



**NATIONAL HEALTH
LABORATORY SERVICE**

National Priority Programmes

**GeneXpert Xpert MTB/RIF
National report
August 2018**



National Xpert MTB/RIF Programme

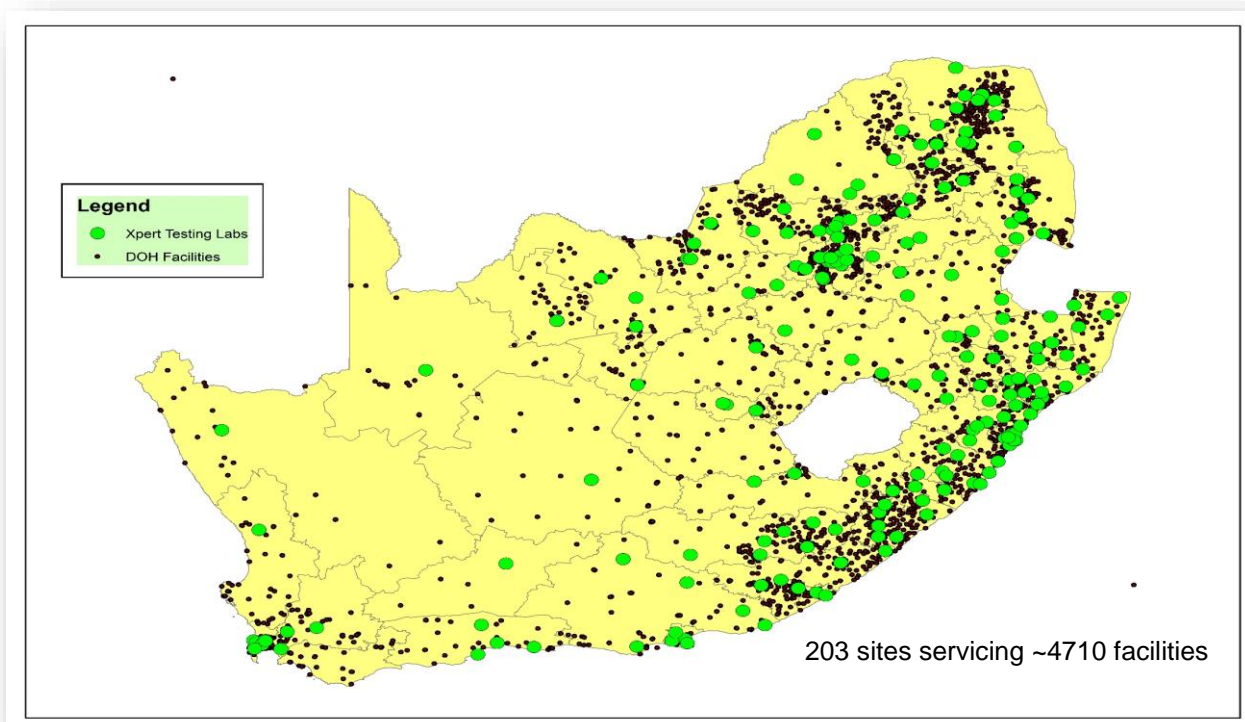
1. Background to Project

This project was initiated at the request of the Honorable Minister of Health, Dr Aaron Motsoaledi, in early 2011, following the World Health Organization's strong recommendation published in December 2010 which stated that "the new automated DNA test for TB be used as the initial diagnostic test in individuals suspected of MDR-TB or HIV/TB" to improve TB healthcare services due to its increased sensitivity for TB detection and reduced testing time.

In 2014, the programme was further expanded to directly support the screening for TB and HIV in high risk populations in correctional centres and in peri-mining communities. Seven on-site laboratories at Correctional Services and six mobile laboratories were established.

GeneXpert Placements

Figure 1: Current GeneXpert Placements (203 testing centers, 325 analysers, GX4: 127; GX16-8: 1; GX16: 189; GX48:1; GX80: 8)



The data extracted in this report is test-based, not patient-based, and representative of the indicated period. While all reasonable efforts to ensure the accuracy of the data have been employed, due to the fluidic nature of data updates and processes within the NHLS Central Data Warehouse, the data reported cannot be viewed as finite. This needs to be considered when comparing this test-based data to data reports obtained from other sources.



2. Assays performed to date

In summary, a total of 13,729,495 specimens have been processed to date (31 August 2018). In August 2018 a total 224,154 specimens were processed. The total % of Mycobacterium tuberculosis complex (MTBC) detected in this cohort was 8.96% (20 080).

Table 1: National GeneXpert MTB Results (Cumulative)

Year	MTB Detected	Indeterminate	MTB Not Detected	Test Unsuccessful	Total	% MTB Detected
2011	30 079		158 220	2 756	191 055	15,74
2012	90 700		538 865	10 853	640 418	14,16
2013	208 923		1 533 342	50 356	1 792 621	11,65
2014	249 987		2 075 895	61 909	2 387 791	10,47
2015	245 517		2 341 813	56 306	2 643 636	9,29
2016	223 309		2 142 180	48 540	2 414 029	9,25
2017	207 673	1 634	1 940 483	33 227	2 183 017	9,51
2018	141 958	24 177	1 286 617	24 176	1 476 928	9,61
TOTAL	1 398 146	25 811	12 017 415	288 123	13 729 495	10,18

Table 2: National GeneXpert RIF Results (Cumulative)

Year	RIF Unsuccessful	RIF Resistant	RIF Sensitive	No RIF Results	Total	% RIF Resistant
2011	284	2 138	27 535	122	30 079	7,11
2012	1 262	6 560	82 164	714	90 700	7,23
2013	5 335	13 810	188 574	1 204	208 923	6,61
2014	6 081	16 329	227 078	499	249 987	6,53
2015	3 289	14 997	226 938	293	245 517	6,11
2016	2 391	13 808	206 949	161	223 309	6,18
2017	2 267	12 121	193 197	88	207 673	5,84
2018	2 616	7 550	131 702	90	141 958	5,32
Total	23 525	87 313	1 284 137	3 171	1 398 146	6,24

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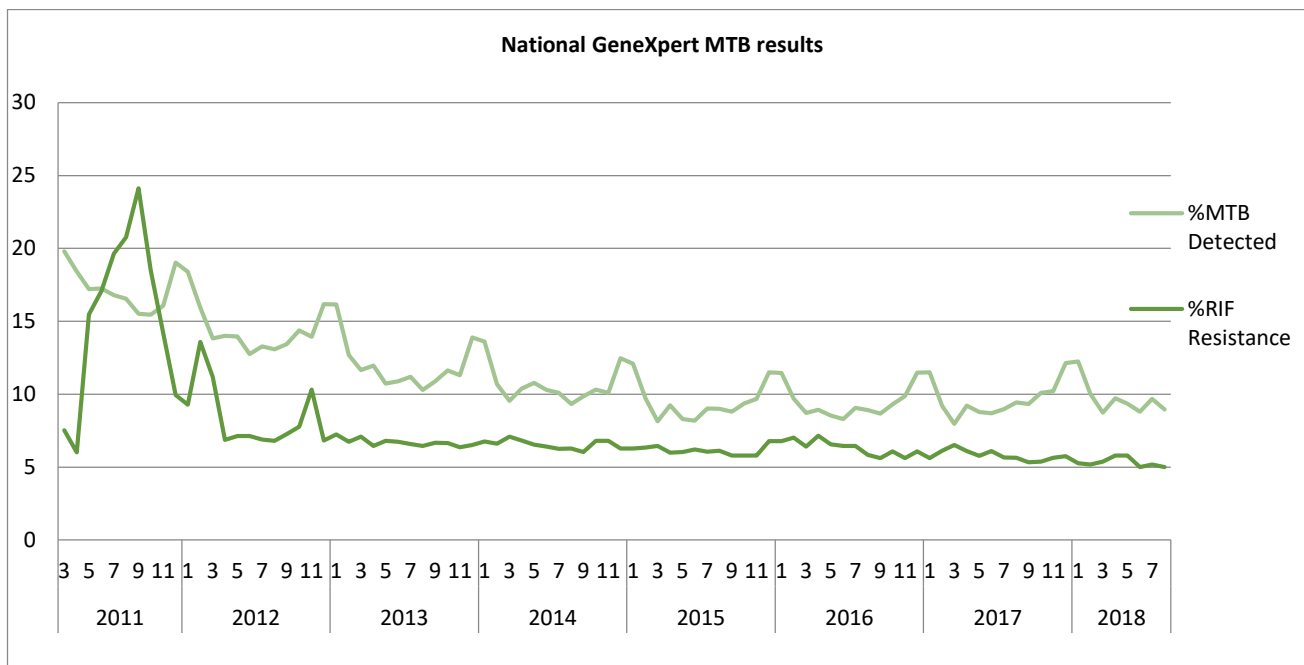


Figure 2: MTB Positivity and RIF Resistant rates overtime

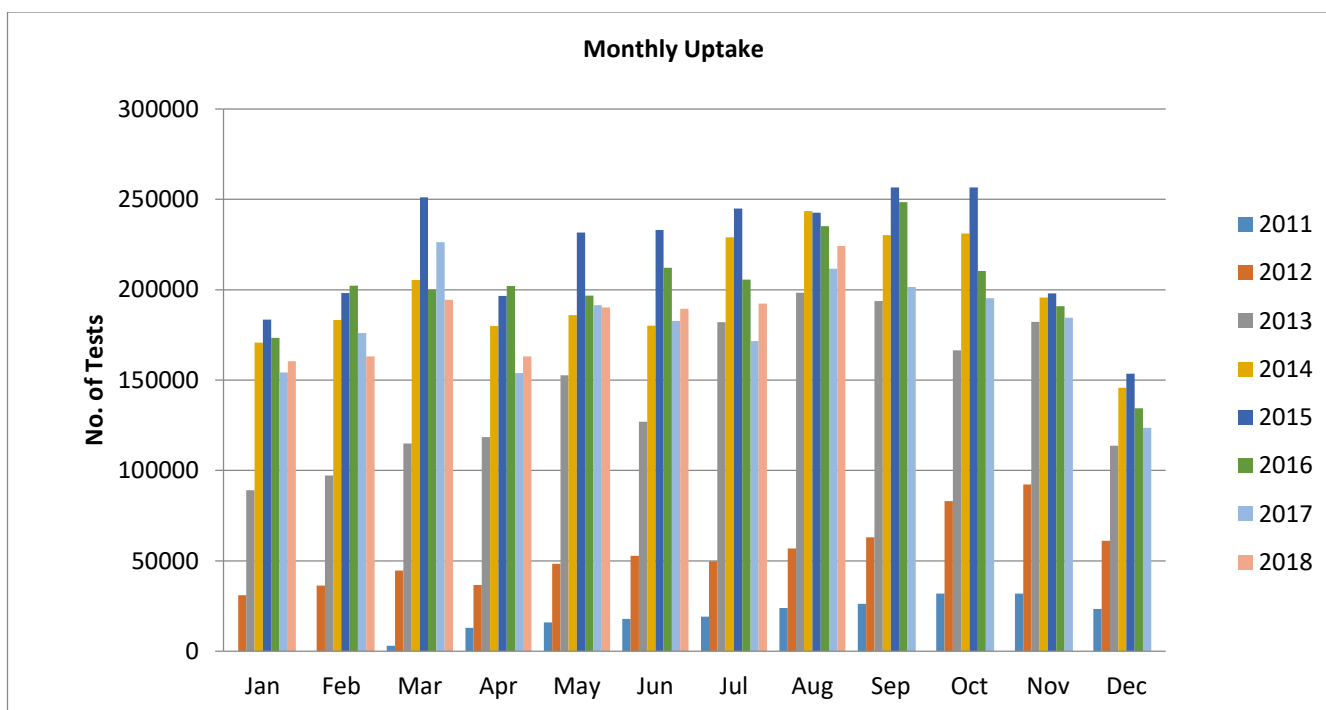


Figure 3: GeneXpert Monthly Uptake

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3. Correctional Services

In order to improve TB control in all 242 correctional facilities in South Africa, the NHLS is working in partnership with the Department of Correctional Services (DCS), NDoH, Aurum Institute, TB/HIV Care Association and Right to Care to ensure access to regular HIV- and TB-related screening, testing and treatment of up to 150,000 offenders through the Global Fund programme. Xpert MTB/Rif testing is being provided at either one of the 7 on-site labs, or at the nearest NHLS referral laboratory.

Total of 371,442 specimens have been processed to date (31 August 2018). The total % of Mycobacterium tuberculosis complex (MTBC) detected in this cohort was 4.67% (17,355).

Table 3: Correctional Service GeneXpert MTB Results (Cumulative)

Year	MTB Detected	Indeterminate	MTB Not Detected	Test Unsuccessful	Total	% MTB Detected
Oct- Dec 2013	662		7 236	142	8 040	8,23
Jan- Dec 2014	3 620		55 995	1 004	60 619	5,97
Jan- Dec 2015	4 831		124 589	2 216	131 636	3,67
Jan -Dec 2016	3 333		68 003	1 308	72 644	4,59
Jan -Dec 2017	3 042	20	57 514	755	61 331	4,96
Jan -Aug 2018	1 867	631	34 035	639	37 172	5,02
Total	17 355	651	347 372	6 064	371 442	4,67

Table 4: Correctional Service GeneXpert RIF Results (Cumulative)

Year	RIF Unsuccessful	RIF Resistant	RIF Sensitive	No RIF Result	Total	% RIF Resistant
Oct- Dec 2013	7	27	626	2	662	4,08
Jan - Dec 2014	107	188	3 323	2	3 620	5,19
Jan - Dec 2015	99	190	4 530	12	4 831	3,93
Jan -Dec 2016	35	149	3 146	3	3 333	4,47
Jan -Dec 2017	34	124	2 877	7	3 042	4,08
Jan -Aug 2018	18	79	1 768	2	1 867	4,23
Total	300	757	16 270	28	17 355	4,36

4. Peri-Mining Communities

NHLS, together with the Aurum Institute, has been appointed by NDoH (under the Global Fund grant) to provide services to implement interventions aimed at improving TB and HIV/AIDS management for vulnerable peri-mining communities (estimated at around 600,000 people) in 6 main mining districts. Six staffed and GeneXpert-equipped mobile TB units undertake Xpert MTB/RIF testing for TB in these communities.

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A total of 114,635 specimens have been processed to date (31 August 2018). The total % of Mycobacterium tuberculosis complex (MTBC) detected in this cohort was 1.45% (1,663).

Table 5: Peri-mining GeneXpert MTB Results (Cumulative)

Year	MTB Detected	Indeterminate	MTB Not Detected	Test Unsuccessful	Total	% MTB Detected
Jun-Dec 2014	55		2 410	66	2 531	2,17
Jan-Dec 2015	406		37 021	609	38 036	1,07
Jan-Dec 2016	257		24 289	510	25 056	1,03
Jan-Dec 2017	418	21	28 472	600	29 511	1,42
Jan-Aug 2018	527	263	18 294	417	19 501	2,70
Total	1 663	284	110 486	2 202	114 635	1,45

Table 6: Peri-mining GeneXpert RIF Results (Cumulative)

Year	RIF Unsuccessful	RIF Resistant	RIF Sensitive	No RIF Result	Total	% RIF Resistant
Jun-Dec 2014	3	2	51	0	56	3,57
Jan-Dec 2015	10	27	364	4	405	6,67
Jan-Dec 2016	9	15	225	8	257	5,84
Jan-Dec 2017	6	14	397	1	418	3,35
Jan-Aug 2018	6	25	495	1	527	4,74
Total	34	83	1 532	14	1 663	4,99

5. Training: Laboratory and Clinical

A total of 3,273 laboratory staff and 15,996 health care workers have been trained since December 2011. This will be an ongoing process to support NDoH training on clinical algorithm. Laboratory staff received both clinical and technical training.

Table 9: Laboratory staff trained in the month of August 2018

	Date	Province	Number of Laboratories	Number of Participants
August 2018	01-Aug	Gauteng	1	1
	01 & 21-Aug	Kwazulu Natal	2	8
	14 & 15-Aug	Eastern Cape	2	3
	23-Aug	Limpopo	1	3
	27 to 31 Aug	National Advance training	29	31
	Total		35	46

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**Table 10: Health Care Workers trained in the month of August 2018**

	Date	Province	District	Sub-district	Number of Participants
August 2018	01-Aug-18	Mpumalanga	Gert Sibanda	Albert Lithuli	17
	07-Aug-18	Mpumalanga	Gert Sibanda	Govern Mbheki	10
	07-Aug-18	Gauteng	Tshwane	Region 2	31
	08-Aug-18	Gauteng	Tshwane	Region 1 & 2	8
	07-Aug-18	Mpumalanga	Gert Sibanda	Lekwa	8
	10-Aug-18	Gauteng	City of JHB	Region A	3
	13-Aug-18	Gauteng	City of JHB	Region B	6
	13-Aug-18	Gauteng	West rand	Merafong	7
	13-Aug-18	Gauteng	City of JHB	Region D	25
	14-Aug-18	Mpumalanga	Gert Sibanda; Nkangala & Enlanzeni	All subdistrict(10)	48
	15-Aug-18	Eastern Cape	Nelson Mandela	Port Elizabeth	20
	15-Aug-18	Gauteng	Tshwane	Region 3 & 4	5
	16-Aug-18	Gauteng	Tshwane	Region 3 & 4	4
	17-Aug-18	Mpumalanga	Enhlizeni	Mbombela	20
	20-Aug-18	Gauteng	City of JHB	Region E	6
	21-Aug-18	Gauteng	Tshwane	Region 3	5
	22-Aug-18	Gauteng	Tshwane	Region 6	4
	22-Aug-18	Eastern Cape	Mbashe	Mbashe	12
	23-Aug-18	Kwazulu Natal	Ethekwini	Ethekwini	23
	23-Aug-18	Gauteng	Tshwane	Region 7	7
	27-Aug-18	Gauteng	West rand	Merafong & Mogale	10
	28-Aug-18	Gauteng	Tshwane	Region 7	7
	29-Aug-18	Northern Cape	Kimberely	kimberely	39
	31-Aug-18	Gauteng	City of JHB	Region A	2
	Total				327

6. Rejected Specimens

Rejections of GeneXpert specimens mostly occur as a result of Clerical errors (incorrect labelling and or incomplete request forms), cancellations (clinical errors), unsuitable specimens and insufficient volumes. In August 2018, 9 765 (4.17%) specimens were rejected. On-going training remains a practical tool to guarantee improvement in specimen collection and labelling.



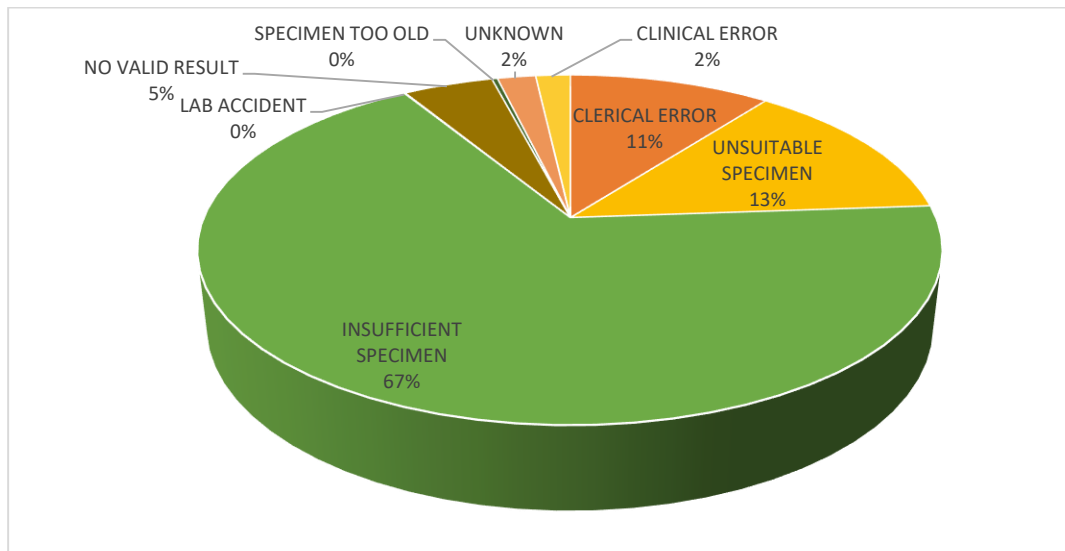


Figure 4: Rejections by reason for August 2018

7. Challenges identified during the month of August 2018

- Sputum rejections due to provision of insufficient specimens, poor-quality sputum (mainly salivary), and contaminated specimens.

8. Upcoming and ongoing plans

- Continuous monitoring of sites through remote connectivity to improve program performance.
- Development of the GeneXpert dashboard to improve program performance.