

Program Evaluation: Using National TB Indicators Project (NTIP)

TB/Refugee Nurse Training
Commonwealth of Virginia 2009

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Presentation Outline

- Describe NTIP and the National TB Program Objectives
- Understand importance of NTIP in TB control and program evaluation (PE)
- Describe CDC/DTBE Program Evaluation (PE) approach



NTIP and National TB Program Objectives



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The National Tuberculosis Indicators Project (NTIP)

What is the National Tuberculosis Indicators Project (NTIP)?

The National Tuberculosis Indicators Project (NTIP) is a monitoring system for tracking the progress of U.S. tuberculosis (TB) control programs toward achieving the national TB program objectives. This system will provide TB programs with reports to describe their progress, based on data already reported to the Centers for Disease Control and Prevention (CDC). In addition, these reports will help programs prioritize prevention and control activities, as well as program evaluation efforts.

What are the national TB program objectives?

The national TB program objectives reflect the national priorities for TB control in the United States. In 2006, a team representing TB programs and the Division of Tuberculosis Elimination (DTBE) selected 15 high-priority TB program objective categories. The program objective categories are—

- Completion of treatment
- TB case rates (in populations: U.S.-born persons, foreign-born persons, U.S.-born non-Hispanic blacks, and children younger than 5 years of age)
- Contact investigations
- Laboratory reporting
- Treatment initiation
- Sputum culture conversion
- Data reporting (Report of Verified Case of Tuberculosis [RVCT], the Aggregate Reports for Tuberculosis Program Evaluation [ARPEs], and the Electronic Disease Notification [EDN] system)
- Recommended initial therapy
- Universal genotyping
- Known HIV status
- Evaluation of immigrants and refugees
- Sputum culture reporting
- Program evaluation
- Human resource development plan
- TB training focal points

TB programs funded through cooperative agreements will be expected to report on their progress toward achieving all 15 national TB program objective categories starting in 2010.

Why was NTIP undertaken?

Program evaluation is an essential component of an effective public health program. Since 2005, DTBE has included program evaluation as a core requirement of the cooperative agreement. With the understanding of the resource limitations and constraints faced by TB programs, NTIP was developed to facilitate the use of existing data to help programs prioritize activities and focus program evaluation efforts.

Who was involved and how was the system developed?

The design of NTIP reports is modeled after the Tuberculosis Indicators Project (TIP), developed by the California Department of Health. To validate the selected national objectives and standardize the measurements for tracking progress toward the objectives, a team of DTBE and TB control program staff from Colorado, New York State, Minnesota, and Tennessee worked together and discussed the validity, reliability, and accuracy of the measures, as well as how the measures will impact programs. The group designed reporting templates to provide information that is significant and programmatically relevant.

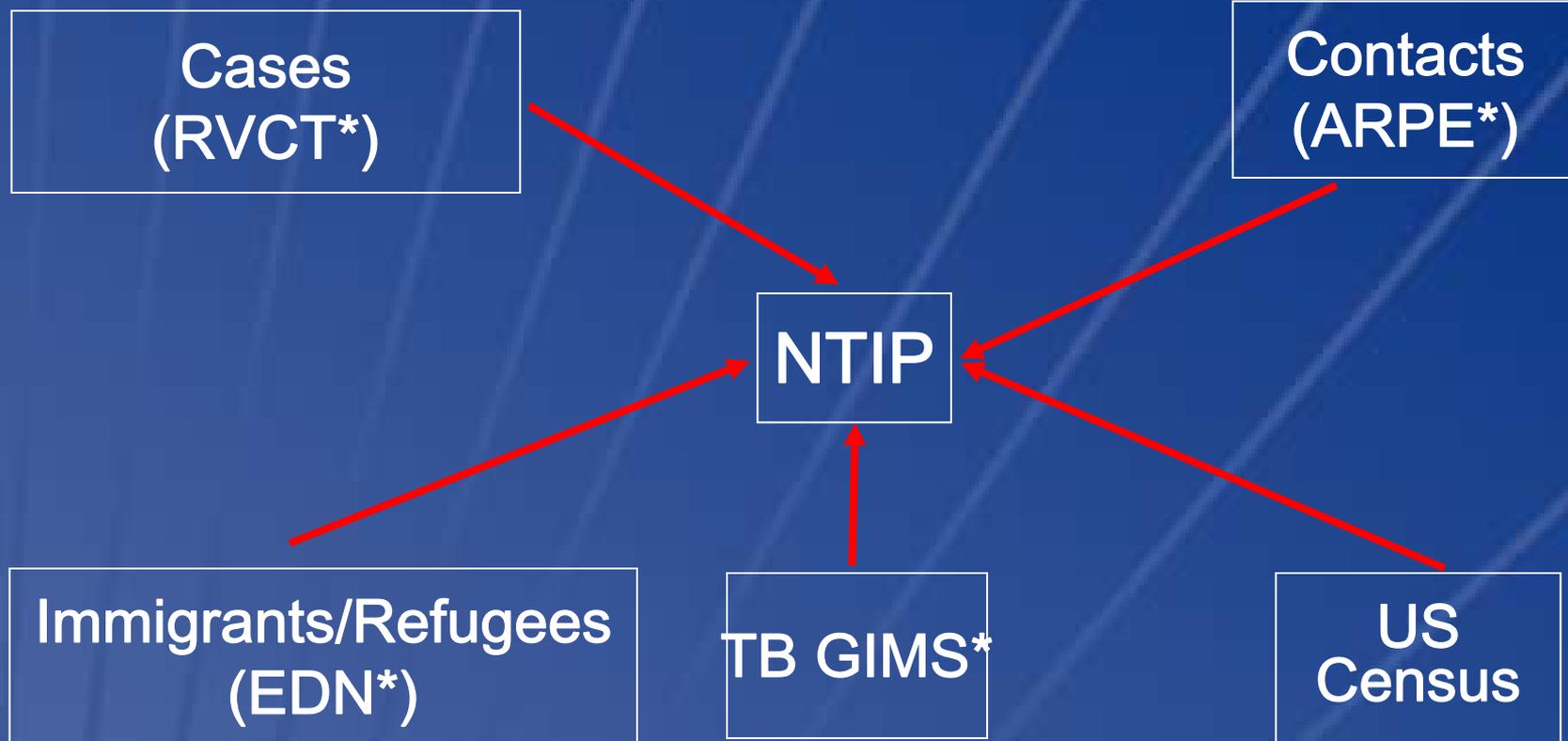
Representatives from the National Tuberculosis Controllers Association (NTCA), the Advisory Council for the Elimination of Tuberculosis (ACET), the TB Education and Training Network (TB ETN), the Evaluation Working Group (EWG), and other interested TB programs were invited to a 2-day intensive review meeting to further validate the indicators and to provide input and guidance on their development.

What is NTIP?

- A program monitoring system
- Indicator reports
 - inform progress toward national objectives
 - focus program evaluation efforts
 - provide performance targets as benchmark for assessment
- <http://www.cdc.gov/tb/publications/factsheets/statistics/NTIP.htm>



Data Sources for NTIP



*RVCT= Report of Verified Cases of Tuberculosis
*ARPE= Aggregate Reports of Program Evaluation
*EDN= Electronic Disease Notification System
*GIMS= Genotyping Information Management System



Selecting Potential NTIP Objectives

- Stakeholders submitted wide range of objectives
- Focus only on those with existing data
- Result: 28 potential objectives
- Stakeholders ranked and grouped objectives into 15 categories



Establishing NTIP Targets

National:

- Established by the National Objective Workgroup
- Based on the “current” performance of a high performing state
- Method used uniformly across all objectives
- Suggestions on methods accepted for future

Program:

- Set their own targets for objectives based on the capacity and resource availability
- Targets to be agreed on with DTBE consultants



National TB Program Objectives 2015



National TB Program Objectives and Performance Targets for 2015

| Objective Categories | Objectives and Performance Targets |
|----------------------|--|
| 1 | <p>Completion of Treatment</p> <p>For patients with newly diagnosed TB for whom 12 months or less of treatment is indicated, increase the proportion of patients who complete treatment within 12 months to 93.0%.</p> |
| 2 | <p>TB Case Rates</p> <ul style="list-style-type: none"> ■ U.S.-born Persons <ul style="list-style-type: none"> ■ Increase the average yearly decline in TB case rate in U.S.-born persons to at least 11.0%. ■ Foreign-born Persons <ul style="list-style-type: none"> ■ Decrease the TB case rate for foreign-born persons to less than 14.0 cases per 100,000. ■ Increase the average yearly decline in TB case rate in foreign-born persons to at least 4.0%. ■ U.S.-born non-Hispanic Blacks <ul style="list-style-type: none"> ■ Decrease the TB case rate in U.S.-born non-Hispanic blacks to less than 1.3 cases per 100,000. ■ Children Younger than 5 Years of Age <ul style="list-style-type: none"> ■ Decrease the TB case rate for children younger than 5 years of age to less than 0.4 cases per 100,000. |
| 3 | <p>Contact Investigation</p> <ul style="list-style-type: none"> ■ Contact Elicitation <ul style="list-style-type: none"> ■ Increase the proportion of TB patients with positive acid-fast bacillus (AFB) sputum-smear results who have contacts elicited to 100.0%. ■ Evaluation <ul style="list-style-type: none"> ■ Increase the proportion of contacts to sputum AFB smear-positive TB patients who are evaluated for infection and disease to 93.0%. ■ Treatment Initiation <ul style="list-style-type: none"> ■ Increase the proportion of contacts to sputum AFB smear-positive TB patients with newly diagnosed latent TB infection (LTBI) who start treatment to 88.0%. ■ Treatment Completion <ul style="list-style-type: none"> ■ For contacts to sputum AFB smear-positive TB patients who have started treatment for the newly diagnosed LTBI, increase the proportion who complete treatment to 79.0%. |
| 4 | <p>Laboratory Reporting</p> <ul style="list-style-type: none"> ■ Turnaround Time <ul style="list-style-type: none"> ■ Increase the proportion of culture-positive or nucleic acid amplification (NAA) test-positive TB cases with a pleural or respiratory site of disease that have the identification of <i>M. tuberculosis</i> complex reported by laboratory within N days from the date the initial diagnostic pleural or respiratory specimen was collected to n%. ■ Drug-susceptibility Result <ul style="list-style-type: none"> ■ Increase the proportion of culture-positive TB cases with initial drug-susceptibility results reported to 100.0%. |

| Objective Categories | Objectives and Performance Targets |
|----------------------|--|
| 5 | <p>Treatment Initiation</p> <p>Increase the proportion of TB patients with positive AFB sputum-smear results who initiate treatment within 7 days of specimen collection to n%.</p> |
| 6 | <p>Sputum Culture Conversion</p> <p>Increase the proportion of TB patients with positive sputum culture results who have documented conversion to sputum culture-negative within 60 days of treatment initiation to 61.5%.</p> |
| 7 | <p>Data Reporting</p> <ul style="list-style-type: none"> ■ RVCT <ul style="list-style-type: none"> ■ Increase the completeness of each core Report of Verified Case of Tuberculosis (RVCT) data item reported to CDC, as described in the TB Cooperative Agreement announcement, to 99.2%. ■ ARPEs <ul style="list-style-type: none"> ■ Increase the completeness of each core Aggregated Reports of Program Evaluation (ARPEs) data items reported to CDC, as described in the TB Cooperative Agreement announcement, to 100.0%. ■ EDN <ul style="list-style-type: none"> ■ Increase the completeness of each core Electronic Disease Notification (EDN) system data item reported to CDC, as described in the TB Cooperative Agreement announcement, to n%. |
| 8 | <p>Recommended Initial Therapy</p> <p>Increase the proportion of patients who are started on the recommended initial 4-drug regimen when suspected of having TB disease to 93.4%.</p> |
| 9 | <p>Universal Genotyping</p> <p>Increase the proportion of culture-confirmed TB cases with a genotyping result reported to 94.0%.</p> |
| 10 | <p>Known HIV Status</p> <p>Increase the proportion of TB cases with positive or negative HIV test result reported to 88.7%.</p> |
| 11 | <p>Evaluation of Immigrants and Refugees</p> <ul style="list-style-type: none"> ■ Evaluation Initiation <ul style="list-style-type: none"> ■ For immigrants and refugees with abnormal chest x-rays read overseas as consistent with TB, increase the proportion who initiate medical evaluation within 30 days of arrival to n%. ■ Evaluation Completion <ul style="list-style-type: none"> ■ For immigrants and refugees with abnormal chest x-rays read overseas as consistent with TB, increase the proportion who complete medical evaluation within 90 days of arrival to n%. ■ Treatment Initiation <ul style="list-style-type: none"> ■ For immigrants and refugees with abnormal chest x-rays read overseas as consistent with TB and who are diagnosed with latent TB infection (LTBI) during evaluation in the U.S., increase the proportion who start treatment to n%. ■ Treatment Completion <ul style="list-style-type: none"> ■ For immigrants and refugees with abnormal chest x-rays read overseas as consistent with TB, and who are diagnosed with latent TB infection (LTBI) during evaluation in the U.S. and started on treatment, increase the proportion who complete LTBI treatment to n%. |
| 12 | <p>Sputum-Culture Reported</p> <p>Increase the proportion of TB cases with a pleural or respiratory site of disease in patients ages 12 years or older that have a sputum-culture result reported to 95.7%.</p> |

National Objective →

State Performance Graph →

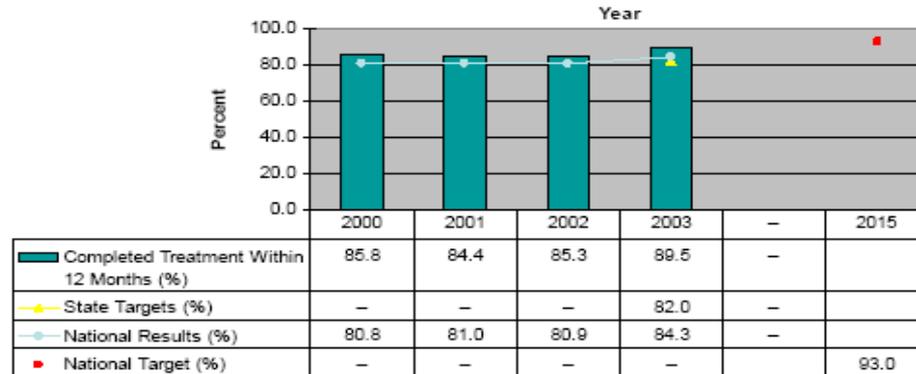
State Data →

Method →

National Objective: Completion of Treatment

Increase the percent of patients with newly diagnosed TB, for whom 12 months of treatment or less is indicated, who complete treatment within 12 months to 93.0% by 2015.

Eligible Patients Who Completed Treatment Within 12 Months, MN, 2000 - 2003



| | 2000 | 2001 | 2002 | 2003 |
|---|------|------|------|------|
| # Total Eligible Patients | 169 | 218 | 218 | 200 |
| # Patients Completed Treatment (Ever) | 160 | 207 | 207 | 193 |
| # Patients Completed Treatment Within 12 Months | 145 | 184 | 186 | 179 |

Objective: Increase the percent of patients with newly diagnosed TB, for whom 12 months of treatment or less is indicated, who complete treatment within 12 months to 93.0% by 2015.

Indicator: % of patients with newly diagnosed TB, for whom therapy for 12 months or less is indicated, who completed treatment within 12 months (366 days).

Cohort: All TB patients, for whom 12 months of treatment or less is recommended, alive at diagnosis, on one or more drugs, and counted in the year of interest. Patients with any rifampin-resistant TB or meningeal TB, and children ages 15 or younger with miliary TB or a positive blood culture are excluded. In addition, patients who die during treatment are excluded.

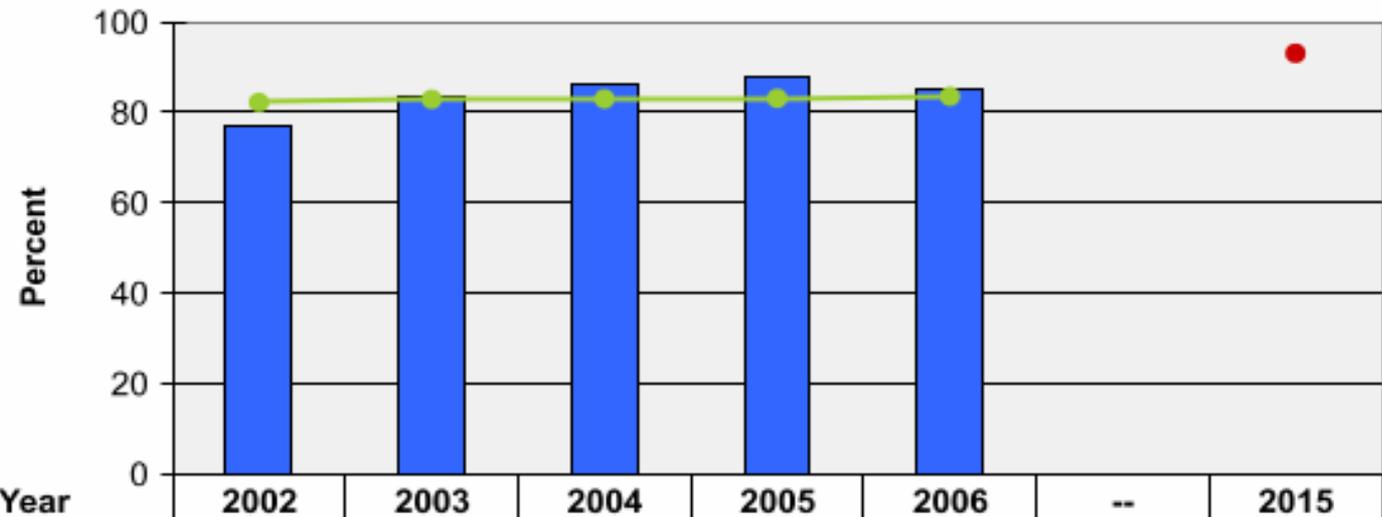
Data Sources: RVCT fields, 5 (Month-Year Reported), 6 (Month-Year Counted), 7 (Date of Birth), 13 (Status at Diagnosis of TB), 15 (Major Site of Disease), 16 (Additional Site of Disease), 18 (Sputum Culture), 20 (Culture of Tissue and Other Body Fluids), 27 (Initial Drug Regimen), 28 (Date Therapy Started), 33 (Initial Drug Susceptibility Results), 34 (Susceptibility Results), 36 (Date Therapy Stopped), 37 (Reason Therapy Stopped).

Calculation: [# patients that complete treatment in less than or equal to 366 days who were eligible to complete treatment within 12 months] / [# total eligible patients who initiated treatment] x 100



Example: TB Treatment Completion

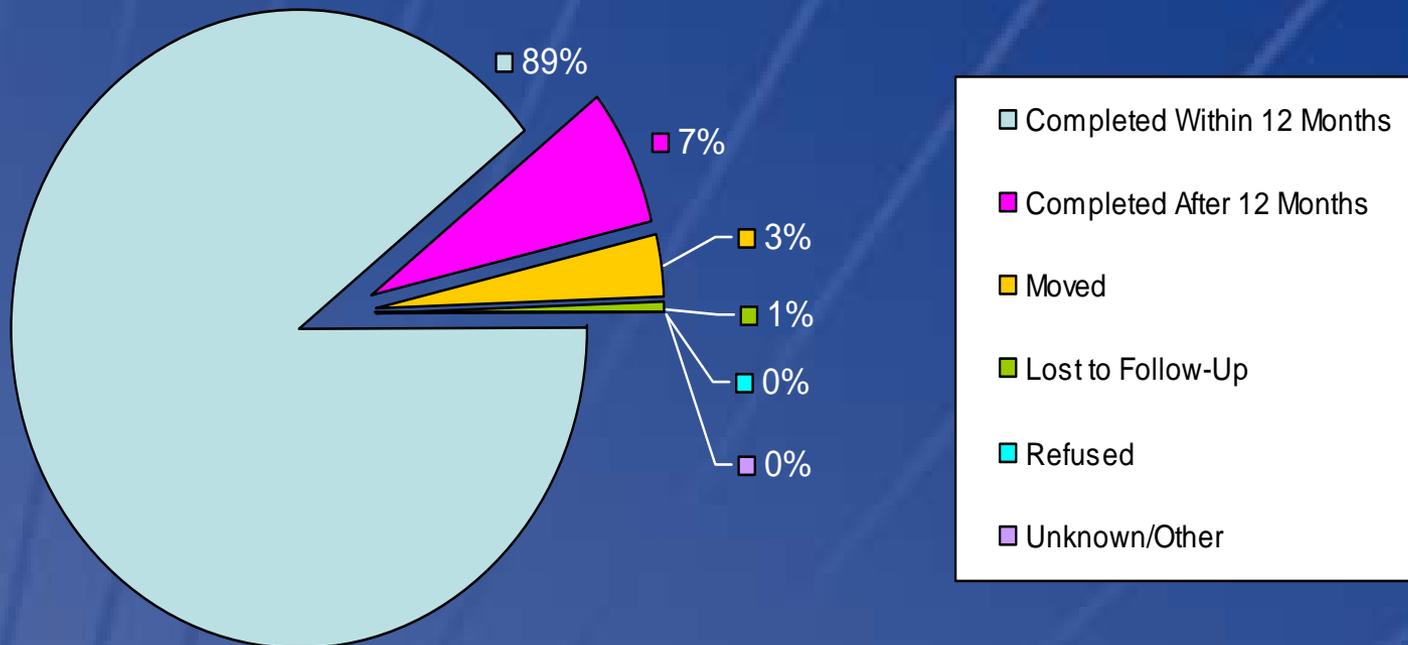
Treatment Completion Within 12 Months for Eligible Patients
Sample State X 2002-2006



| | | | | | | | |
|--|------|------|------|------|------|----|------|
| Completed Treatment Within 12 Months (%) | 77.1 | 83.4 | 86.3 | 87.6 | 84.9 | -- | |
| Program Targets (%) | | | | | | -- | |
| National Average (%) | 82.1 | 82.8 | 82.9 | 83.0 | 83.5 | -- | |
| National Target (%) | | | | | | -- | 93.0 |

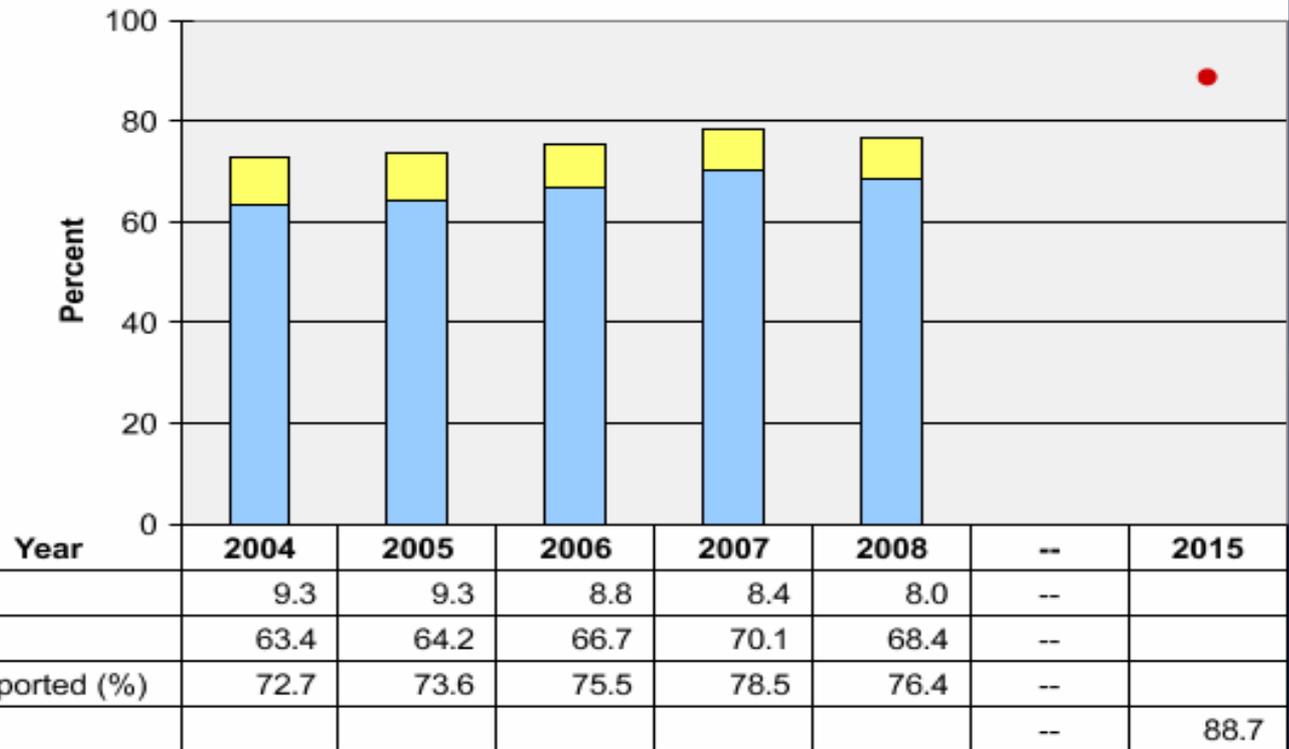
| Year | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|------|------|------|------|------|
| Total Eligible Patients (N) | 314 | 296 | 293 | 266 | 272 |
| Patients Completed Treatment (Ever) (n) | 281 | 283 | 285 | 260 | 256 |
| Patients Completed Treatment Within 12 Months (n) | 242 | 247 | 253 | 233 | 231 |
| Patients Did Not Complete Treatment (n) | 33 | 13 | 8 | 6 | 16 |

Treatment Completion for Eligible Patients, by Treatment Outcomes, State X, 2003



Example: Know HIV Status

Reporting of Positive or Negative HIV Test Result in Persons with TB
United States 2004-2008

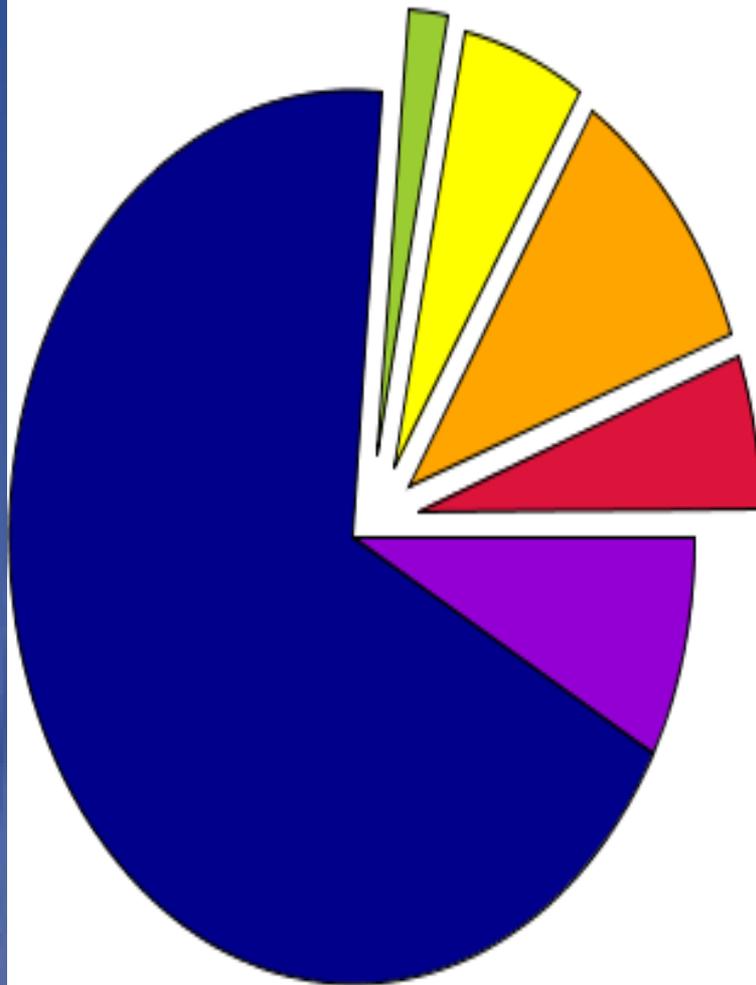


| Year | 2004 | 2005 | 2006 | 2007 | 2008 |
|--|--------|--------|--------|--------|-------|
| Total TB Cases (N) | 11,509 | 11,163 | 10,973 | 10,562 | 9,949 |
| HIV+ (n) | 1,072 | 1,042 | 964 | 884 | 799 |
| HIV- (n) | 7,295 | 7,171 | 7,317 | 7,405 | 6,802 |
| HIV Test Result Reported (n) | 8,367 | 8,213 | 8,281 | 8,289 | 7,601 |
| HIV Test Result Not Reported as positive or negative (n) | 3,142 | 2,950 | 2,692 | 2,273 | 2,348 |



Example: Know HIV Status (cont)

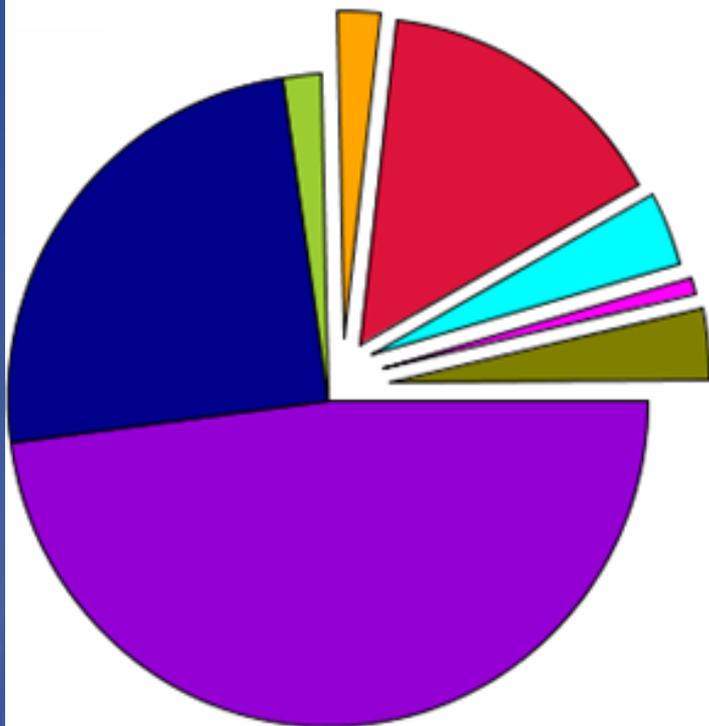
HIV Test Results and Reasons HIV Status Not Determined for TB Cases
United States 2008



| | No. | (%) |
|-------------------------------|-------|---------|
| Total TB Cases | 9,949 | (100.0) |
| HIV+ | 799 | (8.0) |
| HIV- | 6,802 | (68.4) |
| Indeterminate HIV Test Result | 3 | (0.0) |
| HIV Test Done, Result Unknown | 183 | (1.8) |
| Refused HIV Test | 576 | (5.8) |
| Not Offered HIV Test | 1,030 | (10.4) |
| Unknown/Missing | 556 | (5.6) |

Example: Contact Investigation

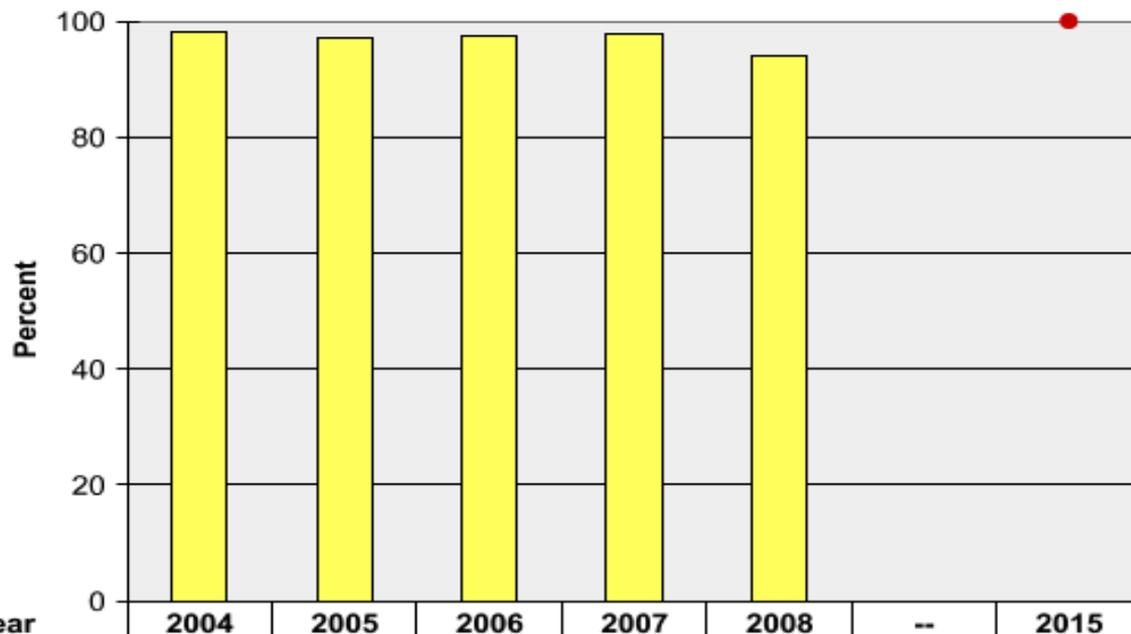
Treatment Outcomes for Contacts to Sputum Acid-fast Bacillus Smear-positive TB Cases with Newly Diagnosed Latent TB Infection (LTBI) State X 2001



| | No. | (%) |
|--|-----|---------|
| Total Contacts with Newly Diagnosed LTBI | 518 | (100.0) |
| Completed Treatment | 248 | (47.9) |
| Did Not Start Treatment | 129 | (24.9) |
| Died | 0 | (0.0) |
| Moved | 10 | (1.9) |
| Developed Active TB | 1 | (0.2) |
| Adverse Effect | 11 | (2.1) |
| Patient Choose to Stop | 78 | (15.1) |
| Lost to Follow-up | 19 | (3.7) |
| Provider Decision to Stop | 4 | (0.8) |
| Unknown/Missing | 18 | (3.5) |

Example: Drug Susceptibility Results

Reporting of Initial Drug-susceptibility Results for Culture-positive TB Cases
United States 2004-2008

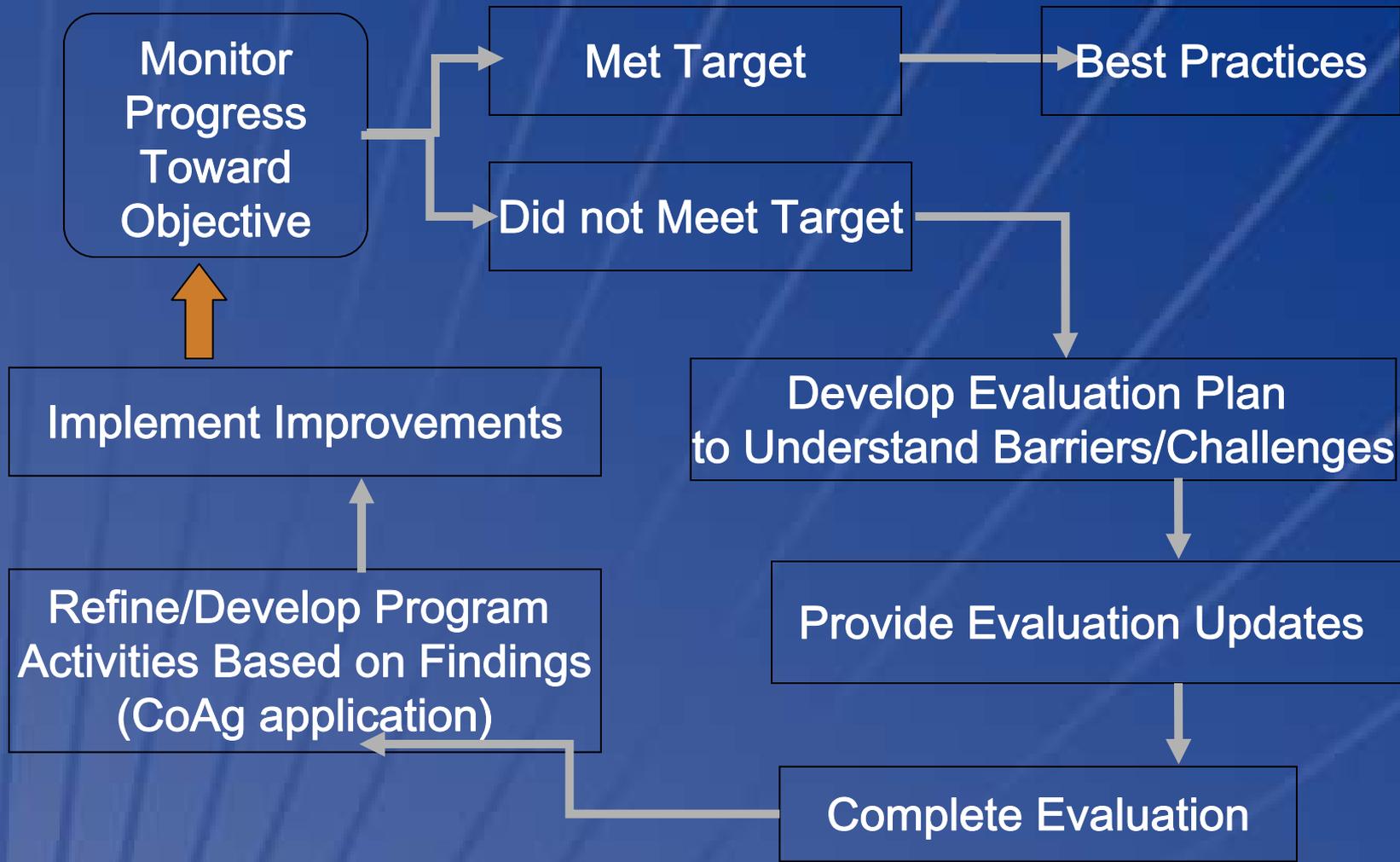


| Year | 2004 | 2005 | 2006 | 2007 | 2008 | -- | 2015 |
|--|------|------|------|------|------|----|-------|
| Initial Drug-Susceptibility Results Reported (%) | 98.0 | 97.2 | 97.4 | 97.9 | 94.2 | -- | |
| National Target (%) | | | | | | -- | 100.0 |

| Year | 2004 | 2005 | 2006 | 2007 | 2008 |
|--|--------|--------|--------|--------|--------|
| Total Culture-positive TB Cases (N) | 11,327 | 10,953 | 10,745 | 10,422 | 10,028 |
| Initial Drug-susceptibility Results Reported (n) | 11,095 | 10,642 | 10,463 | 10,198 | 9,442 |
| Initial Drug-susceptibility Results Not Reported (n) | 22,422 | 21,595 | 21,208 | 20,620 | 19,470 |



Integrating NTIP into Program Practice



Summary

NTIP will

- Reinforce the national priorities
- Measure progress and impact using existing data
- Identify priorities for program improvement, reporting and technical assistance
- Facilitate evidence based practices
- Enhance collaboration among partners at all levels



Acknowledgements

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Erin Holt

Stephen Hughes
Kashef Ijaz
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Billie Juni
Awal Khan
Beth Kingdon
Linda Leary
Phil LoBue
Beverly Metchock
Heather Morrow-
Almeida
Massa Narita
Tom Navin

Robert Pratt
Valerie Robison
Maria Rodriguez
Tom Shinnick
Teresa Smith
Deborah Sodt
Barbara Stone
Wendy Sutherland
Zach Taylor
Wanda Walton
Maureen Wilce



Access NTIP

TB Controllers e-mail their respective program consultants requesting access for staff member



<https://66.155.122.64/ntip/nt/session/login.do>



Virginia NTIP in TB Control and Program Evaluation



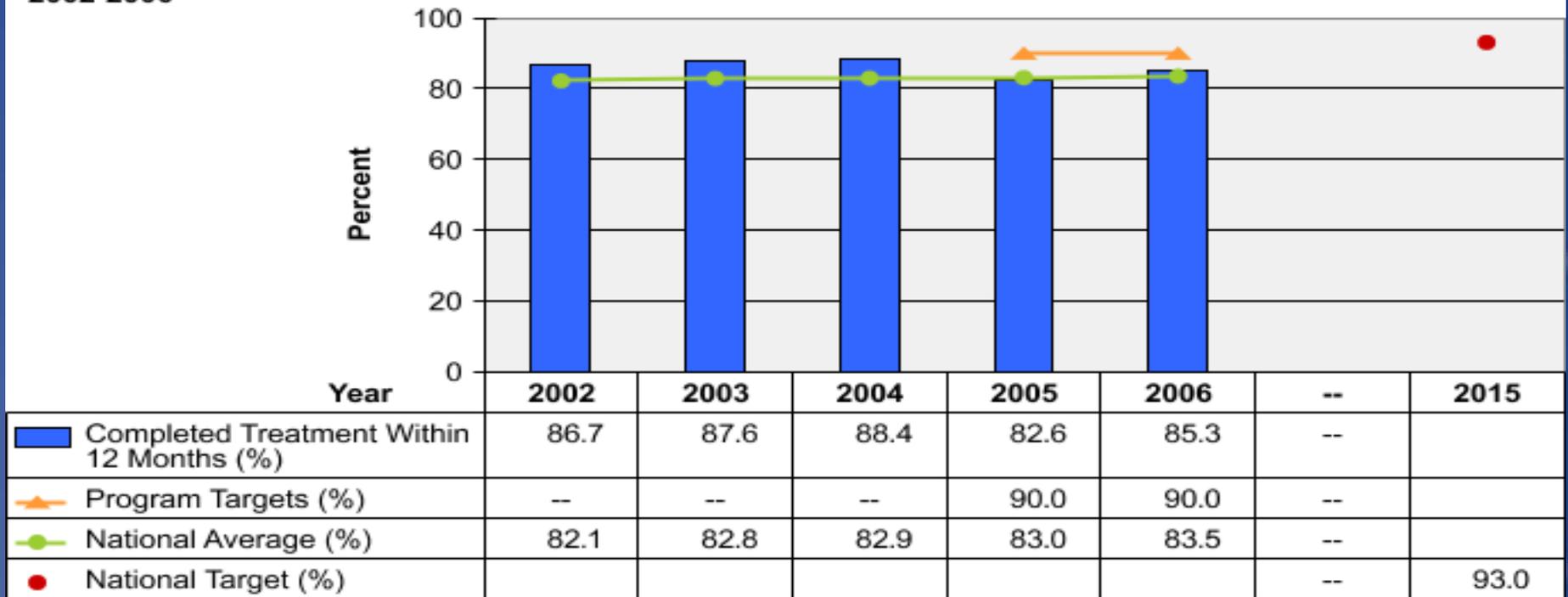
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Treatment Completion in 12 Months

Treatment Completion Within 12 Months for Eligible Patients
Virginia
2002-2006

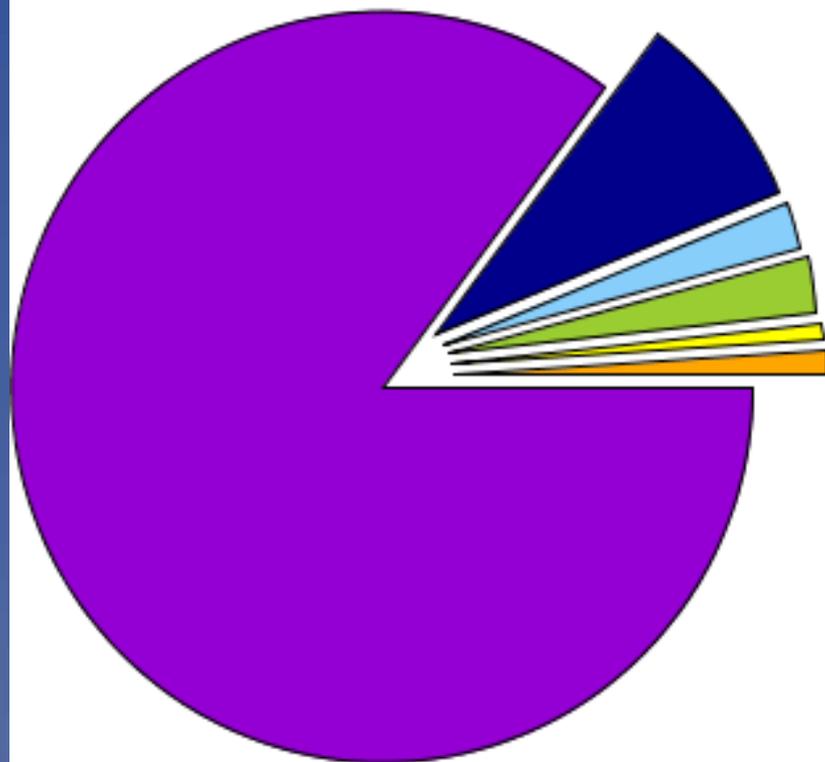


| Year | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|------|------|------|------|------|
| Total Eligible Patients (N) | 285 | 298 | 292 | 321 | 292 |
| Patients Completed Treatment (Ever) (n) | 264 | 282 | 269 | 291 | 274 |
| Patients Completed Treatment Within 12 Months (n) | 247 | 261 | 258 | 265 | 249 |
| Patients Did Not Complete Treatment (n) | 21 | 16 | 23 | 30 | 18 |



Treatment Outcomes

Treatment Outcomes for Eligible Patients
Virginia
2006



| | No. | (%) |
|--------------------------------------|-----|---------|
| Total Eligible Patients | 292 | (100.0) |
| Treatment Completed Within 12 Months | 249 | (85.3) |
| Treatment Completed After 12 Months | 25 | (8.6) |
| Moved | 6 | (2.1) |
| Lost to Follow-up | 7 | (2.4) |
| Refused | 2 | (0.7) |
| Unknown/Missing | 3 | (1.0) |

VA Program Evaluation Framework, 2008

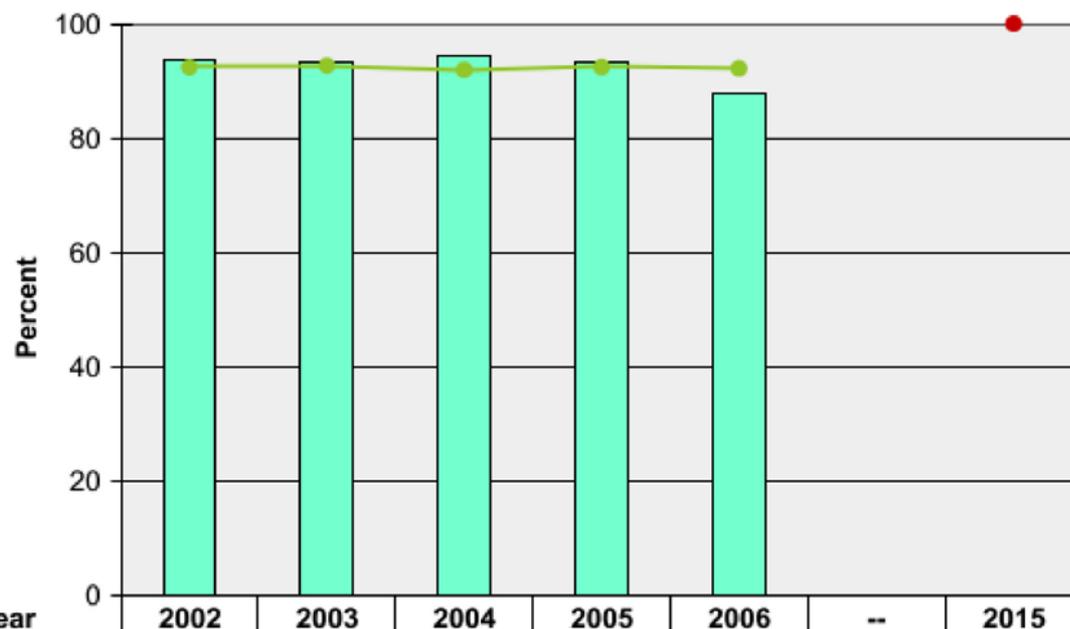
Determine reasons that contacts

- Not identified
- With LTBI not started on treatment



Contacts Elicited

**Sputum Acid-fast Bacillus (AFB) Smear-positive TB Cases with Contacts Elicited
Virginia
2002-2006**



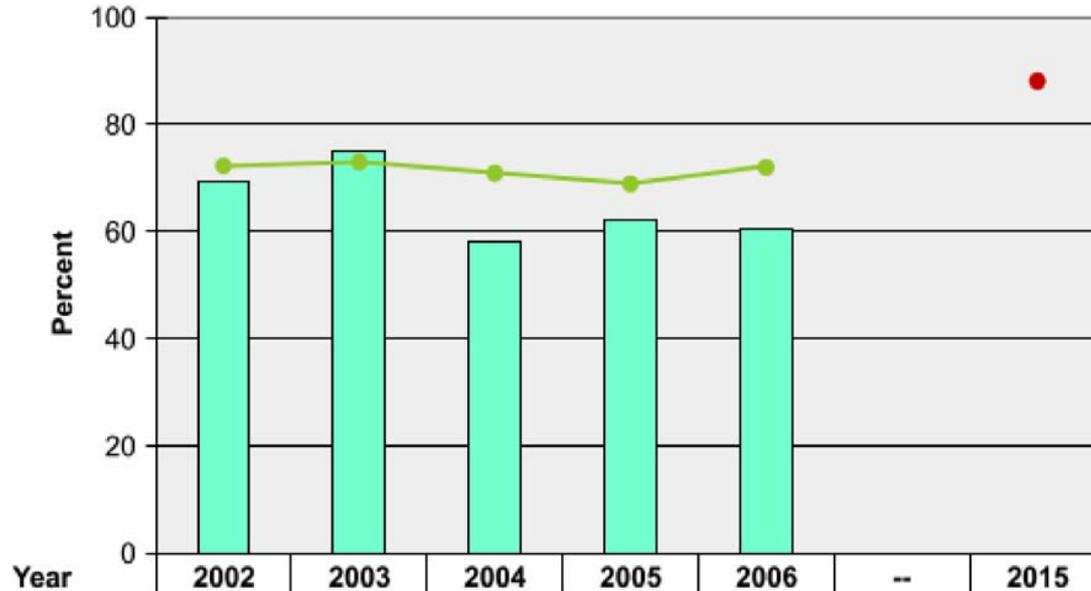
| | | | | | | | |
|----------------------------------|------|------|------|------|------|----|-------|
| Cases with Contacts Elicited (%) | 93.8 | 93.2 | 94.5 | 93.4 | 87.9 | -- | |
| Program Targets (%) | -- | -- | -- | -- | -- | -- | |
| National Average (%) | 92.4 | 92.7 | 91.9 | 92.4 | 92.2 | -- | |
| National Target (%) | | | | | | -- | 100.0 |

| Year | 2002 | 2003 | 2004 | 2005 | 2006 |
|--|------|------|------|------|------|
| Total Sputum AFB Smear-positive TB Cases for Investigation (N) | 113 | 146 | 109 | 152 | 141 |
| Cases with Contacts Elicited (n) | 106 | 136 | 103 | 142 | 124 |
| Cases with No Contacts (n) | 7 | 10 | 6 | 10 | 17 |



Contacts with LTBI Starting Treatment

**Contacts with Newly Diagnosed Latent TB Infection (LTBI) Who Started Treatment
Virginia
2002-2006**



| | | | | | | | |
|--|------|------|------|------|------|----|------|
| Contacts with Newly Diagnosed LTBI Who Started Treatment (%) | 69.1 | 75.0 | 57.8 | 62.1 | 60.5 | -- | |
| Program Targets (%) | -- | -- | -- | -- | -- | -- | |
| National Average (%) | 72.2 | 72.9 | 70.8 | 68.8 | 71.9 | -- | |
| National Target (%) | | | | | | -- | 88.0 |

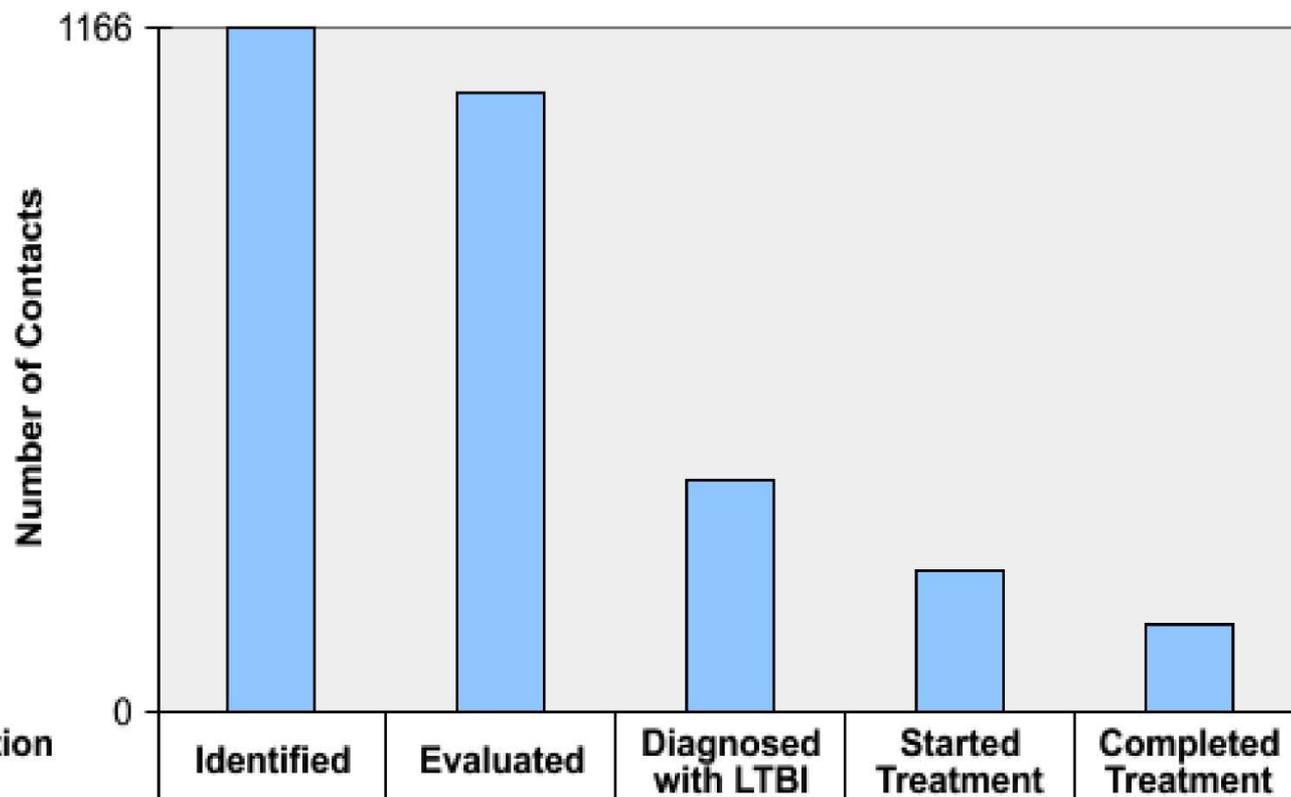
| Year | 2002 | 2003 | 2004 | 2005 | 2006 |
|--|------|------|------|------|------|
| Total Contacts with Newly Diagnosed LTBI (N) | 395 | 591 | 434 | 702 | 392 |
| Contacts Who Started Treatment (n) | 273 | 443 | 251 | 436 | 237 |
| Contacts Who Did Not Start Treatment (n) | 122 | 148 | 183 | 266 | 155 |



Contacts by Disposition

Number of Contacts to Sputum Acid-fast Bacillus (AFB) Smear-positive TB Cases by Evaluation and Treatment Disposition

Virginia
2006



| | | | | | |
|--|-------|-------|-----|-----|-----|
| ■ Contacts to Sputum AFB Smear-positive TB Cases (n) | 1,166 | 1,055 | 392 | 237 | 146 |
|--|-------|-------|-----|-----|-----|



Program Evaluation DTBE Approach



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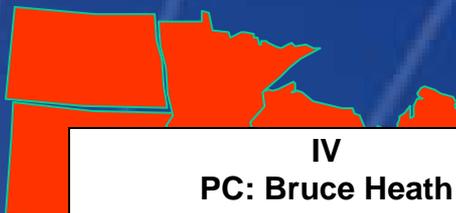


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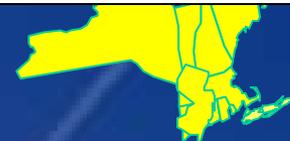
Field Services and Evaluation Branch (FSEB)



TB Program Consultant (PC) and Evaluation Team Rep (ER) Assignment for Technical Support by Consulting Regions



I
PC: Dawn Tuckey
ER: Kai Young
(CT, ME, MA, NH, RI, VT, NY, NJ, NYC)



IV
PC: Bruce Heath
ER: Linda Leary*
(KY, MI, Detroit, MN, ND, SD, WI,
Puerto Rico, Virgin Islands)

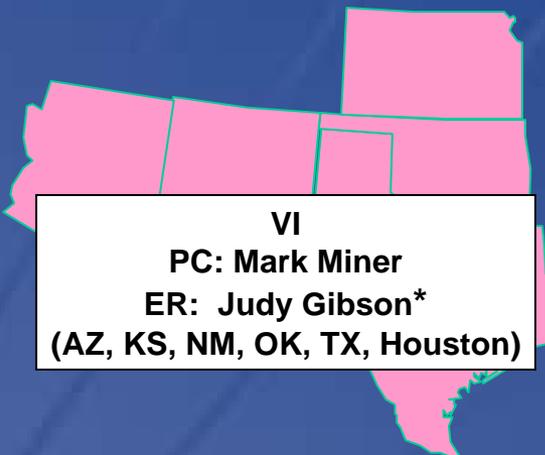
VII
PC: Paul Tribble
ER: Kai Young
(AK, CO ID, MT, NV, OR, UT, WA, WY)

V
PC: Regina Gore
ER: Linda Leary*
(IA, IL, IN, MO, NE, OH, Chicago)

II
PC: Vic Tomlinson
ER: Awal Khan
(Baltimore, DC, DE, MD, NC
PA, Philadelphia, VA, WV)



VIII
PC: Andy Heetderks
ER: Judy Gibson*/Awal Khan
(CA, Los Angeles, San Diego,
San Francisco,
Awal (HI, AS, FM, GU, MH, MP, PW)



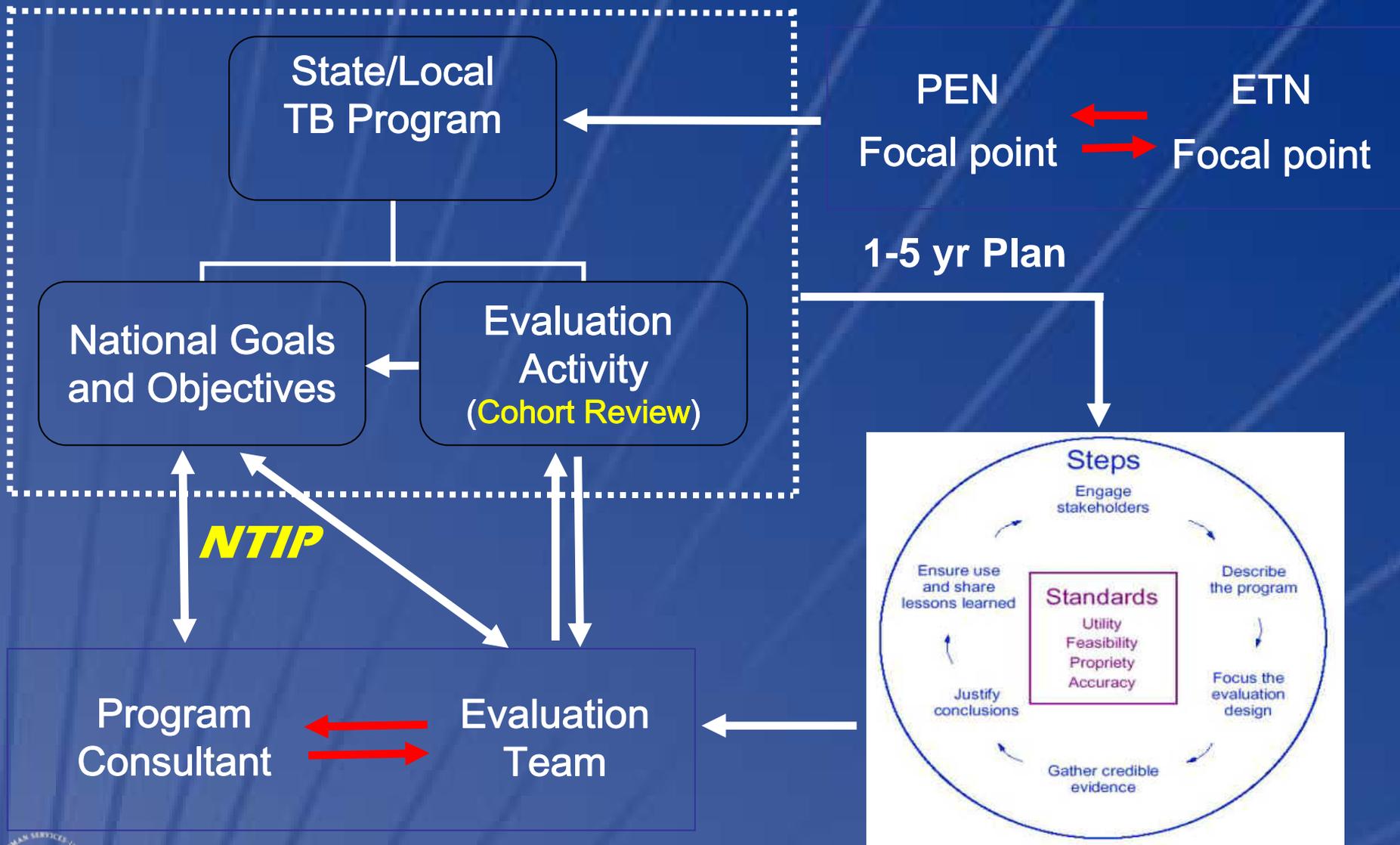
VI
PC: Mark Miner
ER: Judy Gibson*
(AZ, KS, NM, OK, TX, Houston)



III
PC: Gail Burns-Grant
ER: Awal Khan
(AL, AR, FL, GA, LA, MS, SC, TN)

*Backup supports: Kai Young for Linda Leary; Awal Khan for Judy Gibson

Collaborative Approach - Evaluation



PET Activities and Services

Help state and local TB programs develop

- Goals and objectives
- An evaluation plan and logic model
- Evaluation questions and performance indicators
- Data collection methods, instrument, and analysis plan



PET Activities and Services (cont.)

Assist state and local TB programs

- Monitor program goals and objectives
- Identify priority areas of program improvement
- Identify implementation gaps / promote best practices
- Provide feedback, input on PE capacity building activities
- Identify training, educational needs for staff



PET Activities and Services (cont.)

Support TB Program Evaluation Network (TB PEN) Steering Committee in program evaluation activities.



Program Evaluation Focal Point

- Designated point of contact for evaluation activities in COAG site by March 2010
- Serves as the subject matter expert
- Participates in TB Program Evaluation Network (TB PEN)
- Shares experiences and lessons learned
- Facilitates program evaluation capacity building



TB Evaluation Products

**Introduction to Program Evaluation
A Self-Study Guide**

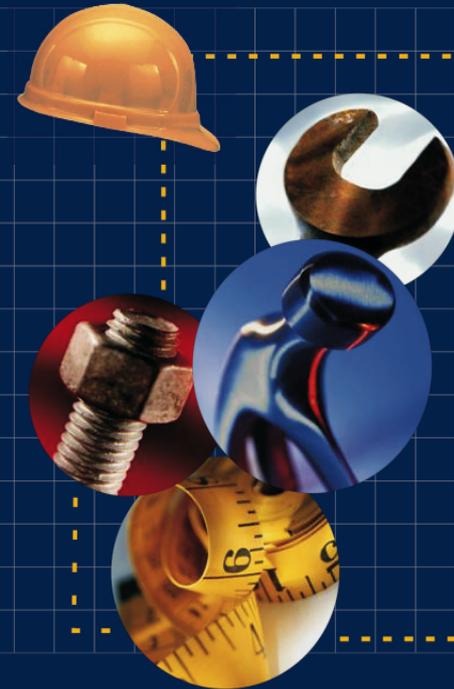
TB Program Logic Models

**TB Program Evaluation
Handbook**

**Welcome to Program Evaluation
What Every Stakeholder Needs to Know
About the Process**

**Guide to Developing a TB
Program Evaluation Plan**

TB Program Evaluation Toolkit



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Any Questions?



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