Empowering a Community for Outbreak Investigation

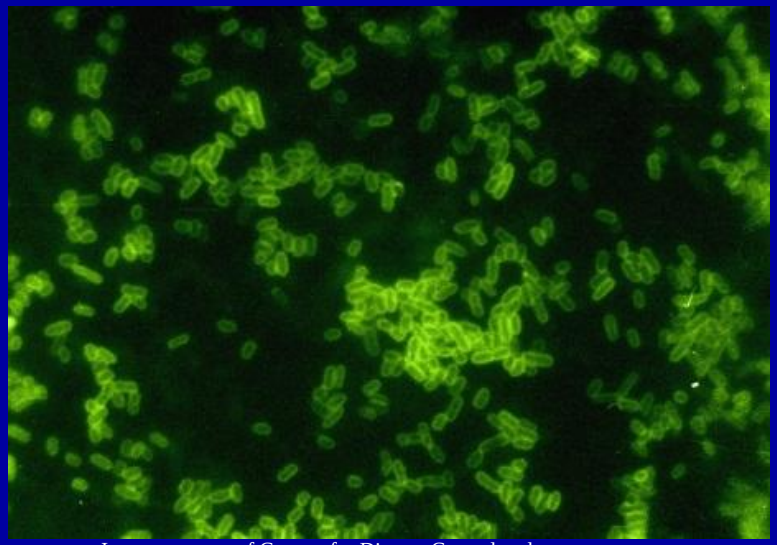


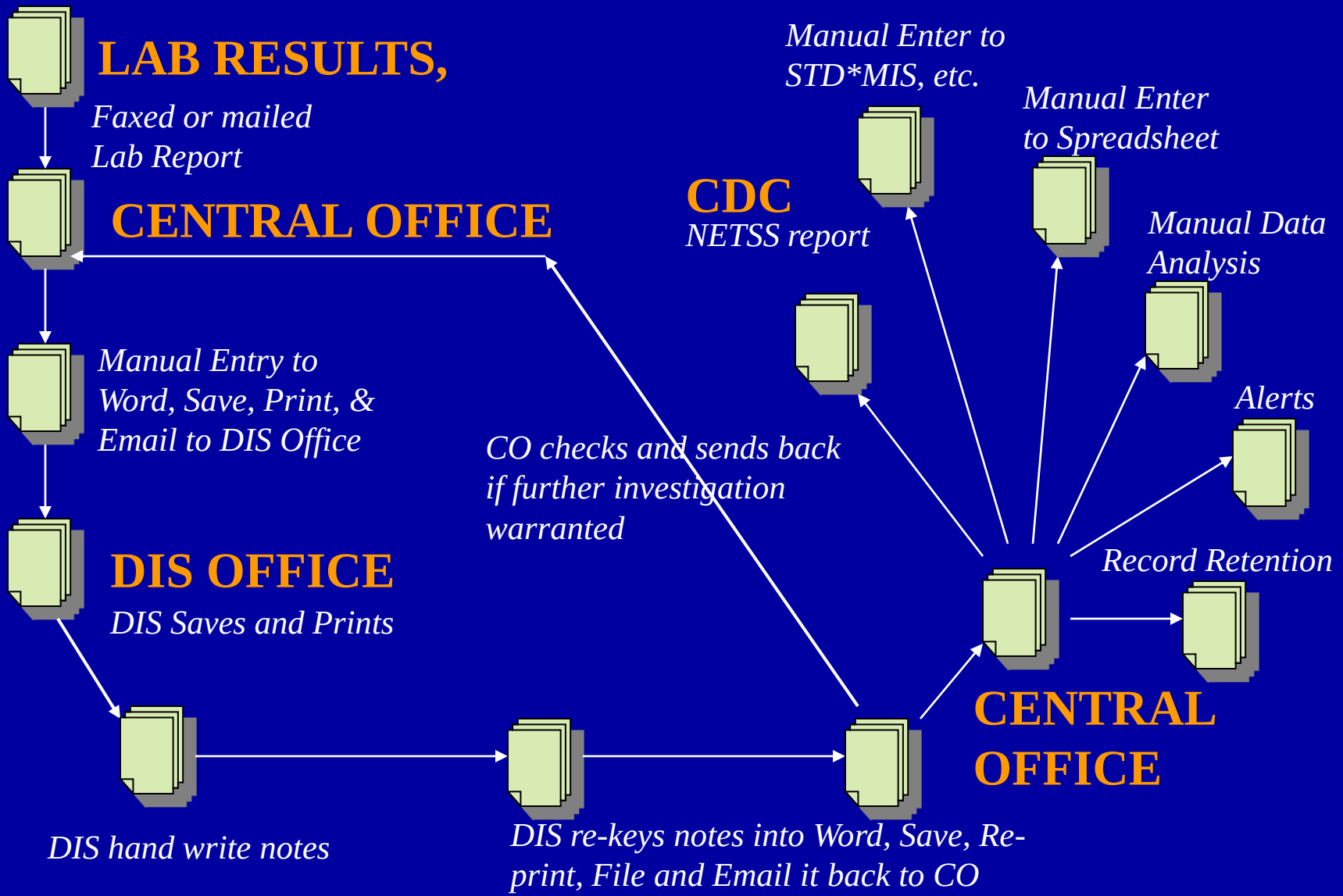
Image courtesy of Centers for Disease Control and Prevention

Image courtesy of the Office of United States Trade Representative

OutbreakNet 2012
August 29, 2012

Nicholas Hill, MPH
Disease Surveillance Manager Epidemiologist, SD-DOH

Historical data flow; nodes still stubbornly persist



Status of Public Health

- Lack of funding
- Lack of staffing resources
- Jurisdictional turf wars
- Lack of system capabilities
- Lack of technical expertise
- Not engaging the right partners
- Growth of government under intense scrutiny
- Benefits of new methods not clearly understood

Meaningful Use

- **Has potential to have dramatic impact, put our targets in focus, bridge the gap between clinical medicine and public health.**

- **Advantages: systematic and standardized way to collect and share patient information, formatted digitally, facilitated data exchange, tracking care, reminder/warnings, validating outcomes, statistical evaluations, security, audit tracking.**

We're still *missing* the most important part of the picture

http://www.wired.com/images_blogs/thisdayintech/2011/03/matrix_in.jpg

PATIENTS conducting *their own investigations* as soon as diagnosed or lab results are reported.

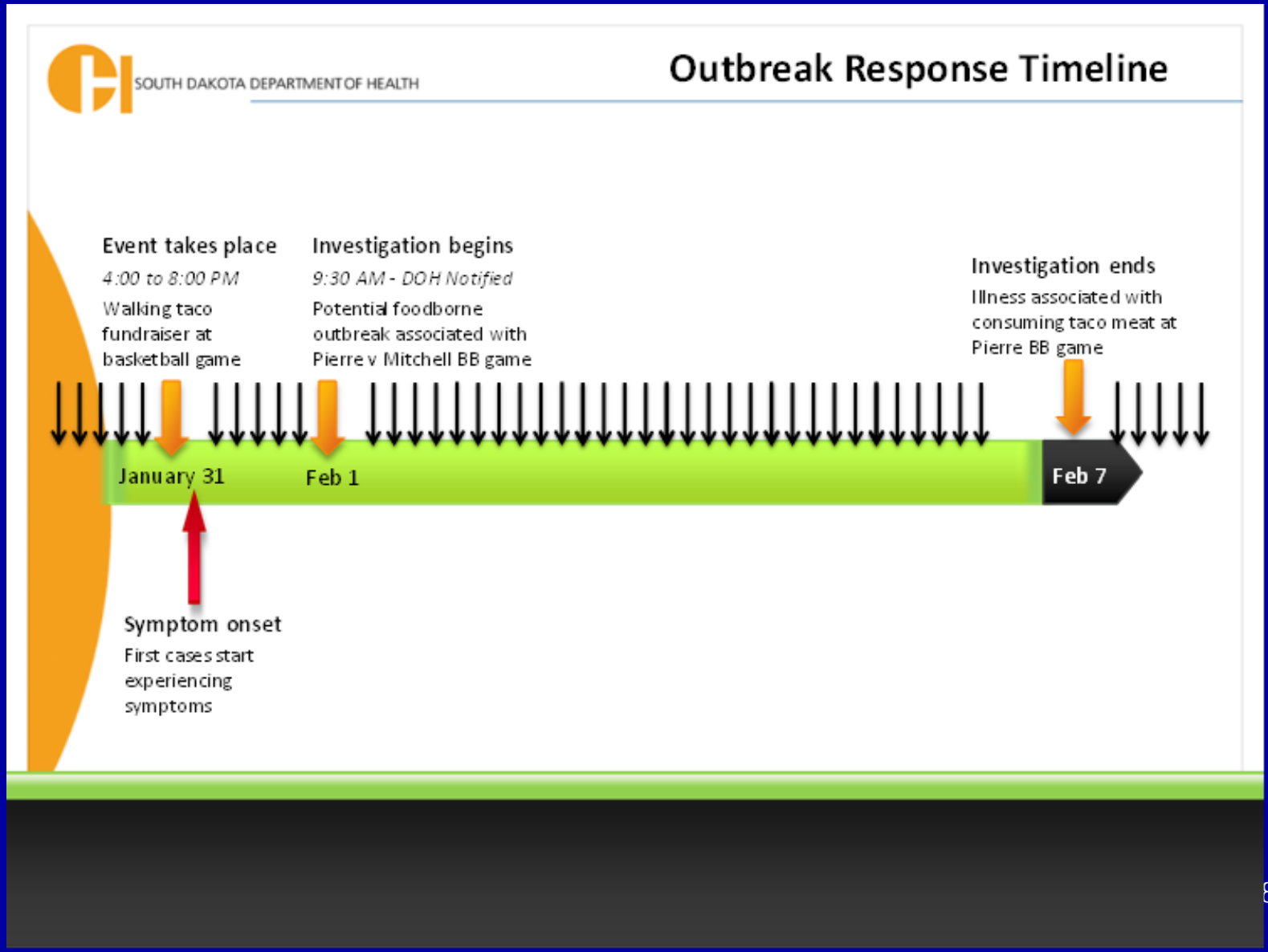
Image courtesy of Centers for Disease Control and Prevention

http://www.aphl.org/2008_12th_Annual_PulseNet_Meeting

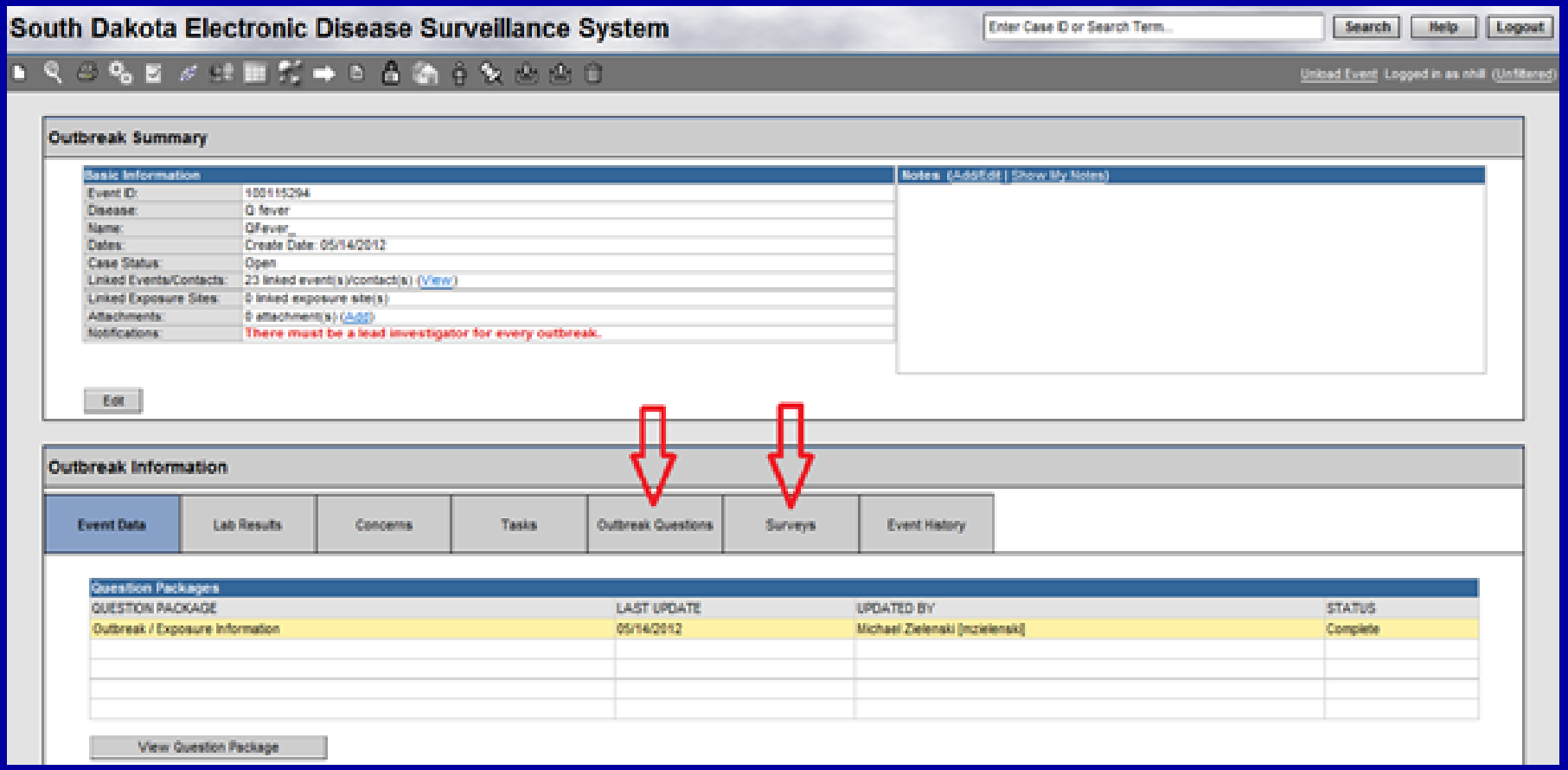
Empowering the Patient

- Equip them and give them their advocacy role.
- Public health can “see” the patient more quickly
- Investigations more effective while patient still infectious
- Intervention efforts are closer to the fire
- Prompt and quality feedback to clinical medicine
- Tracking population trends and statistics
- Clearly identify problems and gaps in need
- Evaluate and increase effectiveness of population-based prevention & control

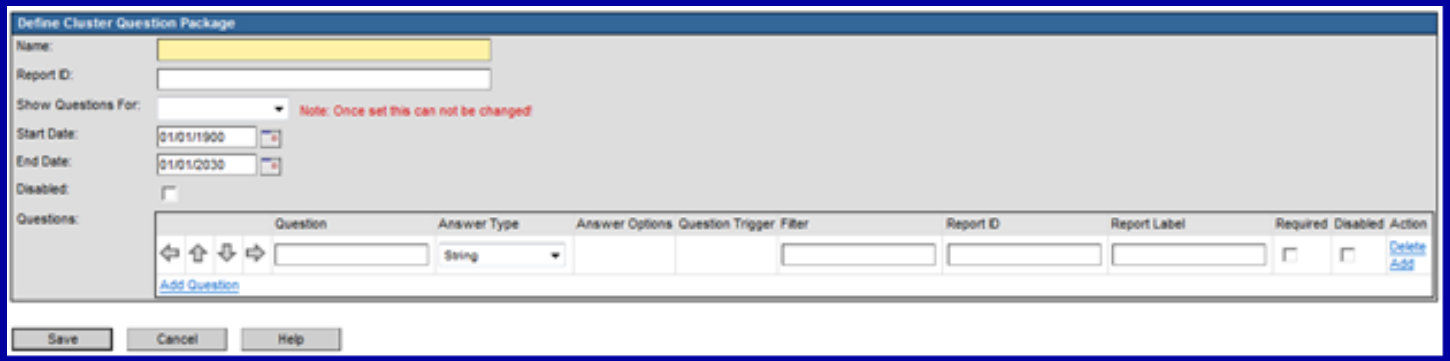
Empowering Communities

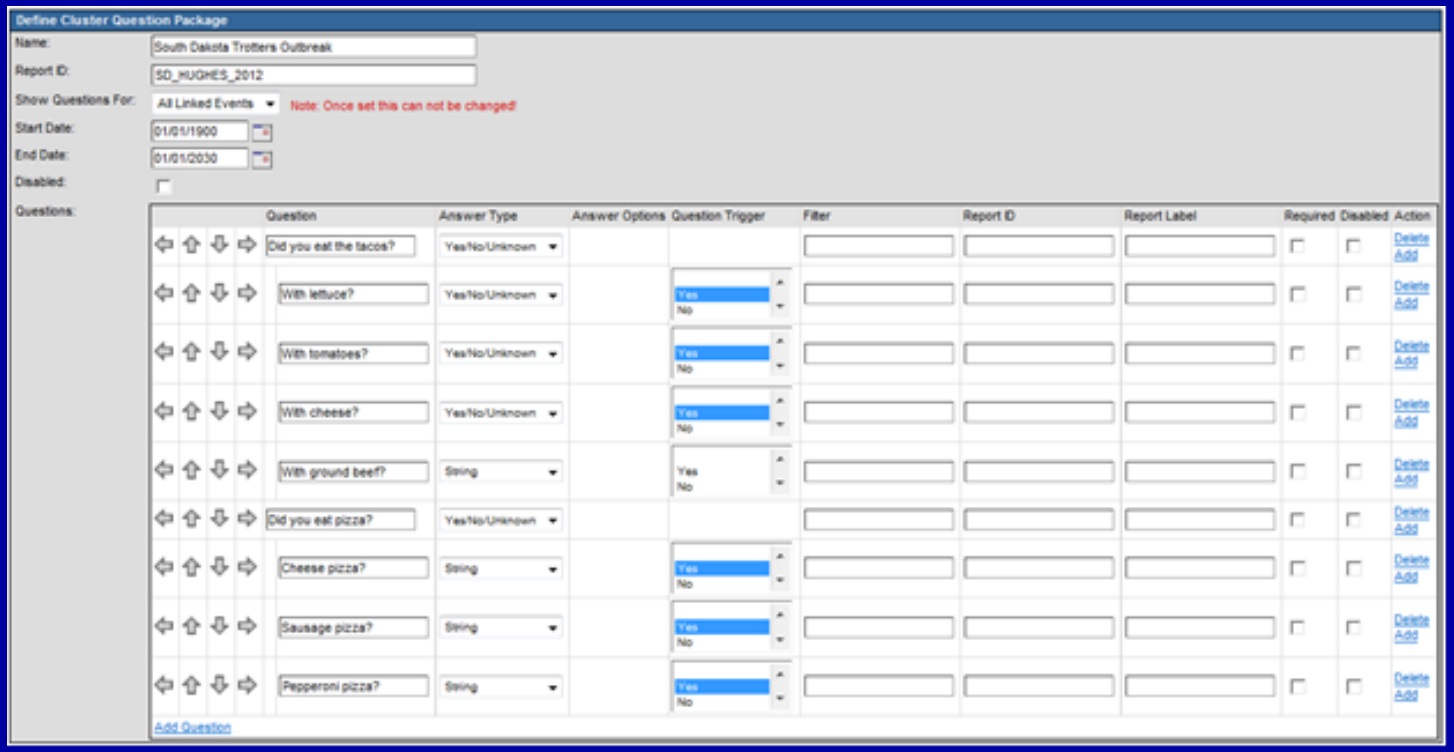


SDEDSS Dynamic Outbreak and Survey Builder



SDEDSS Dynamic Questionnaire Builder





SDEDSS Dynamic Questionnaire

* First Name:
* Last Name:
City:
Zip Code:
Home Phone:
Cell Phone:
Age (in years):
Gender:
Did you attend the Pierre/Mitchell basketball game on Tuesday, Jan. 31st?
Did you have any illness on the day BEFORE you attended the basketball game?
Did you become ill AFTER the basketball game?
Have you sought medical care?
Clinic Name
Was stool sample collected?
What day did your symptoms start?
Approx. what time did symptoms begin?
About how long did your illness last (in hours)?
Did you have diarrhea?
Did you have watery diarrhea?
Did you have bloody diarrhea?
Did you have abdominal cramps?
Did you have a fever?
Did you have nausea?
Did you have vomiting?
Did you have weakness?
Did you have chills?
Did you have headache?
Did you have constipation?

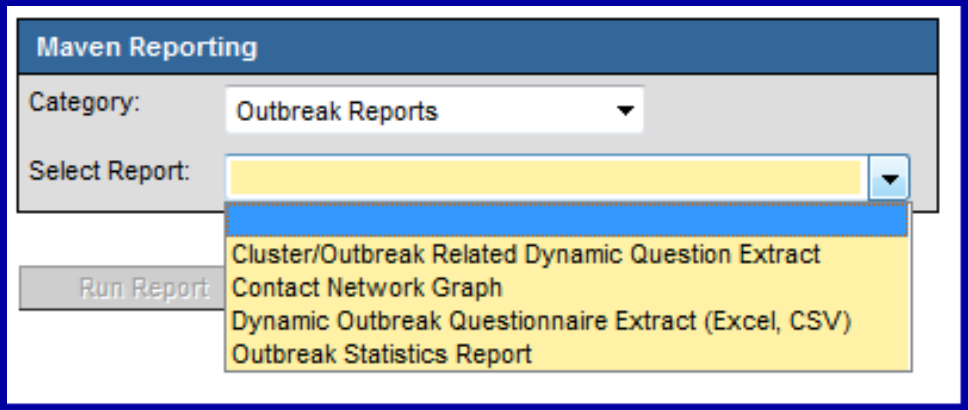
Please describe any other symptoms?

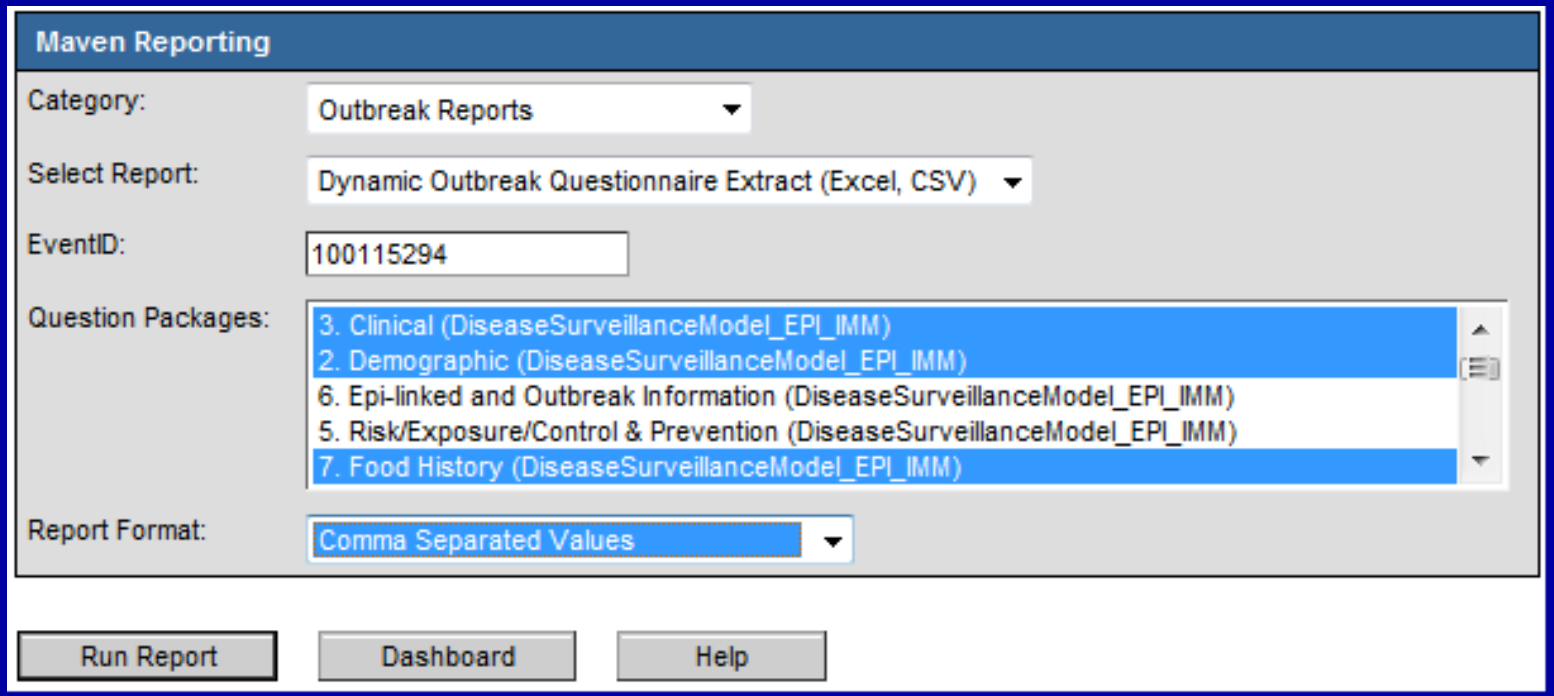
Did you have Walking Tacos? Yes
Did you have meat?
Did you have chips?
Did you have cheese?
Did you have lettuce?
Did you have salsa?
Did you have sour cream?
Did you have pizza?
Did you have hot dogs?
Did you have popcorn?
Did you have fountain pop?
Did you have anything else to eat or drink at the basketball game?

Comments:

* Indicates required field

SDEDSS Report Builder





SDEDSS Outbreak Reports

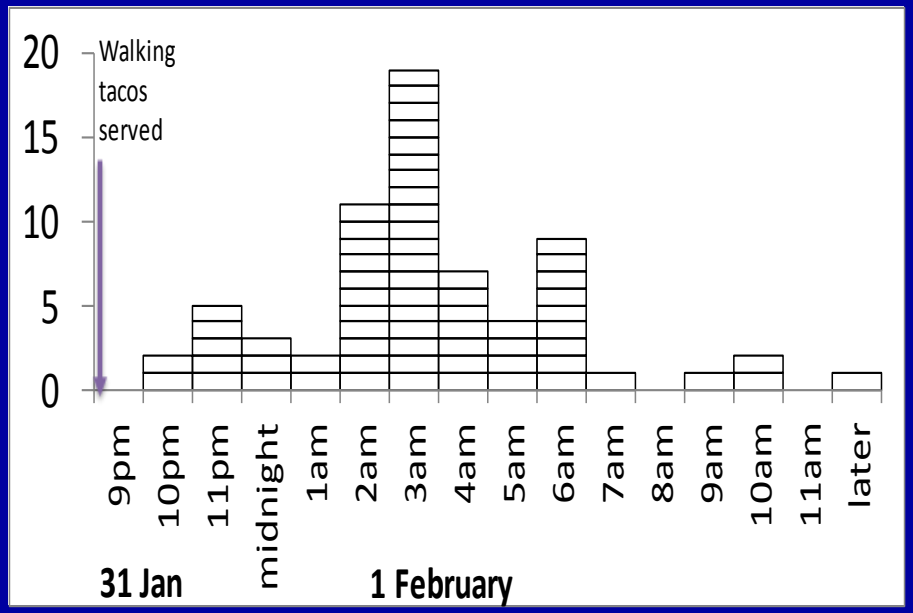


Table 1. Symptoms of Ill cases, Pierre/Mitchell Boys High School Basketball Outbreak, Jan, 2012.

Symptom	Responses	Number with Symptom	% with symptom
Diarrhea	74	74	100%
Watery diarrhea	73	58	79%
Bloody diarrhea	68	4	6%
Abdominal cramps	74	56	76%
Nausea	73	24	33%
Vomiting	73	3	4%
Fever	73	9	12%
Headache	73	14	19%
Chills	73	22	30%
Weakness	73	26	36%
Constipation	73	3	4%

Table 2. Analytical epidemiology: statistical breakdown of foods served at the Pierre/Mitchell Boys High School Basketball Outbreak, Jan, 2012.

	Ill Persons		Well Persons				
Food	Did consume	Did not consume	Did consume	Did not consume	RR	95% CI	P
Walking Taco	72	1	19	48	38.8	5.6 – 270.5	<<0.0001
-Taco Meat	70	2	20	47	19.1	4.9 – 74.4	<<0.0001
-Taco Cheese	70	1	19	47	37.8	5.4 – 263.4	<<0.0001
-Taco Lettuce	62	10	18	49	4.6	2.6 – 8.1	<<0.0001
-Taco Sour Cream	52	20	16	50	2.7	1.8 – 4.0	<<0.0001
-Taco Salsa	53	18	16	50	2.9	1.9 – 4.4	<<0.0001
-Taco Chips	68	4	19	48	10.2	3.9 – 26.2	<<0.0001
Hot Dogs	8	64	13	54	0.7	0.4 – 1.2	0.1299
Pizza	5	67	11	56	0.6	0.3 – 1.2	0.0686
Popcorn	41	31	27	40	1.4	0.996 – 1.9	0.0364
Fountain pop	5	67	13	54	0.5	0.2 – 1.1	0.0258

Future SDEDSS Vision

CLINICIAN REPORT

ELR-EMR EXCHANGE

SDEDSS

Local, State, Federal, International Exchange Partners

PATIENT DRIVEN DATA FLOW

Moving out of the trench…

Public Health must realize we have a smarter, more mobile, more informed PUBLIC. Need to develop tools to engage and leverage these resources to advance public health. Public must be brought into the process.

FDOMS predecessor system

The PATIENT "conducts" their own interview as soon as symptoms develop, diagnosed, or lab result is available.

- **Demonstration of FD-OMS (front side)**
  https://apps.sd.gov/applications/ph93Morbidity/secure/FoodHistory.asp

- **Demonstration of FD-OMS (back side)**
  https://www.state.sd.us/applications/DP42Launchpad/Logon.aspx

Question Package FDOMS

South Dakota Department of Health

Confidential
Food History Questionnaire

front end

Contact Information

Section 1 of 5 Next >>

We need **your help** to determine if any food items you ate may have caused your illness. The information you provide is compared with others who have similar illnesses - to identify possible sources. The way this works best is if you can obtain grocery and restaurant receipts, as well as any checkbook entries or credit card statements (if available) - for the past 10 days before you became ill. Use these and your best recall to tell us about your activities and what you ate in that period. (Note, If you don't know the answer, please just select "unk" for unknown and go to the next item.) **Please be sure to push the "Submit Questionnaire" button on Section 5 when you are finished.** Click Here to download a PDF version(Adobe Acrobat required).

PERSON ILL

*First Name: | MI: | *Last Name:

Home Address:

*City: | State: SD | Zip:

*Phone: | County: -- Select -- | Gender: -- Select --

Date of Birth: *(mm/dd/yyyy)*

Onset date of your first symptoms: *(mm/dd/yyyy)*

Onset date of vomiting or diarrhea: *(mm/dd/yyyy)*

Was this lab confirmed?

Physician Diagnosis:

Are you: the person ill

If you are not the person ill please enter your name: | Phone:

Section 1 of 5 Next >>

Question Package FDOMS

South Dakota Department of Health

Confidential
Food History Questionnaire

General Risks for Illness (in the last 10 days before you got sick)

<< Previous Section 2 of 5 Next >>

Yes No Unk

- Was anyone else in your household (or living arrangement) sick with diarrhea or vomiting?
- Did you spend any nights away from home?
- Are you on any kind of special or limited diet?
- Did you have any contact with dogs, cats, or other pets?
- Did you have any contact with commercial animals (hogs, cattle, horses, sheep, goats, etc.)?
- Did you handle any pets treats like pig ears, rawhide chews - at home or anywhere else?
- Did you have contact with any reptiles, such as snakes, iguanas, or other lizards, and turtles?
- Did you have any contact with baby chicks or other live poultry?
- Do you have any underlying medical conditions such as pregnancy, cancer, or diabetes that you have been told might affect your immune system?

If you answered "Yes" to any of these questions, please describe in this comments section. (5000 character limit)

Eating and Shopping (in the last 10 days before you got sick did you eat any food from..)

Yes No Unk

- any fast-food restaurants
- sit-down restaurants
- grocery-store deli or other kind of deli
- bakery
- coffee shop
- street vendor (wheeled cart or walking tray at events, etc.)
- event concession stand
- gas station or similar mini-mart
- tavern or bar
- free samples anywhere (e.g. grocery store, farmer's market, food event, etc.)

Yes No Unk

- cafeteria/dining room (e.g. worksite, hosptial, school)
- nursing home or care facility dining
- hotel room service
- child care facility
- potluck-type private event
- catered private gathering (e.g. wedding, parties)
- any food at a social event or gathering (church, coffee-hour, etc.)
- food brought in to school, offices or workplace

If you answered "Yes" to any of these questions, please describe in this comments section. (5000 character limit)

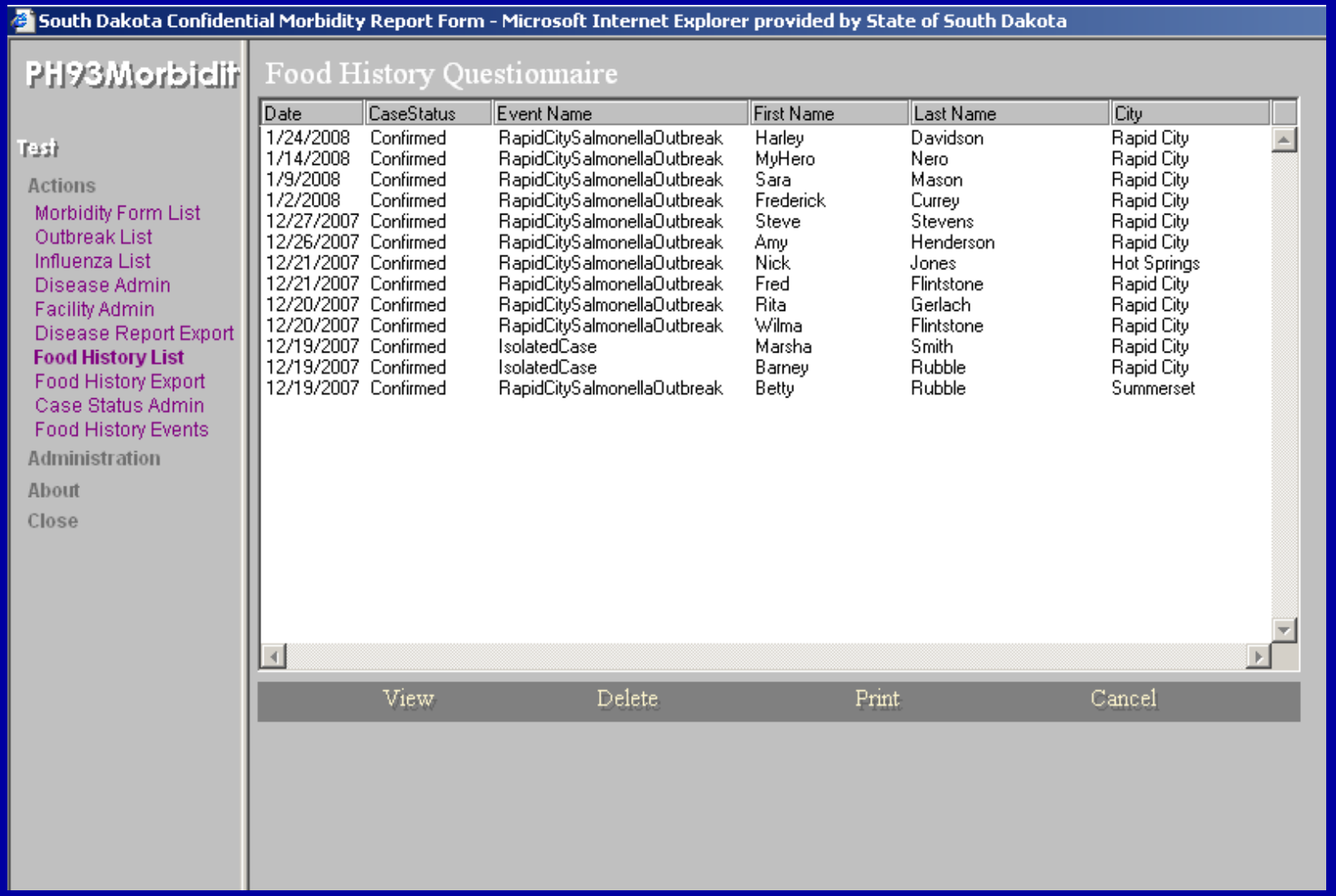
Restaurant Types (if you answered "Yes" to the sit-down restaurants question above)

Yes No Unk

Yes No Unk

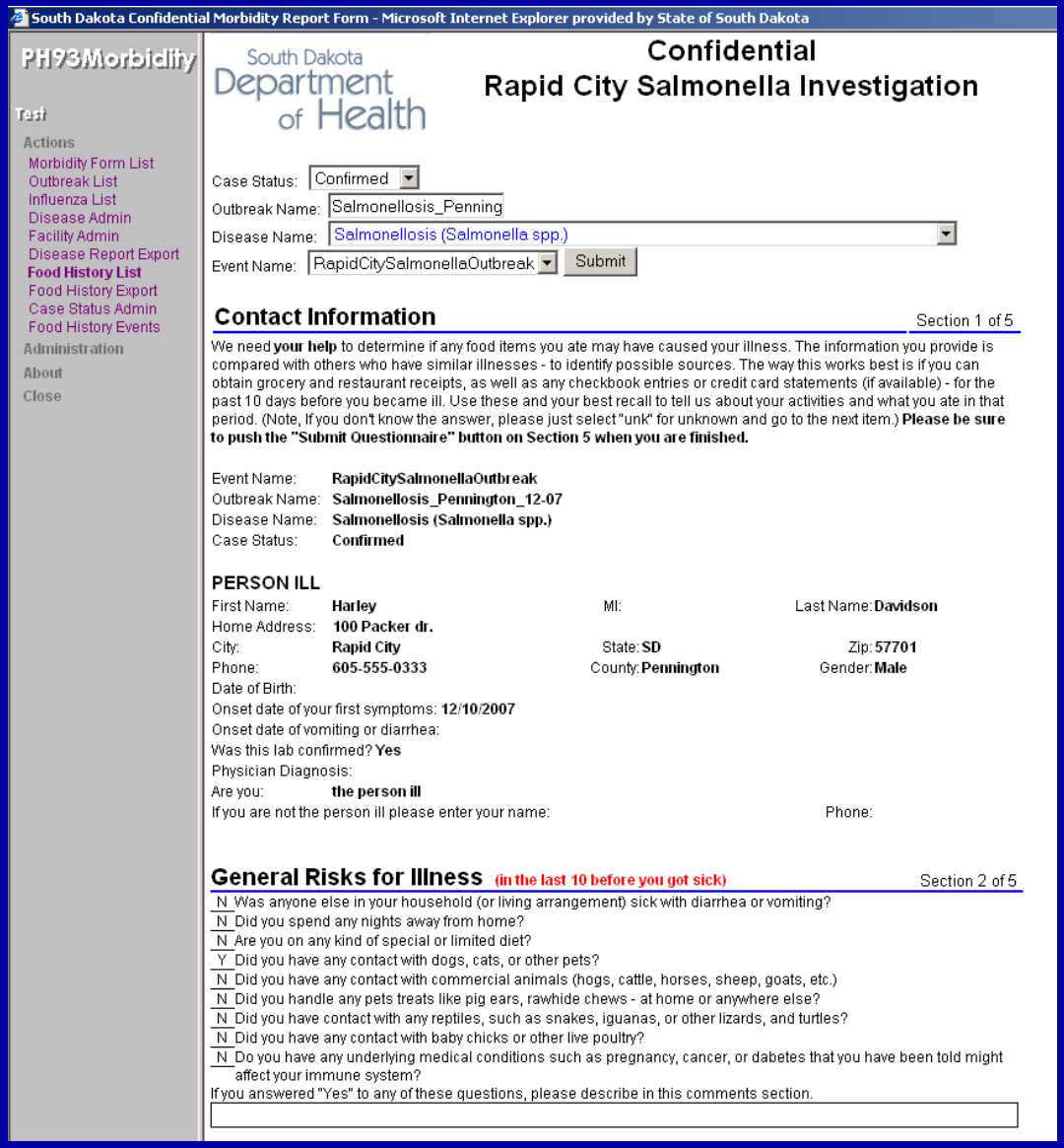
See test URL for complete system form and fields (front end, only)

Workflow FDOMS



Back end

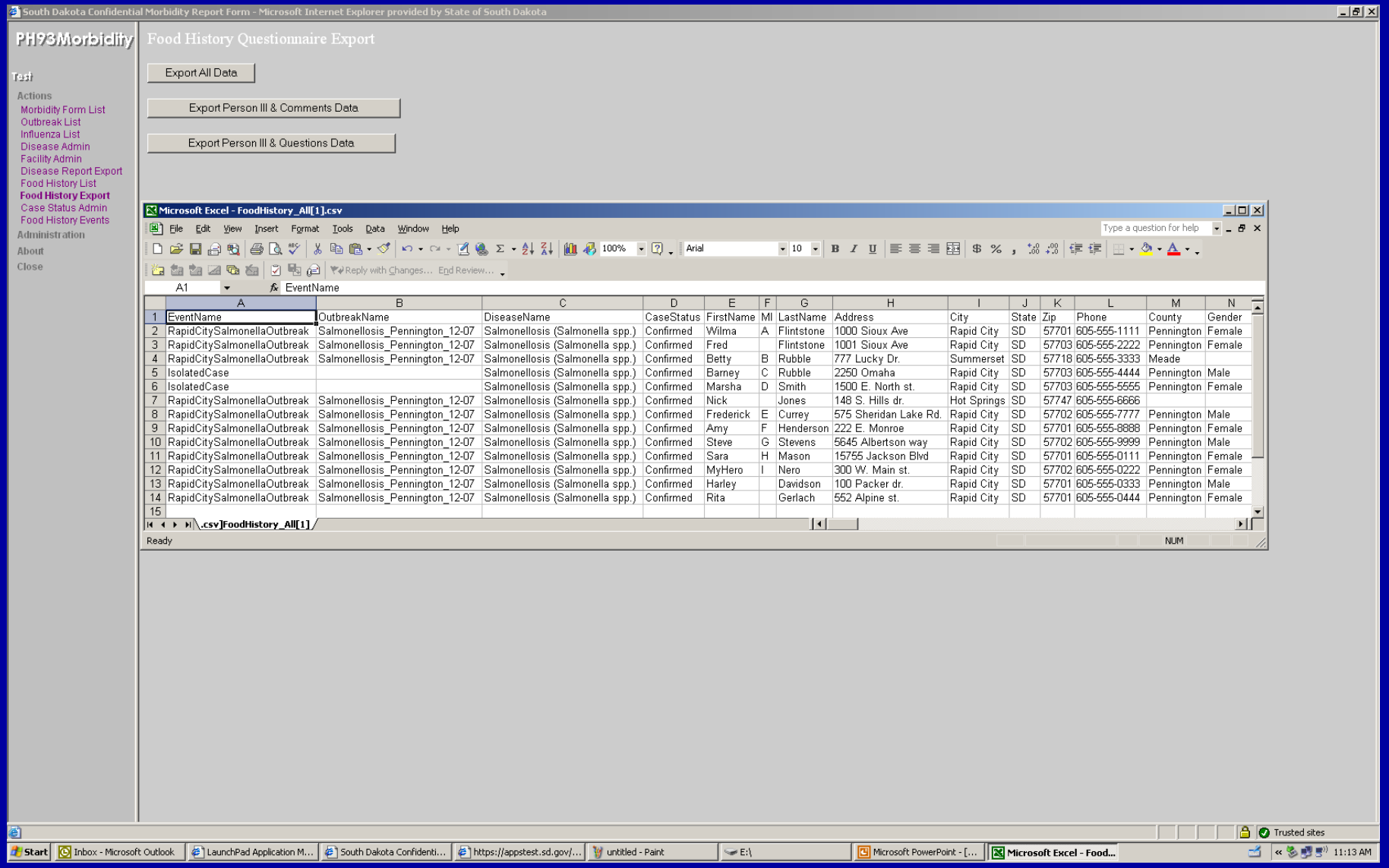
Print Template FDOMS



Back end

Data Export FDOMS

Back end



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	EventName	OutbreakName	DiseaseName	CaseStatus	FirstName	MI	LastName	Address	City	State	Zip	Phone	County	Gender
2	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Wilma	A	Flintstone	1000 Sioux Ave	Rapid City	SD	57701	605-555-1111	Pennington	Female
3	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Fred		Flintstone	1001 Sioux Ave	Rapid City	SD	57703	605-555-2222	Pennington	Female
4	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Betty	B	Rubble	777 Lucky Dr.	Summerset	SD	57718	605-555-3333	Meade	
5	IsolatedCase		Salmonellosis (Salmonella spp.)	Confirmed	Barney	C	Rubble	2250 Omaha	Rapid City	SD	57703	605-555-4444	Pennington	Male
6	IsolatedCase		Salmonellosis (Salmonella spp.)	Confirmed	Marsha	D	Smith	1500 E. North st.	Rapid City	SD	57703	605-555-5555	Pennington	Female
7	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Nick		Jones	148 S. Hills dr.	Hot Springs	SD	57747	605-555-6666		
8	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Frederick	E	Currey	575 Sheridan Lake Rd.	Rapid City	SD	57702	605-555-7777	Pennington	Male
9	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Amy	F	Henderson	222 E. Monroe	Rapid City	SD	57701	605-555-8888	Pennington	Female
10	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Steve	G	Stevens	5645 Albertson way	Rapid City	SD	57702	605-555-9999	Pennington	Male
11	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Sara	H	Mason	15755 Jackson Blvd	Rapid City	SD	57701	605-555-0111	Pennington	Female
12	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	MyHero	I	Nero	300 W. Main st.	Rapid City	SD	57702	605-555-0222	Pennington	Female
13	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Harley		Davidson	100 Packer dr.	Rapid City	SD	57701	605-555-0333	Pennington	Male
14	RapidCitySalmonellaOutbreak	Salmonellosis_Pennington_12-07	Salmonellosis (Salmonella spp.)	Confirmed	Rita		Gerlach	552 Alpine st.	Rapid City	SD	57701	605-555-0444	Pennington	Female
15														

Sample report

"*I live and sleep with stray pups and dogs. I live with street people who are alcoholics. My trailer has no utilities no plumbing no inside bathroom and no running water. Trailer is run down and unlivable. I cook outside in the open fire.*"

Salmonellosis case: self-reported history submitted online 6-29-2012

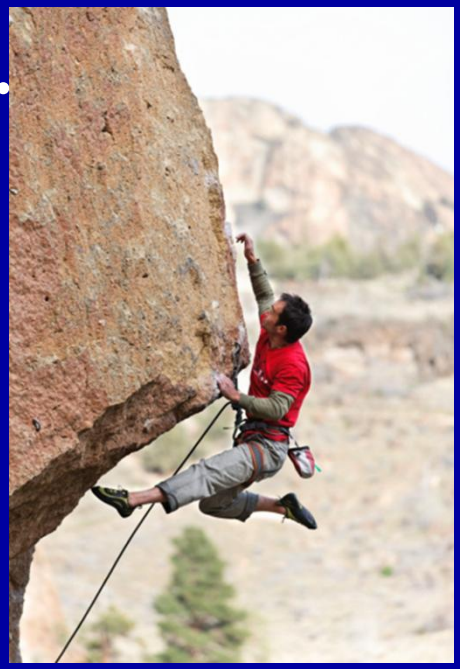
SDEDSS

- **Create model in SDEDSS for all disease conditions, with FDOMS data import.**

- **Build and expand for routine**
- **surveillance and outbreak detection.**

- **Standardize all models to FoodCORE model and share real time data w/CDC**

Picture used by permission



Summary

- **Patient is given the tools and control (FDOMS and SDEDSS patient portal)**
- **Patient is the primary advocate for Public Health**
- **Public Health takes the back seat. We become data and information managers, not hunter gatherers. Data shared near real-time…EpiNet??**