

I've categorized the existing name\label fields into larger overarching categories here. The idea is that each of these themes appear in a large number of diseases, but the field names might not be the exact same. Like, for instance, different diseases will ask if different symptoms have appeared depending on what is relevant for that disease, but they all take a pretty similar format - has the symptom occurred? Depending on the disease it might also ask how long ago it started occurring, a numeric measurement of the symptom (like temperature for fever), etc. So, a way of building the supplemental report might be to have the user indicate a field is a symptom, select the specific symptom name they want to include from a list pulled from FHIR (or type it in manually if it does not already exist), and then allow them to select whether or not they want to include optional questions associated with the field like severity or numerical measurements, or their own input if none matching exists. We can also store and reuse any of these custom user inputs for future use.

Note that the 'Diseases this is seen in' field is not exhaustive, and should serve as a starting point for identifying examples of usages of each type.

All of this can likely be formatted within a 'Questionnaire' Resource

### Symptoms

- Any symptoms the patient is experiencing as a result of this illness.
- Examples:
  - headache, rash, myalgia, stiff neck, altered mental status, weight loss...
  - user input for other
  - some like fever and diarrhea will have sub-selections
    - fever: temperature, highest measured temperature, temperature units (F or C)
    - diarrhea: bloodyYN
- Fields:
  - symptom name
  - symptom onset date
  - symptom severity
- Diseases this is seen in:
  - Almost all (incl hepatitis)
- Is this found in FHIR already?
  - Observation Resource
- Note: Some of these have an option to specify asymptomatic, so we should have an option to include that as well

### Complications

- Other diseases acquired due to being infected with the current disease
- Examples:
  - arthritis, pneumonia
- Fields:
  - disease name
  - disease onset date
- Diseases this is seen in:
  - Arboviral, Brucellosis, Novel Influenza A, QFever, Varicella
- Is this found in FHIR already?
  - DetectedIssue or Condition
  - Diagnosis Resource

## Prior Illnesses

- Any diseases the patient has previously been infected with
- Examples:
  - any disease
- Fields
  - disease name
  - disease onset date
  - has patient recovered or is this ongoing
  - disease resolved date
- Diseases this is seen in:
  - Arboviral, Cholera, Congenital Rubella Syndrome(in mother), Hepatitis
- is this found in FHIR already?
  - Condition
  - Diagnosis
  - Look into how fhir stores medical history
- Note this can probably pull disease info from the same place as above, may be able to reuse elements

## Exposure

- Anything the patient has been exposed to that is relevant to this disease
- Examples
  - animal/animal product exposure, exposure to drugs, working conditions, received blood transfusion, etc
- Fields
  - what the exposure was to
  - exposure date
  - exposure location
    - should have option for city, county, lat/long coordinates
  - exposure detail
    - for instance, public transportation might ask what method of transport
  - any action taken post exposure
    - antibiotics, injections (can use antibiotics/injections template here)
- Diseases this is seen in:
  - almost all (incl hepatitis)
- Is this found in FHIR already?
  - MedicationStatement for drug use
  - For animal disease - Patient stores animal information
  - Observation
  - This one will likely take from a large number of resources

## Travel and Immigration

- Did the patient travel (especially internationally) before they acquired the disease?
- Fields:
  - Travel
    - Travel Destination
    - Was the travel international?
    - Date of Departure
    - Date of Return

- Reason for Travel
  - Immigration
    - Where did the patient immigrate from?
    - Date of departure from home country
- Diseases this is seen in:
  - Arboviral, Cholera, Congenital Rubella Syndrome, Cryptosporidiosis, Cyclosporiasis, Measles, Mumps, hepatitis
- Is this found in FHIR already?
  - We weren't able to find a resource corresponding with this, so we will likely have to create one
  - Travel history
  - Immigration -?
- Note: This should probably be a subset of the exposure category above, or at least available as an option to select for exposure in addition to being a top level category. Some of these might overlap with eICR, though that only asks if the disease was acquired in another country, not just travel, so it might be relevant to include this as supplemental
- should provide option for multiple previous travel destinations (see arboviral)

### Family History

- Can probably compose from the same thing a patient's prior medical history is composed of already in FHIR
  - Can likely pull from FamilyMemberHistory Resource
- See Hepatitis, Congenital Rubella for examples of use

### Historic Vaccine:

- Indicates whether a patient was previously vaccinated for a disease (for things like Mumps, Rubella where preventative vaccines are typical)
- Fields:
  - Did the subject ever receive a disease containing vaccine?
  - If no, reason subject did not receive a disease containing vaccine
  - Number of doses received ON or AFTER first birthday
- Diseases this is seen in:
  - Cholera, Measles, Mumps, Pertussis, Congenital Rubella Syndrome, Rubella, Invasive Pneumococcal Disease, Varicella, Polio, Polio Nonparalytic, Hepatitis
- Is this found in FHIR already?
  - Immunization Resource

### Injection

- Differs from the above in that this is current injection anything given as a part of treatment
- Fields:
  - Vaccine Administered Name
  - Vaccine Administered Date
  - Substance (Substance (vaccine, antibiotic, other) of first injection)
  - Describe (Description of injection substance)
  - Vaccine Manufacturer
  - Vaccine Lot Number
- Diseases this is seen in:

- Animal Rabies, Anthrax
- Is this found in FHIR already?
  - Immunization Resource

### **Treatment**

- Above Injection should probably be a subcategory of this. Also includes medications, antibiotics and any other treatment
- Fields:
  - medicine type
  - quantity
  - was medicine discontinued before it ran out?
- Diseases this is seen in
  - Anthrax (antibiotics), Brucellosis, Cholera, Malaria, Arboviral, Babesiosis, Novel Influenza A, Ped Flu Death, Hepatitis
- Is this found in FHIR already?
  - If injection, will take from Injection Resource
  - Otherwise, will likely take from a combination of Medicine(for medicine info), MedicationOrder, MedicationAdministration,
  - procedure

### **Genotyping**

- Fields:
  - Was genotyping performed
  - was subtyping performed
  - genotyping sent date
  - genotyping location (CDC, other lab)
  - Genotype result
  - Subtype result
- Diseases this is seen in:
  - Congenital Rubella Syndrome, Cryptosporidiosis, Measles, Mumps, Rubella, Varicella
- Is this found in FHIR already?
  - DiagnosticReport
- Note: check Cryptosporidiosis for good examples

### **Lab Test**

- Fields:
  - Result ID
  - Test Name
  - Test Date
  - Test Type
  - Test Method
  - Test Result (should have option to specify numeric, text, or that it's not expecting a particular value)
  - Test Units
  - Reference Range From/To (indicates typical ranges for this test, if numeric)
  - Result Status

- Interpretation Flag (The interpretation flag identifies a result that is not typical as well as how it's not typical. Examples: Susceptible, Resistant, Normal, Above upper panic limits, below absolute low)
  - Lab Report Date (differs from test date this is the day the results were sent)
  - Lab Report Status (is testing finished, in progress, etc)
  - Lab Result Comments
- Diseases this is seen in:
  - Almost all (incl hepatitis)
- Is this found in FHIR already?
  - DiagnosticReport
  - Should be very well defined online
  - Observation for some things like LDL, Cholesterol
- Note: Some of these have spots specifically for tests at the CDC or state clinical labs: might provide hard coded option for location of CDC, State lab, or other lab and then can provide name

### **Specimen:**

- Tests performed on any specimen taken from the patient
- Fields:
  - specimen number
  - date collected
  - specimen site
  - specimen details
  - date collected
  - patient status at specimen collection
  - date sample analyzed
  - organism name/species found in sample
  - was sample sent to CDC?
    - if yes, specimen test result and test date
  - was sample sent to state health department?
    - if yes, specimen test result and test date
- Diseases this is seen in:
  - almost all
- Is this found in FHIR already?
  - Specimen Resource

### **Antigen Based Test**

- Should likely be a subtype of specimen above
- Fields:
  - AgCLinic (What was the result of specimen testing using an antigenbased test (e.g. EIA or lateral flow) at a clinical laboratory?)
  - AgClinicTestType (Name of antigenbased test used at clinical laboratory)
  - AgSphl (What was the result of specimen testing using an antigenbased test (e.g. EIA or lateral flow) at a state public health laboratory?)
  - AgSphlTestType (Name of antigenbased test used at state public health laboratory)
- Diseases this is seen in:
  - Cryptosporidiosis, Cyclosporiasis, Salmonella, Giardia, STEC
- Is this found in FHIR already?

- Specimen or DiagnosticReport, depending on field

### **PRC Testing**

- Should likely be a subtype of specimen above
- Fields:
  - PcrCdc (What was the result of specimen testing for diagnosis using PCR at CDC? (Do not enter PCR results if PCR was performed for speciation or subtyping).)
  - PcrClinic (What was the result of specimen testing using PCR at a clinical laboratory? (where goal of testing is primary detection not subtyping or speciation))
  - PcrClinicTestType (Name of PCR assay used)
  - PcrSphl (What was the result of specimen testing for diagnosis using PCR at the state public health laboratory? (Do not enter PCR results if PCR was performed for speciation or subtyping).)
  - PCR (If PCR was done, select on which specimens it was used ("Blood", "Abscess/wound", "Bone marrow", "CSF", "Other"))
- Diseases this is seen in:
  - Cryptosporidiosis, Cyclosporiasis
- Is this found in FHIR already?
  - Specimen or DiagnosticReport, depending on field/which fits better

### **Isolate**

- Fields:
  - Track Isolate
  - Isolate Received at state public health lab
  - Reason Isolate not received
  - Reason Isolate not received (Other)
  - State public health lab Isolate ID number
- Diseases this is seen in:
  - Botulism, Cryptosporidiosis
- Is this found in FHIR already?
  - Specimen? What is an isolate?

For entirely new elements, we will build a method for allowing the user to input their own questions. The user will have an option to save the question(s) they have created as a resource for future use.