

TABLE 1: MINIMUM DATA SET SPECIFICATIONS¹ (Total number of data elements: 58)

1. BASE FACILITY DATA ELEMENTS (5)

Comments

General:

- These data elements are generally static and should be submitted at baseline and updated as necessary.

Feasibility:

- Many data elements will need web form collection as HL7 messages have limited structures to address these concepts.

BASE FACILITY DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
1.1	Facility Identifier	Y	N	Unique facility identifier	<u>General:</u> <ul style="list-style-type: none"> ▪ Facility identifier is routinely transmitted; facility name and location are derived.
1.2	Facility Name	Y	N	Name of facility	
1.3	Facility Location	Y	N	City, (county) and State	<u>General:</u> <ul style="list-style-type: none"> ▪ May use FIPS county codes
1.4	Number of Facility Beds	Y	N	Total number of physically available facility beds including those in non-participating or non-licensed areas; regardless of licensing or staffing status	<u>General:</u> <ul style="list-style-type: none"> ▪ Potentially active or usable beds at full capacity in a disaster.

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BASE FACILITY DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
1.5	Number of Licensed Beds	Y	N	Total number of Medicare and/or Medicaid certified and licensed beds within a facility)	

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2. DAILY FACILITY SUMMARY REPORT DATA ELEMENTS (18)

Comments:

General:

- Daily aggregate reports will likely need preparation by reporting facility; alternative, (may be costly) is calculation by data recipient.
- May require additional fields to assess hospital burden. Patients may overload facilities at multiple points (e.g., emergency department). Uncertain if hospital census is prepared routinely (e.g., at midnight) by each facility for daily reports.
- Not currently transmitted electronically, would require - Standard definitions, and new resources (personnel, technology, workflow re-engineering).

Feasibility:

- May require manual review of registration system for a daily aggregate report.
- May not be directly calculable from aggregation of record level data.
- May require significant data entry (e.g., web form), since daily facility report for these categories are not available and are not easily transferable.
- May require significant programming by sending facilities to achieve automation

Filtering:

- Situational filtering would “turn on” daily reporting for many of these elements in response to an event (e.g., a disaster or major public gathering) which otherwise would not be expected of each facility.
- Need periodic testing to confirm capacity and accuracy.

DAILY FACILITY SUMMARY REPORT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
2.1	Admissions last 24 hours	Y	N	Number of admissions to facility in last 24 hours	
2.2	Discharges last 24 hours	Y	N	Number of discharges from facility in last 24 hours	

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DAILY FACILITY SUMMARY REPORT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
2.3	Deaths last 24 hours	Y	N	Number of deaths recorded at facility in last 24 hours.	<p><u>General:</u> (Health Level 7 [HL7])</p> <ul style="list-style-type: none"> ▪ Table 0136: Patient Death Indicator ▪ Values: Yes/No ▪ Where used: PID ▪ Additional: Patient Death date/time ▪ Values: Time Stamp ▪ Where used: PID
2.4	Clinical Status	Y*	N	<p>Facilities clinical resources are operating</p> <ul style="list-style-type: none"> ▪ Within normal conditions. ▪ At Level-1 surge conditions. ▪ At Level-2 surge conditions. ▪ Exceeded; acceptable care cannot be provided to additional patients. Diversion or community surge response is required. 	<p><u>General:</u></p> <ul style="list-style-type: none"> ▪ Description and values are based on proposed Hospital Availability Exchange (HAVE) specification http://www.comcare.org/HAVE.html

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DAILY FACILITY SUMMARY REPORT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
2.5	Facility Status	Y*	N	Facility resources are operating under: <ul style="list-style-type: none"> ▪ No limitation adversely affects routine/general facility operations ▪ Limited conditions due to damage, operating on emergency backup systems, or facility contamination. ▪ Severe conditions with active process of partial or full evacuation. ▪ Closure; facility no longer capable of providing services and only emergency services/restoration personnel may remain in the facility. 	<u>General:</u> (HAVE) <ul style="list-style-type: none"> ▪ CDC currently receives automatically but there has been no evaluation <u>Feasibility:</u> <ul style="list-style-type: none"> ▪ May be possible to retrieve from current systems (e.g., EMSystems used in 35% of EDs; over 50% use some system)
2.6	Facility Operations	Y*	N	Status of supplies necessary for facility operations <ul style="list-style-type: none"> ▪ Meets the current needs. ▪ Current needs not being met 	<u>General:</u> (HAVE) <ul style="list-style-type: none"> ▪ Pharmacy stock data (especially antibiotics) should be gathered.
2.7	Staffing	Y*	N	Available personnel to support facility operations <ul style="list-style-type: none"> ▪ Meets the current needs. ▪ Current needs not being met. 	<u>General:</u> (HAVE) <ul style="list-style-type: none"> ▪ Staffing capacities should be broken down by specialty (i.e., nurse, physician, respiratory therapy, pharmacist).

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NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
2.8	Decontamination Capacity	Y*	N	Capacity for chemical/biological/radiological patient decontamination. <ul style="list-style-type: none"> ▪ Not being used, but available if needed. ▪ In use and able to accept additional patients. ▪ In use at maximum capacity. ▪ Needs exceed available capacity. 	<u>General:</u> (HAVE) <ul style="list-style-type: none"> ▪ Might quantify to determine throughput capability and threshold for rerouting to other facilities. <u>Feasibility:</u> <ul style="list-style-type: none"> ▪ No electronic form of decontamination capacity data exist.
2.9	EMS Traffic Status	Y*	N	Facility capable of: <ul style="list-style-type: none"> ▪ Accepting all EMS traffic. ▪ Some limited EMS traffic due to specific resource limitation ▪ Receiving no EMS traffic and requesting re-route of traffic to other facilities. ▪ Not Applicable. This facility does not have an emergency department. 	<u>General:</u> (HAVE)
2.10	EMS Capacity	Y*	N	Number of each triage patient type the hospital can accept. <ul style="list-style-type: none"> ▪ Number of victims with immediate needs. ▪ Number of victims with delayed needs. ▪ Number of victims with minor needs. ▪ Number of deceased victims. ▪ One or more comments. 	<u>General:</u> (HAVE)

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NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
2.11	EMS Census	Y*	N	Number of each triage patient type the overall hospital currently has. <ul style="list-style-type: none"> ▪ Number of victims with immediate needs. ▪ Number of victims with delayed needs. ▪ Number of victims with minor needs. ▪ Number of deceased victims. ▪ One or more comments. 	<u>General:</u> (HAVE)
2.12	Adult ICU Beds	Y*	N	Capacity status for adult ICU beds	<u>General:</u> (HAVE) Beds supporting critically ill or injured patients; includes ventilator support and all major subtypes of ICU beds (e.g., neuro, cardiac, trauma, or medical) except burn ICU beds.
2.13	Medical Surgical Beds	Y*	N	Capacity status for medical-surgical beds.	<u>General:</u> (HAVE) <ul style="list-style-type: none"> ▪ Ward beds; may or may not include cardiac telemetry capability.
2.14	Burn Beds	Y*	N	Capacity status for burn beds.	<u>General:</u> (HAVE) <ul style="list-style-type: none"> ▪ Burn ICU beds; either approved by the American Burn Association or self-designated; NOT included in other ICU bed counts.
2.15	Pediatric ICU Beds	Y*	N	Capacity status for pediatric ICU beds.	<u>General:</u> (HAVE) <ul style="list-style-type: none"> ▪ Similar to adult ICU beds, but for patients 17-years-old and younger.

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DAILY FACILITY SUMMARY REPORT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
2.16	Pediatrics Beds	Y*	N	Capacity status for pediatrics beds.	<u>General:</u> (HAVE) <ul style="list-style-type: none"> Ward medical/surgical beds for patients 17-years-old and younger.
2.17	Negative Flow Isolation Beds	Y*	N	Capacity status for negative airflow isolation beds.	<u>General:</u> (HAVE) <ul style="list-style-type: none"> Respiratory isolation. <i>NOTE:</i> Value may include beds counted above.
2.18	Available Ventilators	Y*	N	Functional ventilators not in current use	<u>General:</u> <ul style="list-style-type: none"> Ventilator category - should include Bi-Pap machines and several other machines that can assist ventilation <u>Feasibility:</u> <ul style="list-style-type: none"> Not routinely collected nor collected by BioSense No identified specification

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3. PATIENT DATA ELEMENTS (10)

Comments:

General:

- Laboratories do not see the patient and have no unique patient identifier. Laboratories receive a specimen sample with limited patient demographic information. Should limit the number of data elements to those the laboratories receive.
- For inpatient and outpatient facilities, transmitted information should be limited to patient status changes (e.g., Admission/Discharge/Transfer [ADT]) available through HL7 transactions, not for every inpatient event.

Filtering:

- Concerns regarding privacy: month and year of birth, gender, and 5 digit zip code may be sufficient to identify many persons, especially older ones.

PATIENT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
3.1	Pseudonymized Data Linker	Y*/N	N	A health care organization-specific longitudinal number that links to patient-level information (i.e., medical record number, name and address) retained at the reporting facility.	<u>General:</u> <ul style="list-style-type: none"> ▪ The MDS data sent to local, state and national public health agencies will not be fully identifiable
3.2	Event Date/Time	Y	N	Date /time of the patient admission/discharge/transfer (ADT)	<u>General:</u> (HL7) <ul style="list-style-type: none"> ▪ Values: Time Stamp ▪ Where used: EVN for ADT ▪ Concerns about duplicate (ADTs) out of the multiple sending systems.
3.3	Event Type	Y	N	Designation of event type: admission, discharge, or transfer.	<u>General:</u> (HL7) <ul style="list-style-type: none"> ▪ Table 0003: Event Type Code ▪ Values: HL7 defined ▪ Where used: EVN for ADT ▪ Additional: MSH – 9

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PATIENT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
3.4	Date of Birth (DOB)	Y	Y	Limited to month and year	<p><u>General:</u> (HL7)</p> <ul style="list-style-type: none"> Where used: PID Full DOB not needed, and introduces confidentiality concerns (w/ zip/gender). <p><u>Filtering:</u></p> <ul style="list-style-type: none"> Requires an action or manipulation to remove the day
3.5	Age	Y*	Y	Numeric value for age	<p><u>General:</u></p> <ul style="list-style-type: none"> Requires calculation for some ADT systems <p><u>Filtering:</u></p> <ul style="list-style-type: none"> For sparsely populated areas will need to limit actual age and categorize into less specific groups
3.6	Age units	Y*	N	Days, Month or Years	<p><u>General:</u></p> <ul style="list-style-type: none"> Requires calculation for some ADT systems BioSense: Unified Code for Units of Measure (UCUM) Where used: OBX-6
3.7	Gender	Y	N	HL7 Administrative Sex <ul style="list-style-type: none"> F – Female M – Male O - Other U - Unknown 	<p>General : (HL7)</p> <ul style="list-style-type: none"> Table 0001: Administrative Sex Values: User defined Where used: PV-1, PID-8, NK1-15, GT1-9, IN1-43, STF-5

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PATIENT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
3.8	Zip Code	Y	Y	Home address [minimum 5 Digit Zip]	<u>General:</u> <ul style="list-style-type: none"> 5-digit zip may not be needed, depending on use/purpose. Refer to HIPAA guideline <u>Filtering:</u> <ul style="list-style-type: none"> Sparsely populated geographic locations will need filtering of 5 digit zip code
3.9	State	Y	N	Home address [2 character abbreviation]	<u>General:</u> (HL7) <ul style="list-style-type: none"> Where used: PID-11 Patient Address
3.10	Transaction date/time update	Y	N	System Time stamp for when the message was sent (all registration (ADT) system transactions)	<u>General:</u> <ul style="list-style-type: none"> Required for de-duplication and/or data manipulation at receiving site based on temporal order.

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4. **CLINICAL DATA ELEMENTS (10)**

Comments

General:

- Presumes 1) data are obtained by monitoring HL7 messages and 2) facility identifier and pseudonymized linker have been associated with the clinical data element record
- For inpatient and outpatient facilities, transmitted information should be limited to patient status changes (e.g., Admission/Discharge/Transfer [ADT]) available through HL7 transactions, not for every inpatient event.
- Need to determine what messages for hospitalized patients, through the course of care, should be included in these clinical data elements.
- Real time ICD-9 CM coding is not routine; often not done until almost 72 hours after patient discharge.
- Most clinical data elements come from registration system with diagnosis assigned after discharge.

Feasibility:

- Collecting nursing data (temperature, pulse oximetry, and notes) would require installing a nursing documentation system.

Filtering:

- Concern about confidentiality and identification of individuals as well as their specific (and sensitive) diagnoses may make filtering a greater priority or even inhibit transmission until filters are established and implemented.

CLINICAL DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
4.1	Diagnosis/Injury Code	Y	Y	<ul style="list-style-type: none"> ▪ ICD-9 Clinical Modification diagnosis codes ▪ Supplementary Classification of External Causes of Injury and Poisoning ▪ Supplementary Classification of Factors Influencing Health Status and Contact with Health Services 	<p><u>General:</u></p> <ul style="list-style-type: none"> ▪ Likely not available in real time ▪ May vary as more information is acquired <p><u>Feasibility:</u></p> <ul style="list-style-type: none"> ▪ Available but incomplete due to reporting delay <p><u>Filtering:</u></p> <ul style="list-style-type: none"> ▪ Mental/behavioral health and STD/HIV conditions or diagnoses should be filtered

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CLINICAL DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
4.2	Diagnosis Type	Y	N	Qualifier for Diagnosis/Injury Code specifying type of diagnosis <ul style="list-style-type: none"> ▪ Preliminary ▪ Interim ▪ Final ▪ Admitting 	<u>General:</u> <ul style="list-style-type: none"> ▪ Correct for billing but not necessarily during an encounter or within 24 hours of event.
4.3	Diagnosis Date/Time	Y	N	Date of onset of diagnosis	<u>General:</u> <ul style="list-style-type: none"> ▪ Not readily available, surrogate would be system time stamp of diagnosis data entry.
4.4	Discharge Disposition	Y	N	If discharged, place to where patient was released. (e.g. Discharged to home or self care (routine discharge), Admitted as an inpatient to this hospital, Left against medical advice or discontinued care)	<u>General:</u> (HL7) <ul style="list-style-type: none"> ▪ Table 0112: Discharged Disposition ▪ Values: User defined ▪ Where used: PV1-36, PV2-27
4.5	Patient Class	Y	N	Patient classification within facility: <ul style="list-style-type: none"> ▪ E: Emergency ▪ I: Inpatient ▪ O: Outpatient ▪ P: Pre-admit ▪ R: Recurring patient ▪ B: Obstetrics 	<u>General:</u> (HL7) <ul style="list-style-type: none"> ▪ Table 0004: Patient Class ▪ Values: User defined ▪ Where used: PV1-2

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CLINICAL DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
4.6	Symptom/Illness Onset Date/Time	N	N	Documented date/time of symptom/illness onset by triage or clinician	<u>General:</u> <ul style="list-style-type: none"> Symptom onset typically recorded in free text without any coded value Paper dominated process at present, but evolving electronic applications make data capture more feasible in the future. May require significant reformatting of onset date/time (e.g., 2 weeks ago to actual date)
4.7	Chief Complaint	Y	N	Short description, recorded during triage, for seeking care	<u>General:</u> <ul style="list-style-type: none"> May be text string or coded (e.g., ICD-9 CM) values
4.8	Temperature	N	N	Recorded temperature during triage	<u>General:</u> (HL7 & LOINC) <ul style="list-style-type: none"> LOINC Code for 'Body temperature' Where Used: OBX-3 <u>Feasibility:</u> <ul style="list-style-type: none"> Temperature routinely collected; for current surveillance system, only 1 of 67 hospitals store electronically
4.9	Pulse Oximetry	N	N	Record pulse oximetry value during triage	<u>General:</u> (HL7 & LOINC) <ul style="list-style-type: none"> LOINC Code for 'Pulse Oximetry' Where Used: OBX-3 <u>Feasibility:</u> <ul style="list-style-type: none"> Pulse oximetry routinely collected; for current surveillance system, only 1 of 67 hospitals store electronically

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CLINICAL DATA ELEMENTS					
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4.10	Nursing/Triage Notes	N	Y	Text string written by nurse or health care partner	<p><u>General:</u></p> <ul style="list-style-type: none"> ▪ May have serious implications for privacy and security ▪ May be source for travel history ▪ No current travel history menu boxes ▪ Usually stored as data string ▪ May be source to search for recent (e.g., in the past 24, 48, and 72 hours) patient location (e.g., mall, concert, stadium). <p><u>Filtering:</u></p> <ul style="list-style-type: none"> ▪ Filtering will not solve significant privacy issues and concerns

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5. LABORATORY/INFECTIOUS DISEASE-RELATED TEST ORDER DATA ELEMENTS (3)

Comments

General:

- Presumes 1) data are obtained by monitoring HL7 messages and 2) facility identifier and pseudonymized linker have been associated with the laboratory/radiology test order element record
- Messages will include all transactions or tests ordered for hospitalized patients, throughout the course of care, as well as those seen in outpatient settings.
- The BDSG has presumed a desired subset of all laboratory tests focused primarily on infectious diseases. Additional laboratory and/or radiologic tests may be transmitted, but a defined set has not been determined.
- Infectious diseases-related describes a broad category of laboratory tests used to identify microorganisms including: gram stain, routine culture, susceptibility testing, serology, polymerase chain reaction (PCR), genotype/phenotype, DNA, RNA, direct florescent antibody (DFA), antigen testing, and any testing for influenza.

Feasibility:

- Sending laboratory/radiology test orders without vocabulary standardization will make information aggregation impossible and difficult at best. Prior vocabulary standardization efforts have been costly and generally met with resistance from data providers.

Filtering:

- Methods to filter for specific test based on unique (idiosyncratic) data provider laboratory or radiology service codes will be required in the absence of comprehensive use of LOINC/SNOMED and/or DICOM standard vocabulary

LABORATORY/INFECTIOUS DISEASES TEST ORDER DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
5.1	Order Number	Y	N	Accession number as defined by reporting laboratory <ul style="list-style-type: none"> ▪ HITSP may use the term "specimen ID". 	<u>General:</u> <ul style="list-style-type: none"> ▪ Laboratories receive one source specimen that yields multiple specimens for various tests. The accession number is not unique to a specific test but rather the specimen source

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5.2	Test/Procedure Name	Y	N	Procedure name from reporting laboratory	<p><u>General:</u></p> <ul style="list-style-type: none"> Laboratory name will be used to interpret test as non-LOINC codes will be meaningless to receiver <p><u>Filtering:</u></p> <ul style="list-style-type: none"> Tests and procedures associated with legally protected status conditions or diagnoses (e.g., HIV) should be filtered
5.3	Test/Procedure Code	Y*	Y	A code (e.g., LOINC/DICOM) and/or text description name should be sent; Idiosyncratic codes are the norm, thus a text description is required at a minimum	<p><u>General:</u></p> <ul style="list-style-type: none"> Assuring accurate LOINC test code values for each test requires a submission and communication with Regenstrief Institute to add new tests and corresponding codes Need method to convert to a standard code set, e.g., LOINC <p><u>Feasibility:</u></p> <ul style="list-style-type: none"> Standardizing to LOINC mapping and implementation is difficult in smaller labs Limited current market penetration of LOINC code mapping makes natural language processing of test/procedure name (description) a necessity Will become easier as LOINC coding progresses in dealing with panels and institutions convert to utilize LOINC in the Laboratory Information Systems (LIS)

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					<p>Filtering:</p> <ul style="list-style-type: none"> Tests and procedures associated with legally protected status conditions or diagnoses (e.g., HIV) should be filtered
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6. LABORATORY/INFECTIOUS DISEASES-RELATED RESULT DATA ELEMENTS (12)

Comments

General:

- Presumes: 1) data are obtained by monitoring HL7 messages 2) order/accession number, facility identifier, and pseudonymized linker have been associated with the clinical data element record
- Need to coordinate with national electronic laboratory reporting initiative.
- Infectious diseases-related describes a broad category of laboratory tests used to identify microorganisms, including: gram stain, routine culture, susceptibility testing, serology, polymerase chain reaction (PCR), genotype/phenotype, DNA, RNA, direct florescent antibody (DFA), antigen testing, and any testing for influenza.

Feasibility:

- Collecting laboratory results should synergize with ongoing work of the EHR-Lab Interoperability and Connectivity Standards (ELINCS) project to establish laboratory test result standardization. ELINCS can serve as the foundation towards achieving standardized laboratory test result reporting.
- ELINCS, with ACLA member laboratory support, provides a rational, consensus implementation guide for standardizing test result information.
- ELINCS is based on a more widely used HL-7 version, within health care and public health. Much work remains to be accomplished (including laboratory test orders),

Filtering:

- Defining and testing the laboratory and/or radiologic test subset for transmission will be critical but has yet to be determined

LABORATORY/INFECTIOUS DISEASES RESULT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments

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LABORATORY/INFECTIOUS DISEASES RESULT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
6.1	Reporting Laboratory Identifier	Y	N	Standard national identifier value	<u>General:</u> <ul style="list-style-type: none"> CLIA or CAP laboratory number
6.2	Performing Laboratory	Y	N	Standard national identifier value	<u>General:</u> <ul style="list-style-type: none"> CLIA or CAP laboratory number <u>Feasibility:</u> <ul style="list-style-type: none"> When sending specimen from referring laboratory to performing lab – CLIA # is not carried on request
6.3	Report Date/Time	Y	N	Date and time of report transmission	<u>General:</u> <ul style="list-style-type: none"> Electronic time stamp
6.4	Result Status	Y	N	Is the result: <ul style="list-style-type: none"> Preliminary Partial Final Corrected Amended 	<u>General:</u> (HL7) <ul style="list-style-type: none"> Where Used: OBR-25
6.5	Collection Date/Time	Y	N	Date (and time, when appropriate) of the specimen collected	<u>General:</u> <ul style="list-style-type: none"> Generally no Collection Date/Time indicated on paper requisitions; may use default (accession) date/time for specimen receipt

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LABORATORY/INFECTIOUS DISEASES RESULT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
6.6	Specimen Source	Y*	N	The Identification of the Specimen Material (e.g. CSF – Cerebral Spinal Fluid, SER – Serum, FLU – Body Fluid Unspecified, BLDV – Blood Venous)	<p><u>General:</u> (HL7)</p> <ul style="list-style-type: none"> Table 0070: Specimen Source Codes Values: HL7 defined Where used: OBR-15 <p><u>Feasibility:</u></p> <ul style="list-style-type: none"> Some data sources may only have free-text field stored in message
6.7	Ordered test code	Y	N	A code (e.g., LOINC) and/or text description name should be sent; Idiosyncratic codes are the norm, thus a text description is required at a minimum	<p><u>General:</u></p> <ul style="list-style-type: none"> Need method to convert to a standard code set, e.g., LOINC <p><u>Feasibility:</u></p> <ul style="list-style-type: none"> Must at least have the data source ordered test description name Will become easier as LOINC coding progresses in dealing with panels and institutions convert to utilize LOINC in the LIS

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LABORATORY/INFECTIOUS DISEASES RESULT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
6.8	Resulted test	Y*	Y	Standard codes or LOINC have greatest coverage for resulted test	<p><u>General:</u></p> <ul style="list-style-type: none"> Many institutions may have limited LOINC implementations Association of Public Health Laboratories (APHL) has built a filter to select appropriate tests for communicable disease reporting <p><u>Feasibility:</u></p> <ul style="list-style-type: none"> <u>Limited implementation of LOINC codes will delay capacity to filter; would need to key off institution's idiosyncratic code</u> <p><u>Filtering:</u></p> <ul style="list-style-type: none"> For large organizations (e.g., national laboratories) operating at a very large scale (e.g., 10 million results/day) daily processing may delay reporting/transmission, Would require mapping of idiosyncratic codes to defined lists (e.g., APHL, <i>see above</i>) to effectively filter by test codes BioSense looks at the diagnostics section field to determine if is microbiologic test; ideally would filter on diagnostics, but uncertain if available uniformly

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LABORATORY/INFECTIOUS DISEASES RESULT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
6.9	Result	N	N	Includes all test results including susceptibilities, serology's, non-organisms; coded value	<u>General:</u> <ul style="list-style-type: none"> Currently, test results are generally report in the test interpretation field (see 6.11) Need method to convert to a standard code set, e.g., SNOMED
6.10	Result unit	N	N	May be in various formats: <ul style="list-style-type: none"> Coded value (e.g., SNOMED) for organism without a unit Susceptibility would have a unit Viral copies 	<u>General:</u> <ul style="list-style-type: none"> Need method to convert to a standard code set, e.g., SNOMED <u>Feasibility:</u> <ul style="list-style-type: none"> Likely available only as free text; if end-user processes free text this would be feasible (Y)

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LABORATORY/INFECTIOUS DISEASES RESULT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
6.11	Test interpretation	Y	N	May be in various formats: <ul style="list-style-type: none"> Organism may be SNOMED coded Modifiers may describe growth (e.g., colony count or “heavy”) Susceptibility for each antibiotic with accompanying minimal inhibitory concentration (MIC) value Qualitative susceptibility measures (e.g., resistant, susceptible, intermediate) Viral copies Categoric (positive/negative) 	<p><u>General:</u></p> <ul style="list-style-type: none"> Variable use of SNOMED by facilities Where Used: OBX-8 <p><u>Feasibility:</u></p> <ul style="list-style-type: none"> Much work required to read and interpret this field if sent in text format May need to convert into 3 or 4 fields since transmitted field blends multiple concepts <p><u>Filtering:</u></p> <ul style="list-style-type: none"> Group was unable to define specific rules and methods to implement a filtering process on test interpretation field Filtering should occur at the resulted test level (see 6.8) since the absence of a result (e.g., faulty transmission) does not uniformly indicate test was negative. Abnormal flags would only be available for tests done on-site BioSense does not filter at level of positive test, they receive all tests. APHL is developing a method (i.e., natural language processing) to find appropriate test results by reading the free text test interpretation field

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LABORATORY/INFECTIOUS DISEASES RESULT DATA ELEMENTS					
NO.	Data Element	Feasible ² (Y/Y*/N)	Filter ³ (Y/N)	Description (values)	Notes/Comments
6.12	Test status	Y	N	Coded value: <ul style="list-style-type: none"> ▪ O: Order received; specimen not yet received ▪ I: No results available; specimen received, procedure incomplete ▪ S: No results available; procedure scheduled, but not done ▪ A: Some, but not all, results available ▪ P: Preliminary: A verified early result is available, final results not yet obtained ▪ C: Correction to results ▪ R: Results stored; not yet verified ▪ F: Final results; results stored and verified. Can only be changed with a corrected result. ▪ X: No results available; Order canceled. ▪ Y: No order on record for this test. (Used only on queries) ▪ Z: No record of this patient. (Used only on queries) 	<u>General Comments: (HL7)</u> <ul style="list-style-type: none"> ▪ Table 0123: Results Status ▪ Values: HL7 defined ▪ Where used: OBR-25

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TABLE 2: Additional DATA ELEMENTS considered but not selected for BDSG Minimum Data Set (14)

NO.	Data Element	Description	User
1.	Mode of conveyance	Method by which patients are transported to hospital	Public health investigator
2.	Triage travel history	Any travel information such as malls, concerts, etc.	Public health & Hospital safety officer
3.	Subjective fever, cough, sore throat, shortness of breath,	May not be indicated in the CC section but could be captured in an electronic clinical encounter section	Health authority
4.	Decontamination loading	Percent of decontamination facilities currently utilized	Hospital safety officer
5.	Patient air source	Room air, face mask, intubated etc.	Health authority
6.	Heart Rate	Date/time of heart rate measurement (beats/minute).	Health authority
7.	Blood Pressure	Blood pressure - indication of shock and other clues	Health authority
8.	Patient treatment history	Previous facility and what patient received for treatment	Health authority
9.	Clinical evaluation notes	Free text data on pre-diagnostic findings (HL7)	Health authority
10.	Number waiting for triage	Patients massed and waiting for triage at an ER Facility	Health authority
11.	Number waiting for beds available	Triaged patients waiting	Health authority
12.	Number admitted but not in licensed bed	Patients who may be in halls, cafeterias, conference rooms etc	Health authority
13.	Ventilator category	Normal, Bi-Pap, other ventilator-substitute	Health authority
14.	Staffing capacities by specialty	Nurse, physician, pharmacist, respiratory therapist	Hospital safety officer, health authority

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Feasibility Testimony Questions:

1. To what extent are the listed minimum data set (MDS) elements available electronically now within your organization, membership, entity or jurisdiction? What future plans or steps would be necessary to make those data elements available? What standard vocabularies are in place to enable machine interpretable health exchange (e.g., Level 4 interoperability) with other systems? Please describe the status of those standards in your organization both currently and for the future (including implementation timelines).
2. What changes would be required in your organization, membership, entity or jurisdiction in order to collect the proposed MDS elements in electronic format? What are anticipated costs (both human/workflow and infrastructure) associated with those changes toward MDS element collection? Please include reference to the following in your response:
 - o end user workflow
 - o interfaces
 - o mapping and filtering of elements
 - o commercial-off-the-shelf (COTS) products
 - o daily reports
 - o please add additional items _____

References:

1. Farzad Mostashari, M.D., MSPH, Assistant Commissioner for the Bureau of Epidemiology Services, New York City Department of Health and Mental Hygiene
2. Shaun Grannis, M.D., M.S. Research Scientist, Regenstrief Institute, Inc.; Assistant Professor of Family Medicine, Indiana University School of Medicine.
3. Jason DuBois, Vice President, Government Relations, American Clinical Laboratory Association (ACLA)
4. Elvin Adams, M.D., Health Authority/Medical Director, Tarrant County Public Health
5. George Hripcsak, M.D., M.S., Professor and Vice Chair of Biomedical Informatics at Columbia University, Associate Director of Medical Informatics Services New York-Presbyterian, Senior Informatics Advisor for the New York City Department of Health and Mental Hygiene
6. Janet Glowicz, R.N., Chief Epidemiologist, Collin County Health Care Services
7. John C. White, C.N.M.T., Assistant Director, Environmental Health and Safety, Radiation Safety Officer-Radioactive Materials, The University of Texas Southwestern Medical Center at Dallas
8. John T. Carlo, M.D., M.S.E., Medical Director/Health Authority, Dallas County Department of Health & Human Services
9. Michael Sternberg, R.N., Infection Control, Plaza Medical Center of Fort Worth
10. Ron Kasowski, Facility Director of Environmental Safety and Emergency Management, Baylor Health Care System
11. Terry Stagg, Director of Emergency & Risk Management, Kellwest Hospital, Wichita Falls, TX
12. David Buckeridge, Aman Verma, and David Siegrist, Tarrant County Evaluation Study {FINAL REPORT} (APC)

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13. Health Level Seven Specifications for Electronic Laboratory-Based Reporting of Public Health Information

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Resource and Costs Estimation of the BDSG Minimum Data Set:

The BDSG considered the relative cost for implementation of reporting/transmission systems for the MDS. These estimates are very preliminary and based on a limited survey of experts. The estimates are imprecise due to the large variation in capacities of health care organizations which would be requested to transmit data on a daily basis. Some would easily adapt to these transmission requests given their sophistication and skill with prior HIT implementations. If central technical resources promoted and supported capacity building, the individual health care organization estimates may be lower but would require greater technical assistance investment. We anticipate a broad range of capacities, thus these cost estimates may significantly underestimate resources required for the less initiated. Attempting to leverage this effort with the Nationwide Health Information Network could substantially increase the cost given the need to invest heavily in infrastructure to achieve level-4 interoperability. Changes in structure of existing clinical systems creates significant burden in clinical settings; cost implications extend beyond simple physical implementations but may involve drastic business process analysis efforts and modification of work flow to accommodate transition to standardized vocabularies throughout the enterprise.

A factor which we were unable to estimate was the cost of disk storage. If facilities (e.g., large laboratories) are required to create and store pseudonymized data linkers, massive storage may be required to track what was sent. Disk storage for some institutions may be necessary as staging areas where free text may be converted to coded values (e.g., LOINC/SNOMED). If there were need to audit processes and verify conversion procedures, disk space may again be significant. On-line data storage for many health care organizations is typically purged every 6-18 months. It is uncertain whether this process of building an MDS would require data to be stored for longer periods.

The BDSG recognized that costs vary based on the data type. Base facility data elements may be relatively easy to acquire; ICD-9 coded values, used for diagnoses, have a long tradition in health care organizations making implementation easier and less expensive. Similarly, patient data elements are relatively standard and much less costly than laboratory data. Laboratory/microbiology data standardization will require much effort in mapping and data transformation. As described in the table above, many laboratories continue to practice with information systems where free text fields are more prevalent incurring greater standardization costs.

Preliminary resources and scale for costs were estimated by experts and from national experience (i.e., BioSense) for startup and maintenance based on health care organization. Specific resources are needed in each of the following categories: interfaces, mappings, training, submitting reports, and assigning responsibility to staff. A more extensive review of prior studies (e.g., Gartner or HIMSS) should be undertaken to confirm these estimates.

1. Resources for startup and a minimum of 3 years maintenance should be considered for each health care organization setting
Clinical setting site:
 - Approximately \$ 250,000-\$300,000 for startup and \$50,000-\$75,000 for ongoing costs without the nursing data items.
 - Includes startup and maintenance including laboratory.

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- Building an interface to the registration system is \$50,000-\$100,000 for startup and three years of maintenance, not including adding the random number generator. An estimate of \$100,000 total. Preliminary cost estimates
- An interface to the laboratory system could also be in the \$50,000-\$100,000 range, but additional costs might be incurred to cover the filtering.
- Integration with infection control work processes will incur additional costs. Efforts to synergize and link Biosurveillance with general public health surveillance should be a goal of this effort. Infection control is a continuum from hospital to the community. Method for reconciliation of confirmed case reports and avoiding double counting requires careful human review. We have not estimated the cost of this linkage and effort.

CDC BioSense site

- Estimated resources for starting a new CDC BioSense sites is approximately \$115,000- \$155,000 for the clinical site.

City/County/State Health Department

- Resources for state or city/county health department to invest in capacity to receive/sent new HI7 messages, analysis, data management, local analysis, is approximately \$175,000 startup and \$100,000 ongoing.
- Feedback, follow-up and response initiation would require additional personnel costs.
- Resources for integration with traditional disease surveillance and communicable disease control would ultimately be necessary for these systems to have true value at a local level. No estimates are available for those efforts.

2. Cost of a web-based resource for summary facility data entry (e.g., HAVE specification elements)

- About \$15 -18 million for the nation's 4,500 hospitals per year.
- On average, \$3,300-\$4,000 per hospital per year, based on a typical, standard ASP costs.
- Cost is estimated based on the population of the region served at \$.04 - \$.05 cents per person (300 million population) plus additional funding for integration of regions and states into a unified national system.

3. Costs for evaluation and testing:

- Periodic (annual) program review, auditing, testing, and improvement resources are essential. Multiple efforts should be funded to support ongoing evaluation. No estimates are available for those efforts.

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