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Table 1. Response rate per Province
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002

Province	Cases		
	Expected	Registered*	
	n	n	%
Eastern Cape	924	1007	109.0
Free State	920	756	82.2
Gauteng	920	915	99.5
KwaZulu-Natal	915	1146	125.2
Limpopo	921	620	67.3
Mpumalanga	918	981	106.9
North West	918	887	96.6
Western Cape	921	793	86.1
South Africa	7357	7105	96.6

* 762 culture-confirmed patients required per Province

**Table 2. Treatment history of suspect cases per Province
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002**

Province	Treatment history*						Total
	No history of prior treatment		History of prior treatment		History unknown		
	n	%	n	%	n	%	
Eastern Cape	1556	56.4	1034	37.5	170	6.2	2760
Free State	2001	67.9	915	31.0	32	1.1	2948
Gauteng	2228	71.5	819	26.3	67	2.2	3114
KwaZulu-Natal	2072	66.8	968	31.2	60	1.9	3100
Limpopo	1699	74.3	530	23.2	58	2.5	2287
Mpumalanga	1858	67.3	575	20.8	328	11.9	2761
North West	3037	74.6	817	20.1	215	5.3	4069
Western Cape	2545	64.5	1333	33.8	69	1.7	3947
South Africa[†]	16996	66.6	6991	30.0[†]	999	3.4	24986

* According to patient and/or record
[†] National rate weighted by Province

**Table 3. Case detection (microscopy and culture) per Province
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002**

Province	No of suspects*	Microscopy			Culture		
		Smears done**	Smears positive		Cultures done***	Cultures positive	
			n	Weighted proportion [†] (%)		n	Weighted proportion [†] (%)
Eastern Cape	2760	2750	894	32.5	2522	1007	39.9
Free State	2948	2921	663	22.7	2536	756	29.8
Gauteng	3114	3095	735	23.7	2816	915	32.5
KwaZulu-Natal	3100	3046	1180	38.7	2559	1146	44.8
Limpopo	2287	2275	606	26.6	1948	620	31.8
Mpumalanga	2761	2739	882	32.2	2454	981	40.0
North West	4069	4041	725	17.9	3838	887	23.1
Western Cape	3947	3885	783	20.2	3357	793	23.6
South Africa[†]	24986	24752	6468	28.3	22030	7105	34.5

* All specimens received

** Excludes smears unreadable

*** Excludes cultures contaminated/not done

[†] National rate weighted by Province

Ratio of suspects : smear-positive cases = 3.54 : 1.00

Ratio of suspects : culture-positive cases = 2.90 : 1.00

**Table 4. Demographic profile of culture-confirmed tuberculosis patients (n = 5 866)
National survey of tuberculosis drug resistance in South Africa, 2001 - 2002**

Demographics		n	Weighted proportion (%)*
Gender	Male	3746	63.6
	Female	2115	36.3
	Unknown	5	0.1
Mean age (SD)		35.5 (0.65)	
Previous TB treatment**	No	4256	70.3
	Yes	1508	27.1
	Unknown	102	2.6
	<i>Retreatment RC</i>	531	32.0
	<i>RF</i>	53	3.7
	<i>RI</i>	333	22.4
	<i>RT</i>	410	30.6
	<i>Unknown</i>	181	11.3
History of imprisonment	No	4899	83.5
	Yes	825	14.4
	Unknown	142	2.1
Previous hospitalisation	No	770	54.2
	Yes	532	34.9
	Unknown	148	10.9

* National rate weighted by Province

** According to patient and/or record

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

Microscopy	n	Weighted proportion (%)*
Negative	18284	71.0
Positive	6468	28.0
Not done	234	1.0
Total	24986	100.0
Culture	n	Weighted proportion (%)*
Negative	14925	57.2
<i>M. tuberculosis</i>	5866	23.9
Nontuberculous mycobacteria	58	0.2
Identification not possible	1181	6.1
Contaminated	2956	12.7
Total	24986	100.0

* National rate weighted by Province

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

Microscopy		n	Weighted proportion (%)*
Grading	Negative	1243	20.0
	2 - 9 AFB per 100 fields	393	6.5
	10 - 99 AFB per 100 fields (1+)	1160	21.1
	10 - 99 AFB in 50 fields (2+)	1084	19.2
	More than 10 AFB per field in 20 fields (3+)	1956	32.6
	Not done	30	0.6
Total		5866	100.0
Culture		n	Weighted proportion (%)*
Grading	2 - 19 colonies	1272	20.7
	20 - 99 colonies (1+)	598	10.0
	100 - 200 colonies (2+)	761	13.5
	Innumerable, discrete (3+)	2879	50.0
	Confluent colonies (4+)	356	5.8
Total		5866	100.0

* National rate weighted by Province

**Table 7. Comparison of microscopy and culture results (both results available)
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002**

		Culture results*		Total*	
		Positive (%)	Negative (%)	n	(%)
Microscopy results*	Positive (%)	5894 (79.9)	246 (1.8)	6140	(28.8)
	Negative (%)	1482 (20.1)	13726 (98.2)	15208	(71.2)
Total		7376 (100.0)	13972 (100.0)	21348	(100.0)

* National rate weighted by Province

Proportion of culture-confirmed cases

smear-positive: 79.9%

smear negative: 20.1%

**Table 8. Gain in case detection by culture
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002**

Province	Culture-positive specimens	
	Smear-positive (%)	Smear-negative (%)
Eastern Cape	80.3	19.7
Free State	75.9	24.1
Gauteng	71.8	28.2
KwaZulu-Natal	83.7	16.3
Limpopo	83.0	17.0
Mpumalanga	77.7	22.3
North West	73.2	26.8
Western Cape	84.5	15.5
South Africa*	79.9	20.1

* National rate weighted by Province

**Table 9. History of prior treatment and resistance to number of drugs (confirmed *M. tuberculosis* strains)
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002**

Resistance to	Treatment history*						Total		
	No history of prior treatment			History of prior treatment					
	n	Weighted proportion (%) [†]	95% CI	n	Weighted proportion (%) [†]	95% CI	n	Weighted proportion (%) [†]	95% CI
1 drug	204	4.6	(3.8 – 5.7)	98	6.5	(5.0 – 7.9)	302	5.1	(4.3 – 5.9)
2 drugs	84	1.9	(1.4 – 2.3)	74	5.0	(3.6 – 6.5)	158	2.7	(2.2 – 3.2)
3 drugs	39	0.8	(0.5 – 1.1)	38	2.6	(1.8 – 3.3)	77	1.3	(1.0 – 1.6)
4 drugs	20	0.5	(0.2 – 0.7)	25	1.4	(0.8 – 2.0)	45	0.7	(0.7 – 1.3)
No resistance	4011	92.2	(91.1 – 93.4)	1273	84.5	(81.9 – 87.2)	5284	90.2	(89.1 – 91.2)
Total	4358	100.0		1508	100.0		5866	100.0	

* According to patient and/or record

† National rate weighted by Province

Table 10. Antituberculosis drug resistance, weighted by Province
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002

	No history of prior treatment*			History of prior treatment*		
	n	%	(95% CI)	n	%	(95% CI)
Total tested	4358	72.9	(70.4 – 75.4)	1508	27.1	(24.6 – 29.5)
Fully susceptible	4011	92.2	(91.1 – 93.4)	1273	84.5	(81.9 – 87.2)
Any resistance	347	7.8	(6.6 – 8.9)	235	15.5	(12.8 – 18.1)
Mono-resistance						
H	113	2.6	(2.0 – 3.2)	40	2.9	(1.9 – 4.0)
R	14	0.2	(0.1 – 0.4)	17	0.8	(0.4 – 1.2)
E	0	0.0	-	1	0.1	(0.0 – 0.4) [†]
S	77	1.8	(1.3 – 2.3)	40	2.6	(1.9 – 3.4)
H+R resistance						
HR	22	0.4	(0.2 – 0.6)	40	2.7	(0.6 – 1.5)
HRE	10	0.1	(0.0 – 0.2)	9	0.5	(0.2 – 0.9)
HRS	26	0.6	(0.3 – 0.9)	27	2.0	(1.2 – 2.8)
HRSE	20	0.5	(0.2 – 0.7)	25	1.4	(0.8 – 2.0)
H+ other resistance						
HE	5	0.1	(0.0 – 2.2)	3	0.3	(0.0 – 0.6) [†]
HS	57	1.3	(1.0 – 1.6)	30	2.0	(1.3 – 2.7)
HES	3	0.1	(0.0 – 0.2) [†]	2	0.1	(0.0 – 0.5) [†]
R+ other resistance						
RE	0	0.0	-	1	0.1	(0.0 – 0.4) [†]
RS	0	0.0	-	0	0.0	-
RES	0	0.0	-	0	0.0	-
Other multi-resistance						
ES	0	0.0	-	0	0.0	-
Any H resistance	256	5.7	(4.9 – 6.5)	176	11.8	(9.3 – 14.4)
Any R resistance	92	1.8	(1.3 – 2.3)	119	7.5	(5.7 – 9.2)
Any E resistance	38	0.8	(0.4 – 1.1)	41	2.4	(1.5 – 3.3)
Any S resistance	183	4.3	(3.5 – 5.0)	124	8.1	(6.6 – 9.6)

* According to patient and/or record

[†] Exact binomial confidence intervals calculated when category numbers < 5

Table 11. Drug resistance (any) and MDR per Province
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002

Province	Any drug resistance (%)		MDR (%)	
	No history of prior treatment*	History of prior treatment*	No history of prior treatment*	History of prior treatment*
Eastern Cape	11.3	17.7	1.0	7.4
Free State**	8.6	9.2	1.8	1.7
Gauteng	6.6	12.7	1.4	5.5
KwaZulu-Natal	6.6	18.4	1.7	7.7
Limpopo	7.1	17.0	2.4	6.8
Mpumalanga	9.4	23.4	2.6	13.7
North West	8.1	19.1	2.2	6.9
Western Cape	5.6	7.9	0.9	3.9
South Africa†	7.7	15.5	1.6	6.6

* According to patient and/or record

** Rates suspect due to misclassification of previous tuberculosis treatment

† National rate weighted by Province

**Table 12. Prevalence of resistance among retreatment patient categories
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002**

Patient category	Total	Fully susceptible		Any resistance		MDR	
		n	Weighted proportion (%) [†]	n	Weighted proportion (%) [†]	n	Weighted proportion (%) [†]
RC	531	467	89.3	64	10.7	19	3.4
RF	53	35	60.1	18	39.9	13	25.5
RI	333	284	85.0	49	15.0	25	7.4
RT	410	332	81.5	78	18.5	29	6.8
Unknown	181	155	86.1	26	13.9	15	7.2
Total	1508	1273	84.5	235	15.5	101	6.6

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

Any resistance among

Unfavourable outcome = 18.5%

Favourable outcome = 14.4%

MDR among

Unfavourable outcome = 10.1%

Favourable outcome = 5.0%

[†] National rate weighted by Province

**Table 13. Estimated MDR tuberculosis caseload, 2001
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002**

	Worst case scenario	Best case scenario
Estimated number of total cases	323342	172733
Proportion retreatment cases	25.7%	25.7%
Proportion new cases	74.3%	74.3%
Estimated number of		
New cases	240243	128341
Retreatment cases	83099	44392
MDR prevalence*		
New MDR cases	1.6%	1.6%
Retreatment MDR cases	6.6%	6.6%
Estimated number of		
New MDR cases	3844	2053
Retreatment MDR cases	5485	2930
Total MDR cases expected	9329	4983

* National rate weighted by Province

**Table 14. Estimated burden of MDR tuberculosis per Province, 2001
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002**

Province	Worst case scenario	Best case scenario
Eastern Cape	2142	1169
Free State	305	212
Gauteng	1213	660
KwaZulu-Natal	2616	1385
Limpopo	832	455
Mpumalanga	906	484
North West	592	322
Western Cape	770	422
South Africa	9329	4983

**Table 15. HIV status of confirmed tuberculosis patients by gender, previous treatment and drug resistance (n = 4 639)
National survey of tuberculosis drug resistance in South Africa, 2001 – 2002**

HIV Status	Gender							
	Male		Female		Unknown		Total	
	n	%	n	%	n	%	n	%
Positive	1627	51.5	1072	62.2	1	20.0	2700	55.3
Negative	1336	48.5	599	37.8	4	80.0	1939	44.7
Total	2963	100.0	1671	100.0	5	100.0	4639	100.0
	Previous treatment for tuberculosis							
	No history of prior treatment		History of prior treatment		History of prior treatment unknown		Total	
	n	%	n	%	n	%	n	%
Positive	2003	56.6	647	51.6	50	59.8	2700	55.3
Negative	1383	43.4	527	48.4	29	40.2	1939	44.7
Total	3386	100.0	1174	100.0	79	100.0	4639	100.0
	Drug resistance							
	Fully susceptible		Any resistance		MDR		Total	
	n	%	n	%	n	%	n	%
Positive	2416	55.1	200	55.8	84	60.0	2700	55.3
Negative	1750	44.9	134	44.2	55	40.0	1939	44.7
Total	4166	100.0	334	100.0	139	100.0	4639	100.0