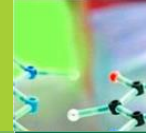




**NATIONAL HEALTH  
LABORATORY SERVICE**

National Priority Programmes



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



# National Xpert MTB/RIF Programme

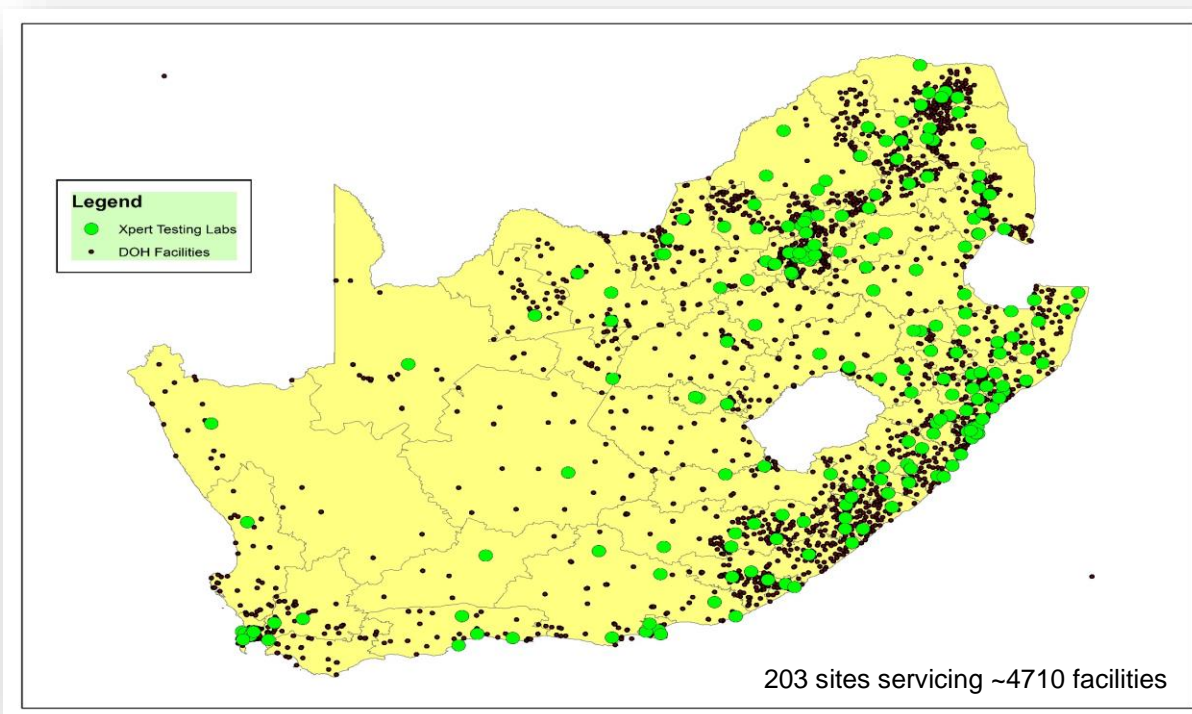
## 1. Background to Project

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 13,950,316 specimens have been processed to date (30 September 2018). In September 2018 a total 207,911 specimens were processed. The total % of Mycobacterium tuberculosis complex (MTBC) detected in this cohort was 8.78% (18 255).

**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	208 764	1 634	1 952 029	33 441	2 195 868	9,51
2018	160 209	27 862	1 469 192	27 635	1 684 898	9,51
<b>Total</b>	<b>1 417 488</b>	<b>29 496</b>	<b>12 211 536</b>	<b>291 796</b>	<b>13 950 316</b>	<b>10,16</b>

**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	2 277	12 173	194 230	84	208 764	5,83
2018	2 980	8 533	148 599	97	160 209	5,33
<b>Total</b>	<b>23 899</b>	<b>88 348</b>	<b>1 302 067</b>	<b>3 174</b>	<b>1 417 488</b>	<b>6,23</b>

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.



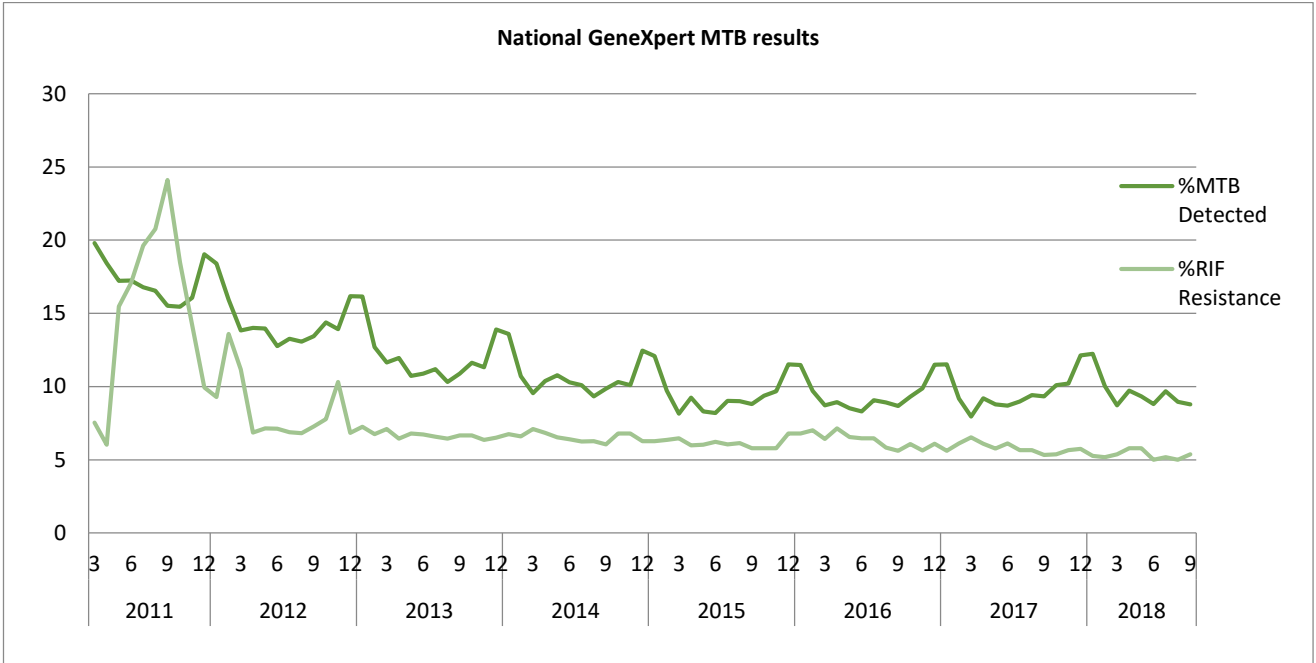


Figure 2: MTB Positivity and RIF Resistant rates overtime

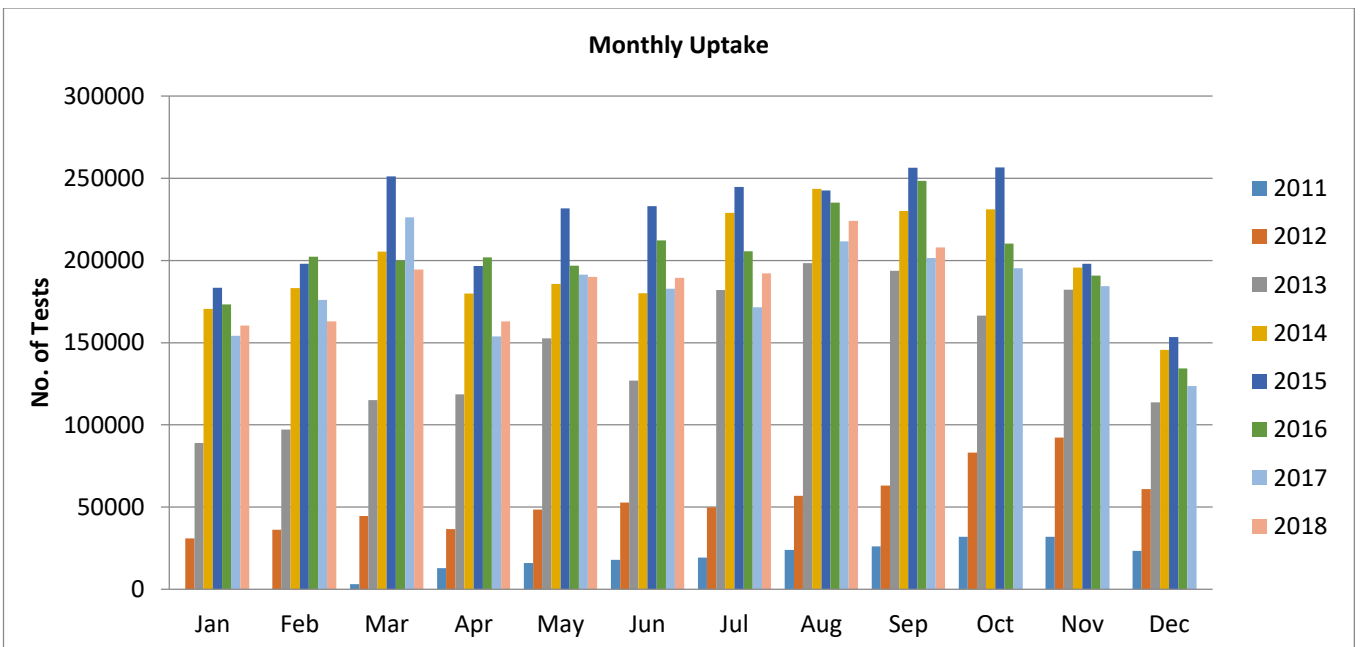


Figure 3: GeneXpert Monthly Uptake

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.





### 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 376,173 specimens have been processed to date (30 September 2018). The total % of Mycobacterium tuberculosis complex (MTBC) detected in this cohort was 4.71% (17,706).

**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 -Sep 2018	2 218	707	38 240	738	41 903	5,29
<b>Total</b>	<b>17 706</b>	<b>727</b>	<b>351 577</b>	<b>6 163</b>	<b>376 173</b>	<b>4,71</b>

**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 -Sep 2018	21	91	2 104	2	2 218	4,10
<b>Total</b>	<b>303</b>	<b>769</b>	<b>16 606</b>	<b>28</b>	<b>17 706</b>	<b>4,34</b>

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.





#### 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.

A total of 117,361 specimens have been processed to date (30 September 2018). The total % of Mycobacterium tuberculosis complex (MTBC) detected in this cohort was 1.47% (1,728).

**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-Sep 2018	592	296	20 867	472	22 227	2,66
<b>Total</b>	<b>1 728</b>	<b>317</b>	<b>113 059</b>	<b>2 257</b>	<b>117 361</b>	<b>1,47</b>

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

Year	RIF Unsuccessful	RIF Resistant	RIF Sensitive	No RIF Results	Total	% 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-Sep 2018	6	28	557	1	592	4,73
<b>Total</b>	<b>34</b>	<b>86</b>	<b>1 594</b>	<b>14</b>	<b>1 728</b>	<b>4,98</b>

#### 5. Training: Laboratory and Clinical

A total of 3,301 laboratory staff and 16,270 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 September 2018**

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.



	Date	Province	Number of Laboratories	Number of Participants
September 2018	11 and 12 September	Limpopo	3	4
	12 September	Northern Cape	1	5
	12 and 13 September	Free State	2	8
	18 September	Kwazulu Natal	1	6
	19 September	Mpumalanga	1	4
	20 September	Western Cape	1	1
	<b>Total</b>			<b>9</b>

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

	Date	Province	District	Sub-district	Number of Participants	
September 2018	4 September	Mpumalanga	Enhlanzeni	Mbombela	12	
	5 September	Free State	Xhariep	Mohokare	21	
	6 September	North West	Bojanala	Madibeng, Rustenburg, Moses Kotane, Kgetleng, Moretele	17	
	10 September	Gauteng	Sedibeng	Emfuleni	3	
	11 September	Free State	Mangaung	Mangaung, Dihlabeng, Sesteto	10	
	11 September	Kwazulu Natal	Ugu	Umzumbe North, Parkryne	10	
	12 September	Kwazulu Natal	Ugu	Ray Nkonyeni	10	
	13 September	Kwazulu Natal	Ugu	Ray Nkonyeni, Umziwabantu	13	
	13 September	Limpopo	Waterberg	Modimolle, Mogopong	17	
	14 September	Kwazulu Natal	Ugu	umzumbe South, Ray Nkonyeni	25	
	18 September	Gauteng	Tshwane	Sub district 2	3	
	18 September	Free State	Lejweleputswa	Machabeng North	13	
	19 September	Free State	Lejweleputswa	Machabeng West and East	9	
	19 September	Free State	Lejweleputswa	Machabeng	8	
	20 September	Free State	Lejweleputswa	Machabeng	21	
	20 September	Free State	Lejweleputswa	Kopano?	13	
	20 September	Northen Cape	Kimberely?	Pixley ka seeme, namaqua, JT Gaetsewe, Francis Baard	25	
	21 September	Free State	Lejweleputswa	Machabeng west	9	
	21 September	Free State	Lejweleputswa	Tokololo	9	
	27 September	Free State	Lejweleputswa	Welkom	21	
	27 September	Gauteng	Sedibeng	Emfuleni	5	
			<b>Total</b>			<b>274</b>

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.



## 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 September 2018, 10 396 (4.76%) specimens were rejected. On-going training remains a practical tool to guarantee improvement in specimen collection and labelling.

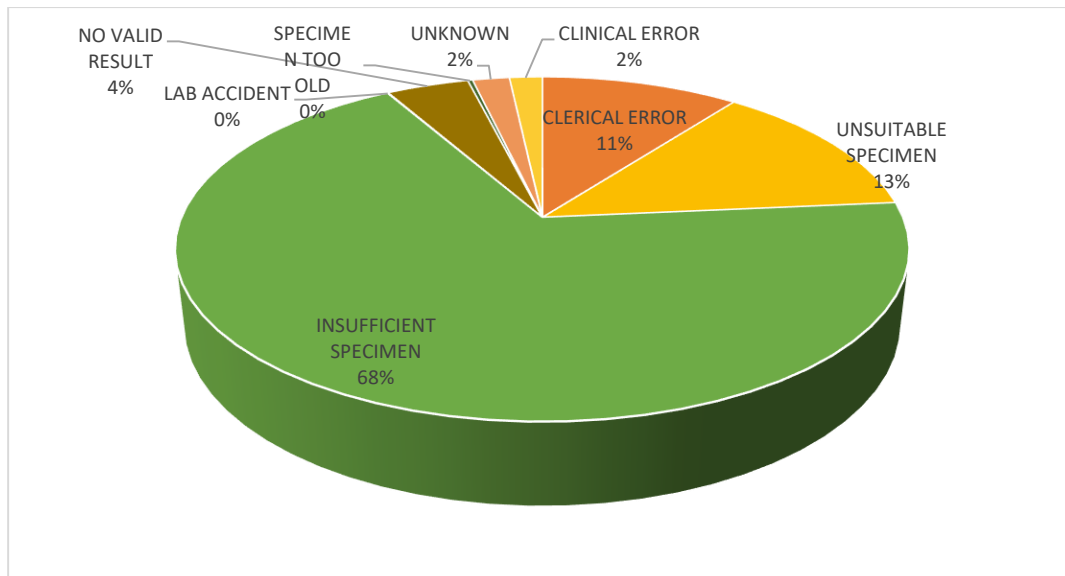


Figure 4: Rejections by reason for September 2018

## 7. Challenges identified during the month of September 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.

