHR systems.

* In August 2012 WEDSS went live with the capacity to accept an electronic message directly from healthcare facilities EHR through the Atlas developed WEDSS EHR Gateway.

WEDSS Case Reporting Using CDD
Work Flow Diagram

WEDSS EHR Gateway Workflow

Integrating Healthcare Enterprise (IHE) Components

IHE Demonstration Flow – Components Related to Atlas

EMR (Form Filler)

- Request is made utilizing HTTP:POST standard
- Provider completes case report

(Form Manager)

- CCD
- HTML specific to the request is sent back to EMR
- Case report is sent to State Health Department
- HTML forms includes patient demographics as well as disease specific questions

State Surveillance System - Atlas (Form Receiver)

- TP50 HTTP POST
- HTML form is received and processed into surveillance system

```xml
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    <s:Header>
        <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RetrieveForm</a:Action>
        <a:MessageID>urn:uuid:6ba17a23-6c82-4fe8-9d37-7829595b5d74</a:MessageID>
        <a:ReplyTo>
            <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
        </a:ReplyTo>
        <a:To
            s:mustUnderstand="1">https://phdemo2.atlasdev.com/CMR_11.0.2_Wisc/Services/FormManager/FormManager_Servi
    </s:Header>
    <s:Body>
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            xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="urn:ihe:iti:rfd:2007">
            <prepopData>
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                    <title>Continuity of Care Document</title>
                    <effectiveTime value="20130425083832-0500"/>
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                    <languageCode code="en-US"/>
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                                <state>WI</state>
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                            </addr>
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                                <name use="L">
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                                </name>
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                                    <given>A</given>
                                    <family>EHRTEST</family>
```

Data Parsed from the CCD Message

The WEDSS application is capable of parsing the following common core data set from a CCD message.

First Name	Middle Name	Last Name
DOB	Gender	Home Phone Street
Address	Apartment Number	City
State	Zip	Country
Ethnicity	Race	Pregnant (if female)
Expected Delivery Date (if pregnant)		
Reporting Source	Medical Record Number	
Diagnosed Disease	LOINC	SNOMED
Organizational ID	NPI	

TEST SYSTEM

Disease Incident

Patient: EHRTest,PerPatOne	Incident ID:	Process Status:
DOB: 09/09/1990	Disease: PERTUSSIS (WHOOPING COUGH)	Resolution Status:

Patient | **Supplemental** | **Pertusis EHR Suppl**

Incident Information

Date of Onset (MM/DD/YYYY)

Asymptomatic: ☐

Date of Diagnosis (MM/DD/YYYY)

Date of Death (MM/DD/YYYY)

Patient Died of this illness:

☐ Yes ☐ No

Patient hospitalized:

☐ Yes ☐ No

☐ Inpatient ☐ Outpatient

Date Admitted (MM/DD/YYYY)

Date Discharged(MM/DD/YYYY)

Notes/Remarks

[Add]

⊞ **Laboratory Information w/Provider & Facility (system)**

[Back] [Next] [Cancel]

TEST SYSTEM

Disease Incident

?

Logged in as: System Process   **Domain:** Web

Patient: EHRTest,PerPatOne   Incident ID: Process Status:

DOB: 09/09/1990   Disease: PERTUSSIS (WHOOPING COUGH)   Resolution Status:

| Patient | Supplemental | Pertusis EHR Suppl |

⊟ Category I disease reporting

THIS IS A CATEGORY I COMMUNICABLE DISEASE. In addition to electronic submission of the disease incident, health care providers must also report the incident by telephone to the appropriate local health department. Local health departments must call the Wisconsin Division of Public Health Bureau of Communicable Diseases and Emergency Response.

Local health department listing

⊟ Pertussis - laboratory testing

Laboratory testing performed
○ Yes   ○ No   ○ Unk

PCR Sample Collection Date

Bordetella pertussis PCR result

Bordetella pertussis culture date

Bordetella pertussis culture result

Bordetella pertussis serology #1 date

Bordetella pertussis serology #1 result

Bordetella pertussis serology #2 date

Bordetella pertussis serology #2 result

Other test

Other pertussis test result

⊟ Pertussis - clinical information

Cough (any type)
○ Yes   ○ No   ○ Unknown

Cough onset date

Catarrhal: first stage (lasting 1-2 weeks) symptoms of pertussis including cold-like illness, runny nose, sneezing, mild cough.

Catarrhal phase illness
○ Yes   ○ No   ○ Unk

Onset of catarrhal phase (cold like symptoms)

Paroxysmal: follows the Catarrhal stage, includes explosive coughing fits with (or without) the whoop and post tussive vomiting

Pertussis - clinical information

Cough (any type)
○ Yes   ○ No   ○ Unknown

Cough onset date
[   ] 📅

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Catarrhal phase illness
○ Yes   ○ No   ○ Unk

Onset of catarrhal phase (cold like symptoms)
[   ] 📅

Paroxysmal: follows the Catarrhal stage, includes explosive coughing fits with (or without) the whoop and post-tussive vomiting.

Paroxysmal cough
○ Yes   ○ No   ○ Unk

Onset of paroxysmal cough
[   ] 📅

Whoop
○ Yes   ○ No   ○ Unk

Posttussive vomiting
○ Yes   ○ No   ○ Unk

Apnea: Prolonged breathlessness, which may occur either after a coughing spasm or spontaneously in an infant.

Apnea
○ Yes   ○ No   ○ Unk

Sleep Disturbance
○ Yes   ○ No   ○ Unk

Pertussis - complications

Result of chest x-ray for pneumonia
○ Pos   ○ Neg   ○ Not Done
○ Unk

Seizures due to pertussis
○ Yes   ○ No   ○ Unk

Acute encephalopathy due to pertussis
○ Yes   ○ No   ○ Unk

Hospitalized
○ Yes   ○ No   ○ Unk

Number of days hospitalized
[   ]

Died
○ Yes   ○ No   ○ Unk

Pertussis - vaccination history

ID-01

This section applies to vaccines given PRIOR to illness onset.

Vaccination date
[   ] 📅   ☐ Last dose

Record type, manufacturer, and lot number.

Pertussis vaccine type
[▼]

Pertussis vaccine manufacturer
[▼]

Lot Number
[   ]

My Case Load | Search | Previous Search | Jurisdiction Review | Outbreak / Investigation | Staging | Administration | Dictionaries | Reports | Help | Case Manag

Logged in as: Gelletta,JohnTest   **Domain:** Main

Staging Area

🦠 Disease Incident

◉ Date Received   ◯ Date of Message

From Date [   ] 📅   To Date [   ] 📅   Patient [   ]   Diagnosis [

Case ID [   ]   Jurisdiction [▼]   Lab [▼]   Accession [

Resulted Test [   ]   HL7 File Name [   ]   [Search]

Imported Results

Case ID	Date Received	Patient	DOB	City	Resulted Test	Value	Diagnosis	Jurisdiction	Laborato
970207	09/06/2013	Test, Auteesha	09/16/1990	NONE GIVEN	BABESIA MICROTI IGM	< 1:20	BABESIOSIS	Training	*Quest D
970202	09/06/2013	McTesterton, Testy	04/29/1969	Cottage Grove	CULTURE	Salmonella species	SALMONELLOSIS	Training	*ACL Lab
970201	09/06/2013	Presley, Elvis	06/25/1967	EAU CLAIRE	GC PCR	NG DETECTED	GONORRHEA	Training	*Sacred Laborato
970200	09/06/2013	STERN, Teacher	12/28/1987	WEST Allis	CULTURE	BDER	UNKNOWN DISEASE	Training	*ACL Lab

Patients

	Match By	Type	Record ID	Date	Patient	DOB	Address	Jurisdiction	Investigator	Disease	Status	Resolution Status	Last Update D
☐	🖱️	🦠 DI	970208	09/09/2013	PRESSLEY, ELVIS	06/25/1967	WI	Training		CHLAMYDIA TRACHOMATIS INFECTION	New	Suspect	10/29/2013 10:3 AM

👤 Matched by Person Name   1234 Matched by Future Client No./MRN   🖱️ User Selected   🦠 Matched by Disease Incident   🟥 Demographics Do Not Match   🟩 Ready For In

Import Options

◯ Attach Species Result

◯ Only Attach Lab Report   ☐ Create a New Person and Disease Incident Record   ☐ Update Demographics   ◯ Attach Serogroup / O Group Result

◯ Create New Disease Incident   ◯ Attach Serotype Result

[Delete]   [View Patient's Demographics]   [Unlock]   [Training]   [Hide Selected Matches]

[LIP Info...]   [View Patient's Lab Report...]   [Select Patient...]   [Import Selected Results...]

Pilot Progress

* In August 2014 Wisconsin Completed integration testing with Epic Systems Corporation's demo EHR, successfully retrieving a disease specific case report form, populating the form from the CCD and submitting the completed form to the WEDSS development site.

* Wisconsin is actively soliciting providers using the current version of Epic's EHR to pilot the EHR gateway. Wisconsin has also begun discussions with other EHR vendors to begin developing their capacity to submit a CCD to public health.

* Disease specific EHR supplemental forms have been created for all reportable diseases.

* WEDSS is able to capture patient demographic information from the CCD message. The next upgrade of the WEDSS system, expected at the end of 2014, will include the functionality to parse treatment and symptom information as well.

Challenges

* Infection Preventionists are typically enthusiastic to support electronic disease reporting, however when the project has been brought to a facilities IT department and management it has consistently been denied due to lack of resources and higher priority projects such as Meaningful Use and the state HIE projects.

* Providers have expressed concerns that the limited amount of fields parsed from the CCD message did not represent a value for the effort involved in implementation. To address this concern Wisconsin has contracted an enhancement to the WEDSS system to capture additional data elements. This enhancement will be delivered at the end of 2014.

Next Steps

* Recruit a facility to pilot electronic case reporting via CCD messaging.

* This project focused on pertussis, chlamydia and campylobacter, once successful with these diseases Wisconsin plans to expand to all Diseases

* Work with other EHR vendors and other providers to further automate the reporting process.

* Implement enhancement to capture treatment and symptom data from the CCD message