

# Infection Control and Intensive Case Finding Notes from KwaZulu-Natal



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## Tugela Ferry KwaZulu-Natal



# Tugela Ferry

- Population of 172 000
- TB incidence 1054 / 100000 population
- MDRTB incidence 141 / 100000 population
- 75% of TB patients co-infected with HIV
- 791 DRTB case since 2005 ( 451 XDR )

# Nosocomial spread



# MDRTB Nosocomial spread

- Significant Transmission of “already drug-resistant strains” (primary resistance)
- Requires different approach to prevention of acquired resistance
- Greater focus on Infection Control needed

Susceptible HIV  
Patients

+

Contagious TB  
Patients

- High Risk Environment
  - High HIV and TB prevalent areas
  - Busy hospitals with high case loads and overcrowding
  - Ingredients & drivers for Nosocomial spread
- Patients accessing care for HIV should not be at risk for catching TB or DRTB



# Comprehensive Response

- Prevention
  - Strengthen TB DOTS program to curb creation of drug resistance
  - Create & Implement comprehensive **Infection control** program to prevent transmission of drug-resistance
- Improved Diagnosis
  - **Intensified case finding** : active screening and surveillance
  - Reduce time to diagnosis : Rapid diagnostic assay
- Treatment
  - Faster initiation of second line drugs ( decentralized treatment centre)
  - Improved Patient support
  - Community management of MDRTB

# Infrastructure

- Human Resources
- Working Space
  - Office space
  - Isolation wards
  - Satellite MDRTB Unit
  - Mechanical ventilation
- Vehicles



TB STAFF	
2005	2008
4	24



# Infrastructure

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TB STAFF		
Office space	12m <sup>2</sup>	60 m2
Isolation	0	14 beds
Ventilation	0	2 wards

# Infrastructure

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TB VEHICLES	
2005	2008
0	11

- Vehicles

# Infection control

- Administrative Protection

↓ exposure to bacillus

- Environmental Protection

↓ concentration of bacillus

- Personal Protection

↓ personal risk

# Administrative Protection

- Implementation
  - Infection control officer and committee
  - Creation of infection control plan and policies
  - IC Audits
- Training
  - Staff training
- Identify and separate
  - Implement TB screening at entry points
  - Fast track suspects
  - Isolate Identified DRTB patients
  - Reduce hospital admissions and length of stay
  - Relocate waiting areas to outside venues

# Spaghetti problem

Integrate TB and HIV “with care”

- TB screening for all HIV clinic attendees
- VCT for all TB patients
- Separate known TB pts from ARV literacy sessions



# Environmental control



- Endeavour to achieve 12 ACH
- Bring in clean air
- Move out contaminated air



# Environmental Control



Controlled  
pressure and flow  
in closed systems

Vs

Natural Ventilation

# Environmental Control

Controlled  
pressure and flow  
in closed systems

Pressure differentials  
Power dependant  
High maintenance

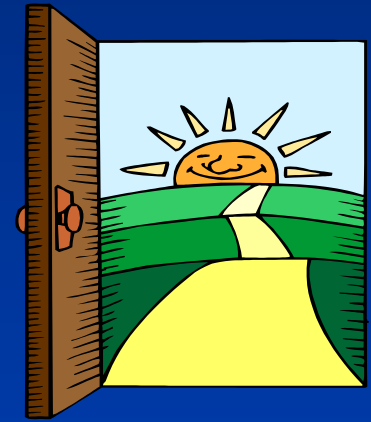
Vs

Natural Ventilation

Open windows/doors  
Cross ventilation  
Natural air movement  
and convection

# Infection Control Program

- Maximize Natural Ventilation
  - Open all windows and doors
  - Relocate waiting areas to Outdoors
  - Sputum collection outside / Booth outside
- Installation of mechanical ventilation system for when windows closed ( cold winter nights)





Extractor fan



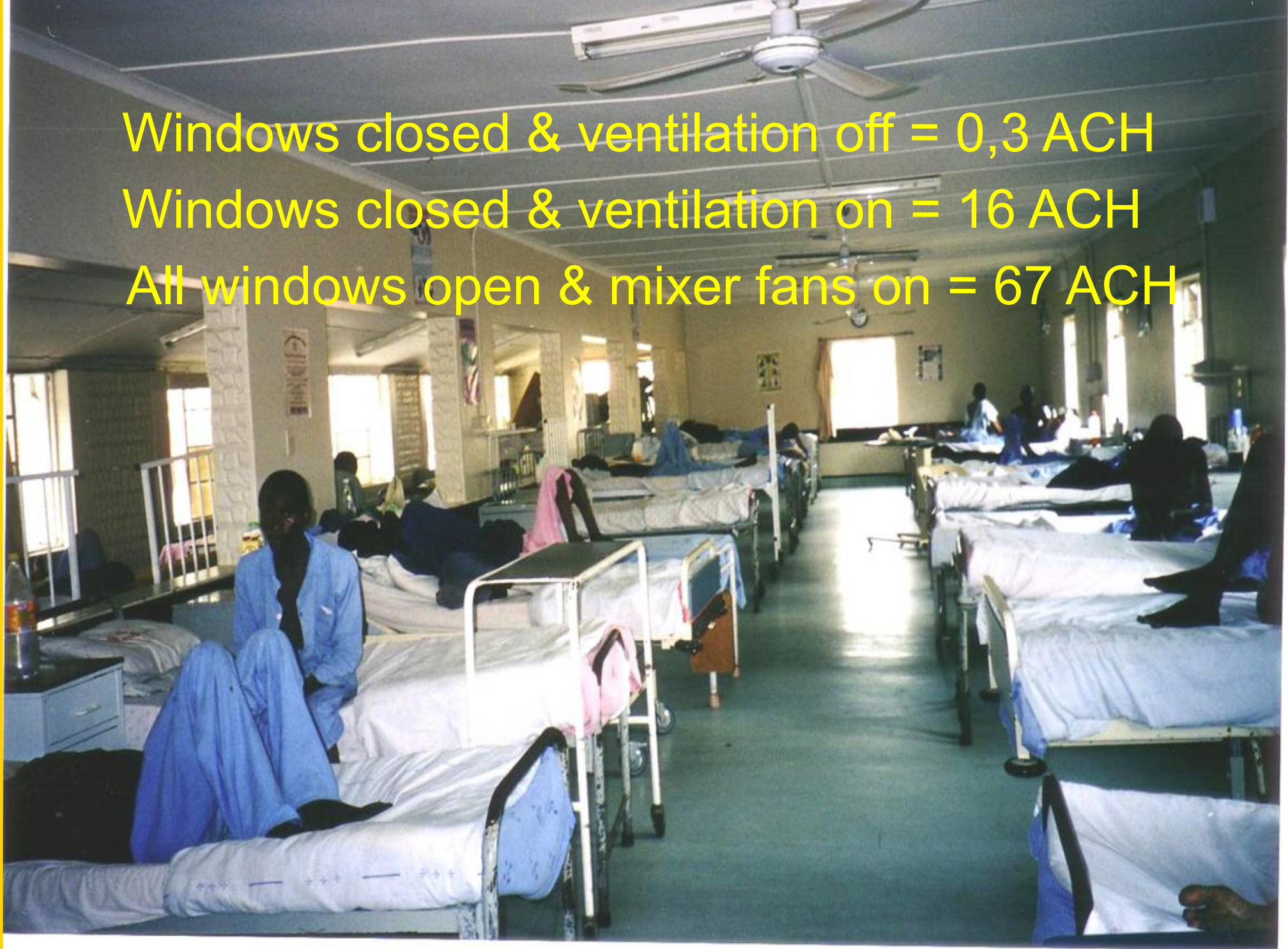
Vacuum duct



Windows closed & ventilation off = 0,3 ACH

Windows closed & ventilation on = 16 ACH

All windows open & mixer fans on = 67 ACH



## Even with adequate ACH



- Think proximity of patients
- Think personal Air volume
- Think direction of air flow
- Think Stagnant areas



























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DECONGEST

# Infection Control Program cont'd

- Personal
  - N95 mask use by all staff in High Risk areas
  - HIV testing offered to all staff
    - Offer relocation to lower risk hospital locations
    - Antiretroviral therapy for CD4 <350
  - Staff screening
    - Baseline screening for all new staff
    - 6 monthly screening
    - Staff clinic for consultation for any S&S



# Personal Protection

- Wear masks in high risk areas

Ensure availability of Masks

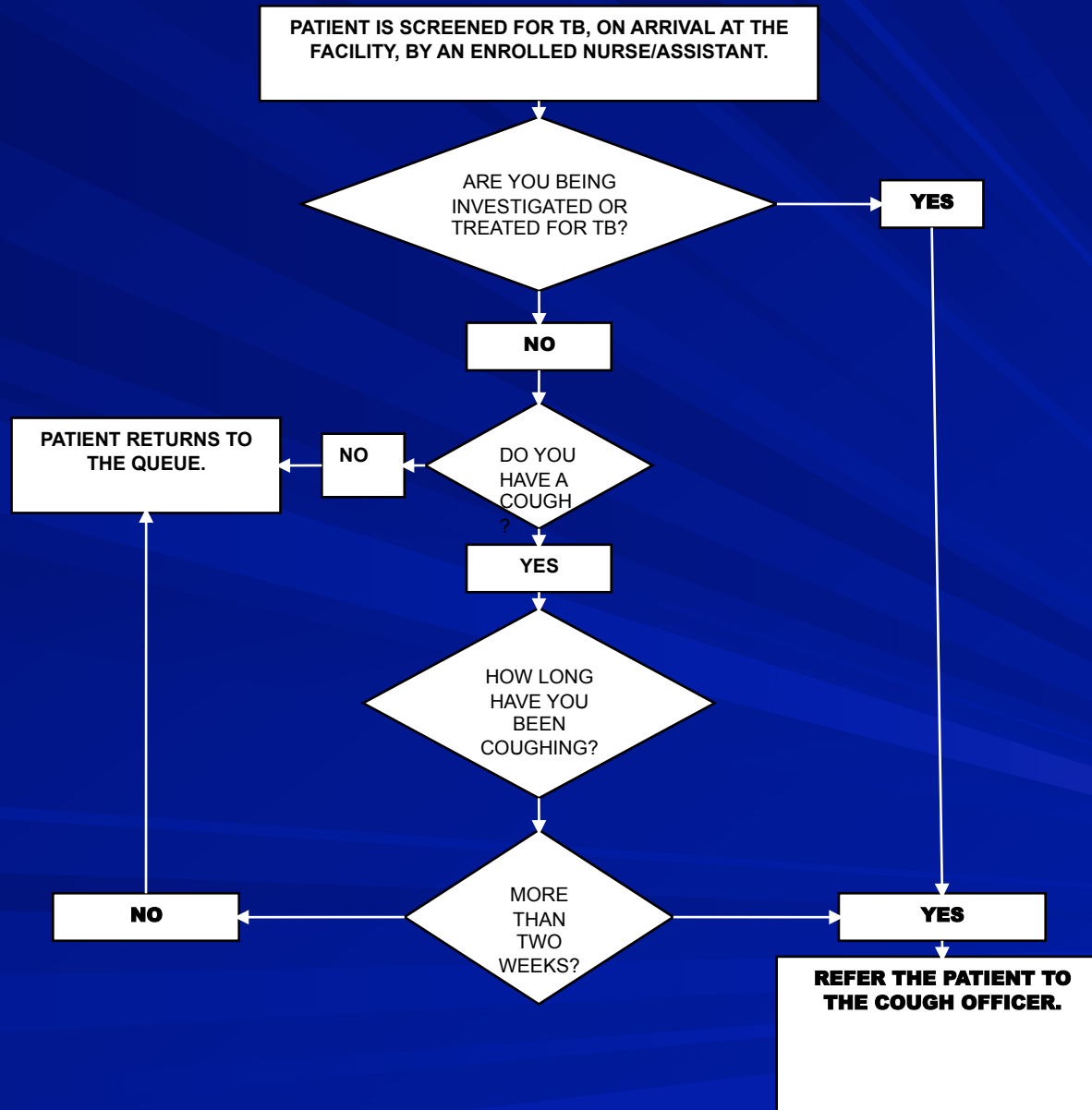


# Audit tools for IC

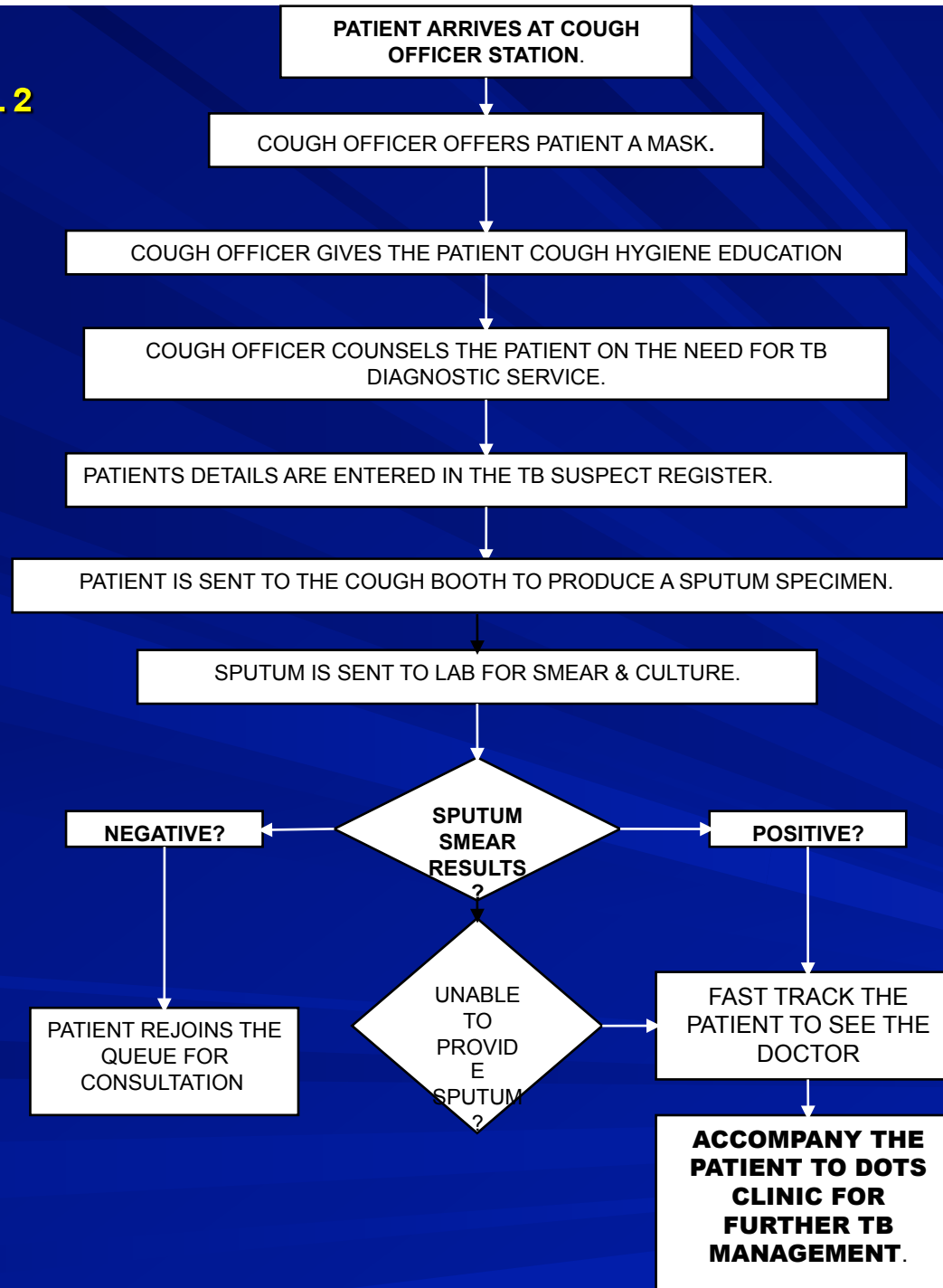
- Annual TB facility Risk assessment (WHO/JH)
- Adherence to clinical pathways
- Environmental control monitoring
- Staff Screening program
- Home IC audit in the community



## CLINICAL PATHWAY OPD. 1



## CLINICAL PATHWAY OPD.2



# ENVIRONMENTAL AUDITS

	TOTAL # AUDITS. JUL-SEPT AUG 2007	TOTAL A/AIL WINDOW	Av. OPEN WINDOW LARGE/ SMALL	PERCENT COMPL	TOTAL A/AIL. DOORS	TOTAL OPEN	PERCENT COMPL.	A/AIL. VENTS	FUNCT. VENTS.	PERCENT COMPL.
MTB	26	30 14	28 9	93 64	1	26	88	26	26	100
FTB	25	24 10	21 5	87 46	2	44 50	88	25	24	96
MDR	25	10	8	78	1	25	100	NA	NA	NA
DOTS	25	10 1	4 0.4	35 36	1	18	70	NA	NA	NA
X- RAY	25	8	8	99	1	25	100	NA	NA	NA
OPD	20	21	8	40	1	19	95	NA	NA	NA

# Intensified Case Finding

- Increased surveillance
  - Identification of TB suspects at all entry points
  - Sputum sent for DST on all suspects
  - Use of the HAIN Molecular MDRTB rapid test
- Contact tracing of all MDRTB index cases
  - House Holds of ALL index cases screened (3206)
- Community surveillance
  - Hlola Manje (test now campaign)
  - Pension pay point drive

# Cough Officer Suspect Register Data

MONTH	OPD		GATEWAY		DOTS		
	# PATIENTS SCREENED	# POS SPUTUMS MICROSCOPY ONLY.	# PATIENTS SCREENED	# POS SPUTUMS MICROSCOPY ONLY.	# PATIENT S SCREENED	# POS SPUTUMS MICROSCOPY ONLY.	# POS SPUTUMS CULTURE
JAN	90	31	36	7			
FEB	58	11	25	2			
MAR	56	7	30	1			
APR	44	10	18	2			
MAY	79	10	38	3	35	2	
JUN	40	5	11	4	108	0	
JUL	96	8	53	8	111	2	
AUG	95	14	53	2	101	2	
SEPT	107	14	75	6	49	1	
OCT	90	7	66	2	97	2	
NOV	78	5	31	3	174	0	
DEC	48	0	21	1	171	0	
JAN	68	2	13	0	144	0	
FEB	79	4	21	0	158	0	
MAR	38	2	33	0	49	0	
TOTAL.	1066	130	524	41	1197	9	
		12.20%			7.82%		
						0.75%	

# Community surveillance



- Hlola Manje
  - Over 4 days in August 08 ( 13 teams )
  - 85 households visited + Taxi ranks
  - 987 sputums taken and 19 pos (2%)
  - 128 VCT taken and 20 pos (15%)
- Pension pay points
  - 774 screened for VCT 144 Pos (18%)
  - 256 sputums taken 28 pos (11%)



- 
- Decongest

surveillance ( into community)

up

- Step

# The end

- Thank you

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# Tugela Ferry

- Population +/- 170 000
- TB incidence 1054/100000 population
- MDRTB incidence 141 / 100000 population
- HIV prevalence 30% (Antenatal figures)
- 75% of TB patients co-infected with HIV
- +/- 1800 new TB cases per year
- 791 DRTB case since 2005

# Evidence for Nosocomial spread

- Genetic fingerprinting shows predominance of the KZN strain (spoligotyping)
- Limited community spread ( 2% community spread)
- 8 staff members have died of X/MDRTB (4X, 4M)
- Multi Variant analysis shows previous hospitalization as a strong predictor of XDRTB
- Ward occupation time line
- 51 % of patients never had previous TB before (not acquired)

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	2005	2006	2007	/2008	totals
MDR	65	120	101	54	340
XDR	118	119	145	69	451
TOTAL	183	239	246	123	791

# POLICIES AND PROCEDURES.

- Clinical Pathways for TB Infection Control.
- Environmental Control.
- Protection of Health Care Workers.
- Respiratory Protection.
- Staff Training and Development.
- Monitoring of TB Infection Control Management.



# How effective are the interventions ?

Look at percentage of new XDR cases prevented

If nothing is done there will be 1300 new cases in 5 years

