Namibia’s experience with an electronic recording and reporting system
Background

- Population ~2.2 million
- Population density 2.2/km²
- 35 public hospitals, 34 health districts
- Government finances 100% of all anti-TB medicines (including 2nd line) and 60% of all HIV-care medicines
- TB & HIV diagnosis and care services provided for free in public health facilities
- Excellent telecommunication infrastructure in all districts
  - Telephone & email present at all major facilities
Epidemiology: HIV/TB in Namibia (1)

- 2010 ANC HIV prevalence: 18.7%
- 204,000 estimated PLWHA
- 76,307 patients active on ART (Dec 2010)
- 18,236 patients active pre-ART (Dec 2010)
- Of the active patients 13,581 received IPT (Dec 2010)
- 164,041 ever enrolled in HIV care since the programme began (includes died, lost to follow up and transferred to private)
- ART coverage for those eligible is currently estimated at about 69%
  - Dropped from 88% due to revision of guidelines
- 141/338 public health facilities providing ART
- 74% of notified TB patients had an HIV result
- 35% of HIV positive TB patients were put on ART in 2009
Epidemiology: HIV/TB in Namibia (2)

- In 2009 TB CNR 634/100,000 down from 665/100,000 (2008)
- 58% of TB patients are co-infected with HIV
- Treatment success in new smear positive cases was 82% (2008 cohort)
- 396 patients placed on 2nd line TB medicines in 2009 (275 MDR TB, 17 XDR TB, 80 PDR, 24 with no DST)
- TBIC guidelines printed in 2009; TB guidelines revised 2011; ART guidelines revised 2010 to include early initiation:
  - All TB/HIV co-infected to get ART in 2-8 weeks of starting TB Rx
  - CD4 ≤ 350 regardless of stage
  - Stage 3 & 4 regardless of CD4 count
Overview of the TB and HIV reporting systems in Namibia

**TB Programme**
- Paper based tools have been in use since adoption of DOTS and have been reviewed periodically (under review currently).
- Desktop based Electronic TB register (ETR) in place since 2007
- Plans to introduce Web based *eTB manager* for PMDT (pilot to start May 2011)
- This tools can capture the following HIV-related information
  - Testing for HIV among TB patients
  - ART regimens for TB patients
  - Cotrimoxazole for TB patients

**HIV programme**
- Paper based tools have been in use since 2003 and has been reviewed periodically (under review currently).
- Electronic Patient Monitoring system (ePMS) in place since 2007
- Other electronic tools include Electronic Dispensing Tool (EDT) pharmacy based tool.
- ePMS can capture the following TB-related information
  - Screening for TB, and dates of treatment
  - IPT
  - Cotrimoxazole
MoHSS - NAMIBIA

ART Electronic Patient Monitoring System (ART ePMS)

- Main Menu
- New Patient
- Search
- HIVQUAL
- Card Data_Entry
- Card_F_Up
- Quality Control
- Reports
- Appointments
- Import_Export
- Chang_ART_
- EWI

This_Facility_code
This_Health_Facility
This_Region
ePMS

- Main electronic reporting system for HIV patient care in Namibia
- Source of data for the system is the patient care booklet
- On the 3Is captures:
  - IPT among HIV positive patients
  - Number of HIV positive patients screened for TB in HIV care setting
  - Does not capture any information on TBIC yet
## Data Flow

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health facility level:</td>
<td>Patient based data collected on the patient care booklet and Pre and ART registers</td>
</tr>
<tr>
<td>District level</td>
<td>Data entered at district level in an electronic patients monitoring system (EPMs) Data aggregated in periodic reports for the regional level Report for the district is made</td>
</tr>
<tr>
<td>Regional level</td>
<td>Hard copy of the district report is forwarded to the region</td>
</tr>
<tr>
<td>National level</td>
<td>Soft copy to the National office National aggregation of data Production of periodic reports</td>
</tr>
</tbody>
</table>
**ePMS - data entry**

### Patient Information

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Name</td>
<td></td>
</tr>
<tr>
<td>Last Name</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>DOB</td>
<td></td>
</tr>
<tr>
<td>Age Group</td>
<td></td>
</tr>
<tr>
<td>Telephone #</td>
<td></td>
</tr>
<tr>
<td>Transferred In</td>
<td>Yes</td>
</tr>
<tr>
<td>Transferred Out</td>
<td>No</td>
</tr>
<tr>
<td>HIV Test</td>
<td></td>
</tr>
<tr>
<td>Initiating Therapy</td>
<td></td>
</tr>
<tr>
<td>Therapy Change</td>
<td></td>
</tr>
<tr>
<td>CD4%</td>
<td></td>
</tr>
<tr>
<td>Eligible &amp; Ready for ART</td>
<td></td>
</tr>
<tr>
<td>INH</td>
<td></td>
</tr>
<tr>
<td>CDT</td>
<td></td>
</tr>
<tr>
<td>TB</td>
<td></td>
</tr>
<tr>
<td>Pregnancy</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td></td>
</tr>
</tbody>
</table>

### Allergy to Medicines

<table>
<thead>
<tr>
<th>Meds</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Stop Lost

<table>
<thead>
<tr>
<th>Stop Lost</th>
<th>Date</th>
<th>Why</th>
<th>Restart Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop</td>
<td>Lost</td>
<td>Lost</td>
<td></td>
</tr>
<tr>
<td>Stop</td>
<td>Lost</td>
<td>Lost</td>
<td></td>
</tr>
<tr>
<td>Stop</td>
<td>Lost</td>
<td>Lost</td>
<td></td>
</tr>
<tr>
<td>Stop</td>
<td>Lost</td>
<td>Lost</td>
<td></td>
</tr>
<tr>
<td>Stop</td>
<td>Lost</td>
<td>Lost</td>
<td></td>
</tr>
</tbody>
</table>

### Follow Up Visits

<table>
<thead>
<tr>
<th>Visit Date</th>
<th>Status</th>
<th>Function</th>
<th>Visit Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### HIV Care/ART Card

- **Unique # Check**: 
- **Health Passport No**: 
- **3, Mar, 2010**: 
- **Main Menu**: 
- **Card Data Entry**: 
- **Cord Up**: 
- **Find Related F-Up Records**: 
- **New Patient**: 
- **Create F-Up Card**: 
- **HIVQUAL**: 
- **Reports**: 
- **Data Entry Table**: 
- **Quality Control**: 
- **Health Facilities**: 
- **Duplicate Entry**: 
- **Appointments**: 
- **Referral Letter**: 
- **Change_ART_i**: 

### Info block

- **Still_On_ART_Codes**: 
- **Still_On_Care**: Yes
- **Modification Date**: 
- **Still_On_Care in this facility**: Yes
- **Periodic Palliative_Care_Code**: 
- **Lost Follow_Up**: N/A
- **Lastest F Up Visit**: 
- **Last_Follow_Up_Duration**: 
- **F_Up_Visit**: 
- **Current_Therapy**: Not/A
- **Current_Therapy_code**: 
- **Regimn_Code**: 0
**ePMS - follow up data entry**

![Image of ePMS interface](Image)

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serial</strong></td>
<td>00212</td>
</tr>
<tr>
<td><strong>Visit Date</strong></td>
<td>22/3/05</td>
</tr>
<tr>
<td><strong>Visit Status</strong></td>
<td>Visit Status</td>
</tr>
<tr>
<td><strong>Visit Status</strong></td>
<td>New Off Up</td>
</tr>
<tr>
<td><strong>Serial</strong></td>
<td>00212</td>
</tr>
<tr>
<td><strong>Visit Date</strong></td>
<td>22/3/05</td>
</tr>
<tr>
<td><strong>Visit Status</strong></td>
<td>Visit Status</td>
</tr>
<tr>
<td><strong>Visit Status</strong></td>
<td>New Off Up</td>
</tr>
</tbody>
</table>

**Height** cm: 50

**Weight** kg: 70

**Function** Status: Ambulatory

**Current Regimen**
- **WHO Clinical Stage**: T2
- **TB Status**: TB Rx
- **Dispensed Duration**: 0.5
- **Initial ART Code**: N/A
- **Duration on ART**: N/A
- **Duration on Current ART**: N/A

**Laboratory**

<table>
<thead>
<tr>
<th>Test</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD4</td>
<td>24/Feb/05</td>
</tr>
<tr>
<td>Hb</td>
<td>24/Feb/05</td>
</tr>
<tr>
<td>ALT</td>
<td>24/Feb/05</td>
</tr>
<tr>
<td>HBsAg</td>
<td></td>
</tr>
<tr>
<td>RPR</td>
<td></td>
</tr>
<tr>
<td>V/Load</td>
<td></td>
</tr>
<tr>
<td>V/Resistance</td>
<td></td>
</tr>
<tr>
<td>Cr Clearance</td>
<td></td>
</tr>
</tbody>
</table>

**Referral**

**Referral B**

**Notes**

**Care Card**

- **Cohort**
- **Sex**
- **Age**
- **DOB**
- **Prior ART**
- **Enrolled HIV Care**
- **Start ART**
- **Original Regimen**
- **Where Started Rx**
- **Age Calc Months**
- **At Start Weight**
- **At Start Function**
- **At Start Clin Stage**
- **At Start CD4**
- **At Start ART CD4%**

**Follow Up Visits**

<table>
<thead>
<tr>
<th>Visit Date</th>
<th>F_Up Visit</th>
<th>Weight</th>
<th>Height</th>
<th>Function</th>
<th>WHO Stage</th>
<th>TB Status</th>
<th>Side Effects</th>
<th>OI</th>
<th>Status</th>
<th>Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>22/3/05</td>
<td>22/3/05</td>
<td>60</td>
<td></td>
<td>Ambulatory</td>
<td>T2</td>
<td>TB Rx</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ePMS - reports
Data collection and management

- Recorded by HCW (community counsellor, nurse and doctor) at point of care in the *Patient care booklet ; Pre-ART and ART* registers
- Entered by data clerks into EPMS at district level
- Periodic reports generated and hard copies send to regional level
- Electronic reports emailed to national level for cleaning aggregation & analysis
- National office produce quarterly bulletins based on ePMS reports
Enablers

• Introduction of the IMAI & HIVQUAL has managed to strengthen the following aspects of the system
  ▪ Identifying gaps and areas for improvement
  ▪ Screening for TB in HIV patients
  ▪ Roll out of IPT
  ▪ Task-sharing and role of teamwork
• Housing of the TB & HIV programmes in the same directorate and division
• Presence of a TB-HIV collaboration technical working group at national level – joint planning and cross consultation
• Regular training of both implementers and data entry staff on the tools
• Mentoring and support visits to the sites
• Good telecommunication infrastructure
Challenges

- Sub-optimal integration of TB and HIV reporting systems (parallel reporting), sometimes leading to conflicting or double-reported data
- Data verification done on ad-hoc basis
- Human resources challenges still remain
- Data clerks often overwhelmed by the reporting requirements
THANK YOU