

**Table 1. Response rate per District**  
**National survey of tuberculosis drug resistance in Mpumalanga, 2001 - 2002**

District	Cases	
	Expected	Registered (%)*
Nelspruit	28	8 (28.6)
Sabie	8	13 (162.5)
Kabokweni	149	176 (118.1)
Shongwe	57	76 (133.3)
Tonga	21	8 (38.1)
Barberton	85	130 (152.9)
Eerstehoek	51	36 (70.6)
Piet Retief	42	17 (40.5)
Ermelo	93	126 (135.5)
Volksrust	18	23 (127.8)
Standerton	108	98 (90.7)
Bethal	17	18 (105.9)
Highveld Ridge	77	48 (62.3)
Mmamethlake	4	1 (25.0)
Lydenburg	17	22 (129.4)
Middelburg	11	13 (118.2)
Witbank	122	158 (129.5)
Kwamhlanga	10	10 (100.0)
<b>Total</b>	<b>918</b>	<b>981 (106.9)*</b>

\* Total of 762 culture-confirmed patients required

**Table 2. Treatment history of suspect cases by District  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 – 2002**

District	Treatment history*						Total N
	No history of prior treatment		History of prior treatment		History unknown		
	n	%	n	%	n	%	
Nelspruit	32	84.2	6	15.8	0	0.0	38
Sabie	27	77.1	6	17.1	2	5.7	35
Kabokweni	355	77.9	93	20.4	8	1.8	456
Shongwe	79	26.6	31	10.4	187	63.0	297
Tonga	37	82.2	7	15.6	1	2.2	45
Barberton	199	64.4	88	28.5	22	7.1	309
Eerstehoek	108	63.2	29	17.0	34	19.9	171
Piet Retief	33	73.3	9	20.0	3	6.7	45
Ermelo	145	78.4	35	18.9	5	2.7	185
Volksrust	97	69.8	40	28.8	2	1.4	139
Standerton	196	77.8	40	15.9	16	6.3	252
Bethal	61	64.2	20	21.1	14	14.7	95
Highveld Ridge	88	67.2	28	21.4	15	11.5	131
Mmamethlake	9	69.2	4	30.8	0	0.0	13
Lydenburg	103	76.9	29	21.6	2	1.5	134
Middelburg	34	75.6	10	22.2	1	2.2	45
Witbank	242	71.4	82	24.2	15	4.4	339
Kwamhlanga	13	40.6	18	56.3	1	3.1	32
<b>Total</b>	<b>1858</b>	<b>67.3</b>	<b>575</b>	<b>20.8</b>	<b>328</b>	<b>11.9</b>	<b>2761</b>

\* According to patient and/or record

**Table 3. Case detection (microscopy and culture) by District  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 - 2002**

District	No of suspects*	Microscopy			Culture		
		Smears done**	Smears positive		Cultures done***	Cultures positive	
			n	%		n	%
Nelspruit	38	38	6	15.8	35	8	22.9
Sabie	35	35	14	40.0	28	13	46.4
Kabokweni	456	452	154	34.1	414	176	42.5
Shongwe	297	294	83	28.2	244	76	31.1
Tonga	45	45	6	13.3	45	8	17.8
Barberton	309	306	112	36.6	271	130	48.0
Eerstehoek	171	169	32	18.9	153	36	23.5
Piet Retief	45	44	14	31.8	39	17	43.6
Ermelo	185	184	139	75.5	158	126	79.7
Volkswest	139	138	19	13.8	123	23	18.7
Standerton	252	250	79	31.6	226	98	43.4
Bethal	95	93	11	11.8	83	18	21.7
Highveld Ridge	131	130	44	33.8	121	48	39.7
Mmamethlake	13	13	2.0	15.4	8	1	12.5
Lydenburg	134	133	14	10.5	126	22	17.5
Middelburg	45	45	12	26.7	40	13	32.5
Witbank	339	338	132	39.1	311	158	50.8
Kawmhlanga	32	32	9.0	28.1	29	10	34.5
<b>Total</b>	<b>2761</b>	<b>2739</b>	<b>882</b>	<b>32.2</b>	<b>2454</b>	<b>981</b>	<b>40.0</b>

\* All specimens received

\*\* Excludes smears unreadable

\*\*\* Excludes cultures contaminated/not done

**Ratio of suspects : smear-positive cases = 3.11 : 1.00**

**Ratio of suspects : culture-positive cases = 2.50 : 1.00**

**Table 4. Demographic profile of culture-confirmed tuberculosis patients (N = 877)  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 – 2002**

Demographics		n	%
<b>Gender</b>	Male	574	65.5
	Female	303	34.5
<b>Age group (years)</b>	0 - 14	5	0.6
	15 - 24	148	16.9
	25 - 34	300	34.2
	35 - 44	226	25.8
	45 - 54	133	15.2
	55 - 64	39	4.4
	65 - 99	16	1.8
	Unknown	10	1.1
<b>History of prior TB treatment*</b>	No	683	77.9
	Yes	175	20.0
	Unknown	19	2.2
	<i>Retreatment RC</i>	50	28.6
	<i>RF</i>	8	4.6
	<i>RI</i>	43	24.6
	<i>RT</i>	37	21.1
<i>Unknown</i>	37	21.1	
<b>History of incarceration</b>	No	751	85.6
	Currently	6	0.7
	Previously	90	10.3
	Unknown	30	3.4

\* According to patient and/or record

Retreatment categories

RC = after cure

RF = after failure

RI = after interruption

RT = after treatment completion

**Table 5. Microscopy and culture results (all specimens)  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 – 2002**

<b>Microscopy</b>	<b>n</b>	<b>%</b>
Negative	1857	67.3
Positive	882	31.9
Not done	22	0.8
<b>Total</b>	<b>2761</b>	<b>100.0</b>
<b>Culture</b>		
<b>Culture</b>	<b>n</b>	<b>%</b>
Negative	1473	53.4
<i>M. tuberculosis</i>	877	31.8
MOTT*	11	0.4
Identification not possible	93	3.4
Contaminated	307	11.1
<b>Total</b>	<b>2761</b>	<b>100.0</b>

\* Mycobacteria other than tubercle bacilli

**Table 6. Grading of bacteriology results (confirmed *M. tuberculosis* strains)  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 - 2002**

<b>Microscopy</b>		<b>n</b>	<b>%</b>
Grading	Negative	185	21.1
	2 - 9 AFB* per 100 fields	66	7.5
	10 - 99 AFB per 100 fields (1+)	180	20.5
	10 - 99 AFB in 50 fields (2+)	166	18.9
	More than 10 AFB per field in 20 fields (3+)	275	31.4
	Not done	5	0.6
	<b>Total</b>	<b>877</b>	<b>100.0</b>
<b>Culture</b>		<b>n</b>	<b>%</b>
Grading	2 - 19 colonies	191	21.8
	20 - 99 colonies (1+)	101	11.5
	100 - 200 colonies (2+)	109	12.4
	Innumerable, discrete (3+)	398	45.4
	Confluent colonies (4+)	78	8.9
	<b>Total</b>	<b>877</b>	<b>100.0</b>

\* AFB = Acid Fast Bacilli

**Table 7. Comparison of microscopy and culture results (all specimens)  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 – 2002**

		Culture results		Total	
		Positive (%)	Negative (%)	n	(%)
<b>Microscopy results</b>	Positive (%)	758 (77.7)	34 (2.3)	792	(32.5)
	Negative (%)	218 (22.3)	1424 (97.7)	1642	(67.5)
<b>Total</b>		<b>976 (100.0)</b>	<b>1458 (100.0)</b>	<b>2434</b>	<b>(100.0)</b>

**Proportion of culture-confirmed cases**

smear-positive: 77.7%  
smear negative: 22.3%

**Table 8. History of prior treatment for tuberculosis and number of resistant drugs (confirmed *M. tuberculosis* strains)  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 – 2002**

Resistance to	Treatment history*						Total		
	No history of prior treatment			History of prior treatment					
	n	%	95% CI	n	%	95% CI	n	%	95% CI
1 drug	39	5.6	3.5 – 8.6	12	6.9	2.8 – 14.9	51	5.8	3.9 – 8.6
2 drugs	15	2.1	1.0 – 4.4	9	5.1	1.8 – 12.7	24	2.7	1.5 – 4.9
3 drugs	10	1.4	0.5 – 3.5	8	4.6	1.5 – 11.9	18	2.1	1.0 – 4.0
4 drugs	2	0.3	0.0 – 1.8	12	6.9	2.8 – 14.9	14	1.6	0.7 – 3.4
No resistance	636	90.6	86.9 – 93.3	134	76.6	66.1 – 84.7	770	87.8	84.5 – 90.8
<b>Total</b>	<b>702</b>	<b>100.0</b>		<b>175</b>	<b>100.0</b>		<b>877</b>	<b>100.0</b>	

\* Prior treatment according to patient and/or record

**Table 9. Antituberculosis drug resistance**  
**National survey of tuberculosis drug resistance in Mpumalanga, 2001 – 2002**

	No history of prior treatment*			History of prior treatment*		
	n	%	(95% CI)	n	%	(95% CI)
Total tested	702	100.0		175	100.0	
Fully susceptible	636	90.6	(86.9 – 93.3)	134	76.6	(66.1 – 84.7)
Any resistance	66	9.4	(6.7 – 13.1)	41	23.4	(15.3 – 33.9)
Mono-resistance						
H	22	3.1	(1.7 – 5.7)	4	2.3	(0.4 – 8.8)
R	4	0.6	(0.1 – 2.3)	4	2.3	(0.4 – 8.8)
E	0	0.0	(0.0 – 1.3)	0	0.0	(0.0 – 5.2)
S	13	1.9	(0.8 – 4.1)	4	2.3	(0.4 – 8.8)
H+R resistance						
HR	6	0.9	(0.2 – 2.7)	6	3.4	(0.9 – 10.4)
HRE	4	0.6	(0.1 – 2.3)	2	1.1	(0.1 – 7.1)
HRS	6	0.9	(0.2 – 2.7)	4	2.3	(0.4 – 8.8)
HRSE	2	0.3	(0.0 – 1.8)	12	6.9	(2.8 – 14.9)
H+ other resistance						
HE	1	0.1	(0.0 – 1.6)	0	0.0	(0.0 – 5.2)
HS	8	1.1	(0.4 – 3.1)	3	1.7	(0.2 – 8.0)
HES	0	0.0	(0.0 – 1.3)	2	1.1	(0.1 – 7.1)
R+ other resistance						
RE	0	0.0	(0.0 – 1.3)	0	0.0	(0.0 – 5.2)
RS	0	0.0	(0.0 – 1.3)	0	0.0	(0.0 – 5.2)
RES	0	0.0	(0.0 – 1.3)	0	0.0	(0.0 – 5.2)
Other multi-resistance						
ES	0	0.0	(0.0 – 1.3)	0	0.0	(0.0 – 5.2)
Any H resistance	49	7.0	(4.6 – 10.3)	33	18.9	(11.6 – 28.9)
Any R resistance	22	3.1	(1.7 – 5.7)	28	16.0	(9.3 – 25.7)
Any E resistance	7	1.0	(0.3 – 2.9)	16	9.1	(4.3 – 17.7)
Any S resistance	29	4.1	(2.4 – 6.9)	25	14.3	(8.0 – 23.8)

\* Prior treatment according to patient and/or record

**Table 10. Prevalence of resistance among retreatment patient categories  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 – 2002**

Patient category	Total	Fully susceptible		Any resistance		MDR	
		n	%	n	%	n	%
RC	50	38	76.0	12	24.0	6	12.0
RF	8	7	87.5	1	12.5	1	12.5
RI	43	29	67.4	14	32.6	8	18.6
RT	37	30	81.1	7	18.9	4	10.8
Unknown	37	30	81.1	7	18.9	5	13.5
<b>Total</b>	<b>175</b>	<b>134</b>	<b>76.6</b>	<b>41</b>	<b>23.4</b>	<b>24</b>	<b>13.7</b>

RC = Retreatment after cure  
 RF = Retreatment after failure  
 RI = Retreatment after interruption  
 RT = Retreatment after completion

Any resistance among  
     Unfavourable outcome = 29.4%  
     Favourable outcome = 21.8%

MDR among  
     Unfavourable outcome = 17.7%  
     Favourable outcome = 11.5%

**Table 11. Estimated MDR tuberculosis case load, 2001  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 – 2002**

	<b>Worst case scenario</b>	<b>Best case scenario</b>
<b>Estimated number of total cases</b>	18788	10048
Proportion retreatment cases	20.0%	20.0%
Proportion new cases	80.0%	80.0%
<b>Estimated number of:</b>		
New cases	15030	8038
Retreatment cases	3758	2010
<b>MDR Prevalence</b>		
New MDR cases	2.6%	2.6%
Retreatment MDR cases	13.7%	13.7%
<b>Estimated number of:</b>		
New MDR cases	391	209
Retreatment MDR cases	515	275
<b>Total number of MDR cases expected</b>	<b>906</b>	<b>484</b>

**Table 12. HIV status of confirmed tuberculosis patients by gender, previous treatment and drug resistance (N = 655)  
National survey of tuberculosis drug resistance in Mpumalanga, 2001 – 2002**

HIV status	Gender						Total	
	Male		Female				Total	
	n	%	n	%		n	%	
Positive	281	65.3	159	70.7		440	67.2	
Negative	149	34.7	66	29.3		215	32.8	
<b>Total</b>	<b>430</b>	<b>100.0</b>	<b>225</b>	<b>100.0</b>		<b>655</b>	<b>100.0</b>	
	Previous treatment for tuberculosis							
	No history of prior treatment		History of prior treatment		History of prior treatment unknown		Total	
	n	%	n	%	n	%	n	%
Positive	343	66.3	84	68.3	13	86.7	440	67.2
Negative	174	33.7	39	31.7	2	13.3	215	32.8
<b>Total</b>	<b>517</b>	<b>100.0</b>	<b>123</b>	<b>100.0</b>	<b>15</b>	<b>100.0</b>	<b>655</b>	<b>100.0</b>
	Drug resistance							
	Fully susceptible		Any resistance		MDR		Total	
	n	%	n	%	n	%	n	%
Positive	387	66.7	53	70.7	12	66.7	440	67.2
Negative	193	33.3	22	29.3	6	33.3	215	32.8
<b>Total</b>	<b>580</b>	<b>100.0</b>	<b>75</b>	<b>100.0</b>	<b>18</b>	<b>100.0</b>	<b>655</b>	<b>100.0</b>