TBCIS : Tuberculosis Contact Investigation System

Presented by

SC Dept. of Health and Environmental Control

CGH Technologies, Inc

Project History

- Received Suppl. funding in 2001 to assist in Contact Investigations
- Goal was to automate contact investigations and the production of reports
- Laptop Computers purchased for investigators
- Development started June 2002 on prototype system in MS-Access
- Prototype was well received.

Project History – cont

- Decision was made to build the system as Visual Basic system using the MSDE (Microsoft Database Engine (MS-SQL2k))
- Data to be replicated to central office.
- Database was a mirror image of the NEDSS Base System Operational Data Store as it was understood at the time.
- Development ended Fall 2003
- Deployed in two pilot health districts

What can the system do?

- **The system can collect contact**

1. Demographics
2. Exposure information
3. Priority
4. Prior TST and treatment information
5. Current TST results
6. Signs and symptoms reviews
7. Chest x-ray results
8. Treatment information
9. Contact disposition

What can the system do? cont.

- **Contacts are linked to**

1. Case/suspect of tuberculosis
2. Infectious period
3. Case's smear status

- **System can generate**

1. Aggregate Report for Tuberculosis Program Evaluation: Contacts
2. Contact Investigation Report Forms
3. TB Contact Evaluation Record
4. Repeat TST reports

Where are we now?

- Having some issues with replication
- Need to resolve discrepancies between how data is stored in TBCIS vs NBS
- Other Program Areas are showing interest in acquiring similar systems.
- Need to decide what approach to take to resolving these issues

Options for future development

- **Fix Current System (database replication and consistency with NBS)**
- **Convert system to stand-alone web-based system**
- **Re-develop as an NBS Program Area Module**
- **Include support for other Program Areas and conditions**

Which option is best for us?

NBS PAM w/ support for other conditions

Why?

- Have gained experience building NBS PAM's with our CHESS-IR immunization Registry PAM
- There is a real benefit to having the information tightly integrated with case investigations
- A single user-interface - One-stop-shopping

Case Search Screen

TB Contact Investigation System (All Cases)

File Report Record

Case Name

Last First MI

Infectious Period

From: To:

DOB

Ethnicity

Race

Birth Country

Case Location

Street

State

County

District

Site Of Disease

- Pulmonary
- Pleural
- Lymphatic: Ce
- Lymphatic: Int
- Lymphatic: Ot
- Lymphatic: Ur
- Bone and/or J
- Genitourinary
- Miliary
- Meningeal
- Perioneal
- Site not Stated
- Other

E-Ethambutol (EMB)

S-Streptomycin (Strep)

D H E C

TECT PROSPER

or Aggregate
port

ave

Next

ontacts

4/23/2004

Search For

Last First MI

Street

State City Zip

County Phone

DOB / / Sex Patient ID #

Ethnicity Case #

Race

Birth Country

Search for a Case

Limit Search to Active Cases

Search

Search Results

Last Name	First Name	MI	DOB
Bob	Jim	K	
Case	Joe	R	12/12/2002
Smith	John	K	

Go to Record

Cancel

Case Screen

TB Contact Investigation System (All Cases)

File Report Record

Case Name

Last First MI

DOB Sex Patient ID #

Ethnicity Case #

Race

Birth Country

Case Location

Street

State City Zip

County Phone

District

Site Of Disease

- Pulmonary
- Pleural
- Lymphatic: Cervical
- Lymphatic: Intrathoracic
- Lymphatic: Other
- Lymphatic: Unknown
- Bone and/or Joint
- Genitourinary
- Miliary
- Meningeal
- Perioneal
- Site not Stated
- Other

Resistant To

- None
- I-Isoniazid (INH)
- R-Rifampin (RIF)
- P-Pyrazinamide (PZA)
- E-Ethambutol (EMB)
- S-Streptomycin (Strep)

Infectious Period

From: To:

Sputum Smear Sputum Culture

Case Type

Organism

Type Of Investigation

Interviewer

Date of Initial Interview New

Comments

DHEC PROMOTE PROTECT PROSPER

Cohort year for Aggregate Report

Previous Save Next

Show Contacts

4/23/2004

Contact Screen

Contacts for Joe Case

File Report Record

Contact, Joe | Contact, Sue | New Contact

Contact Demographics | Risk Factors | Medical Eval / Tx Plan | Treatment Disposition

Save Contact

Go Back To Case

Reason For Evaluation

Contact Name

Last First MI

DOB Sex Patient ID

Ethnicity

Race

Birth Country

Contact Location

Street

State City Zip

County District

Phone

Priority of Contact

Relationship To Case

Exposure Environment

- Home
- Shelter
- Work
- School
- Leisure/Recreation
- Correctional Facility
- Other

4/23/2004

Contact Screen cont.

Contacts for Joe Case

File Report Record

Contact, Joe | Contact, Sue | New Contact

Contact Demographics | Risk Factors | Medical Eval / Tx Plan | Treatment Disposition

Date Contact Identified

Date Of Last Exposure

Aggregate Report

☐ Evaluation Complete

Status

Save Contact

Go Back To Case

Documented History of TST

Date Reading mm

HIV

Date of test Status

Prior Treatment

For Treatment Date

Prior Treatment Completed

Treatment Plan

Date Initial Treatment Began

Initial TST

Date Given Date Read

Result mm ☐ Positive

Repeat TST Required ?

☐ Yes When?

Initial Symptom Review

Date Result

Repeat TST

Date Given Date Read

Result mm ☐ Positive

Initial CXR

Date Result

Repeat Symptom Review

Date Result

4/23/2004

Investigation Form

D H F C

Contact Investigation Report Form:

Infectious Period:
From Date: _____ To Date: _____

INDEX CASE		INTERVIEW		
Name:	DOB:	Date of Interview:	Site(s) of Disease:	**Sputum Smear**: ☐ Positive ☐ Negative ☐ Not Done ☐ Unknown **Sputum Culture**: ☐ Positive ☐ Negative ☐ Not Done ☐ Unknown
Address:	Country of Birth:	Interviewer's Name:		
	Sex:		Type of Investigation:	☐ *M. tuberculosis* organism
Phone:	Race:	Patient ID:	☐ Verified Case of Tuberculosis	Resistant To:

Contact: Patient ID, Last Name, First, MI, Address, Telephone Number	DOB / Sex / Country of Birth	Race / Ethnicity	Priority / Relationship to Case	Place	Contact Identified / Last Exposure	History: Prior TST	History: Prior Treatment	Initial TST (and/or Symptom review)	Repeat TST (and/or Symptom review)	Chest X-Ray	Tx LTBI / Start Date	Comments
	☐ M ☐ F	☐ White ☐ Black ☐ Asian ☐ Am. Ind. ☐ Pac. Isl. ☐ Other ☐ Hisp ☐ Non H	☐ High ☐ Medium ☐ Low	☐ Home ☐ Shelter ☐ School ☐ Work ☐ Leisure ☐ Prison/Jail ☐ Other	Date: Date:	Date: Result:	☐ LTBI ☐ TB Disease Date: ☐ Completed ☐ DOT	Date: Result: ☐ Asymptomatic ☐ Symptomatic	Date: Result: ☐ Asymptomatic ☐ Symptomatic	Date: ☐ Normal ☐ Abnormal	☐ Yes ☐ No Date:	
	☐ M ☐ F	☐ White ☐ Black ☐ Asian ☐ Am. Ind. ☐ Pac. Isl. ☐ Other ☐ Hisp ☐ Non H	☐ High ☐ Medium ☐ Low	☐ Home ☐ Shelter ☐ School ☐ Work ☐ Leisure ☐ Prison/Jail ☐ Other	Date: Date:	Date: Result:	☐ LTBI ☐ TB Disease Date: ☐ Completed ☐ DOT	Date: Result: ☐ Asymptomatic ☐ Symptomatic	Date: Result: ☐ Asymptomatic ☐ Symptomatic	Date: ☐ Normal ☐ Abnormal	☐ Yes ☐ No Date:	
	☐ M ☐ F	☐ White ☐ Black ☐ Asian ☐ Am. Ind. ☐ Pac. Isl. ☐ Other ☐ Hisp ☐ Non H	☐ High ☐ Medium ☐ Low	☐ Home ☐ Shelter ☐ School ☐ Work ☐ Leisure ☐ Prison/Jail ☐ Other	Date: Date:	Date: Result:	☐ LTBI ☐ TB Disease Date: ☐ Completed ☐ DOT	Date: Result: ☐ Asymptomatic ☐ Symptomatic	Date: Result: ☐ Asymptomatic ☐ Symptomatic	Date: ☐ Normal ☐ Abnormal	☐ Yes ☐ No Date:	
	☐ M ☐ F	☐ White ☐ Black ☐ Asian ☐ Am. Ind. ☐ Pac. Isl. ☐ Other ☐ Hisp ☐ Non H	☐ High ☐ Medium ☐ Low	☐ Home ☐ Shelter ☐ School ☐ Work ☐ Leisure ☐ Prison/Jail ☐ Other	Date: Date:	Date: Result:	☐ LTBI ☐ TB Disease Date: ☐ Completed ☐ DOT	Date: Result: ☐ Asymptomatic ☐ Symptomatic	Date: Result: ☐ Asymptomatic ☐ Symptomatic	Date: ☐ Normal ☐ Abnormal	☐ Yes ☐ No Date:	

Aggregate Report

CDC
DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR HIV, STD, AND TB PREVENTION
DIVISION OF TUBERCULOSIS ELIMINATION
ATLANTA, GEORGIA 30333

Aggregate Reports for Tuberculosis Program Evaluation:
Follow-up and Treatment for Contacts to Tuberculosis Cases

Reporting Area: Marion County

Cohort Year: 2002

Closure Date for Follow-up: 8 / 15 / 04 (August 15 of the second year after the cohort year)

Total TB Cases Reported: _____

Part I. Cases and Contacts

	Types of Cases for Investigation:		
	Sputum smear +	Sputum smear - cult. +	Others
Cases for Investigation	(a1)	(a2)	
Cases With No Contacts	(b1)	(b2)	
Number of Contacts	(c1)	(c2)	(c)
Evaluated	(d1)	(d2)	(d)
TB Disease	(e1)	(e2)	(e)
Latent TB Infection	(f1)	(f2)	(f)
Started Treatment	(g1)	(g2)	(g)
Completed Treatment	(h1)	(h2)	(h)

Reasons Treatment Not Completed:

Death			
Contact Moved (follow-up unknown)			
Active TB Developed			
Adverse Effect of Medicine			
Contact Chose to Stop			
Contact is Lost to Follow- up			
Provider Decision			

Part II. Evaluation Indice (Automated in TIMS, and converted to percentage as indicated by "%")

No Contacts Rate	(b1 / a1), %	(b2 / a2), %	
Contacts Per Case	(c1 / a1)	(c2 / a2)	
Evaluation Rate	(d1 / c1), %	(d2 / c2), %	
Disease Rate	(e1 / d1), %	(e2 / d2), %	
Latent Infection Rate	(f1 / d1), %	(f2 / d2), %	
Treatment Rate	(g1 / f1), %	(g2 / f2), %	
Completion Rate	(h1 / g1), %	(h2 / g2), %	