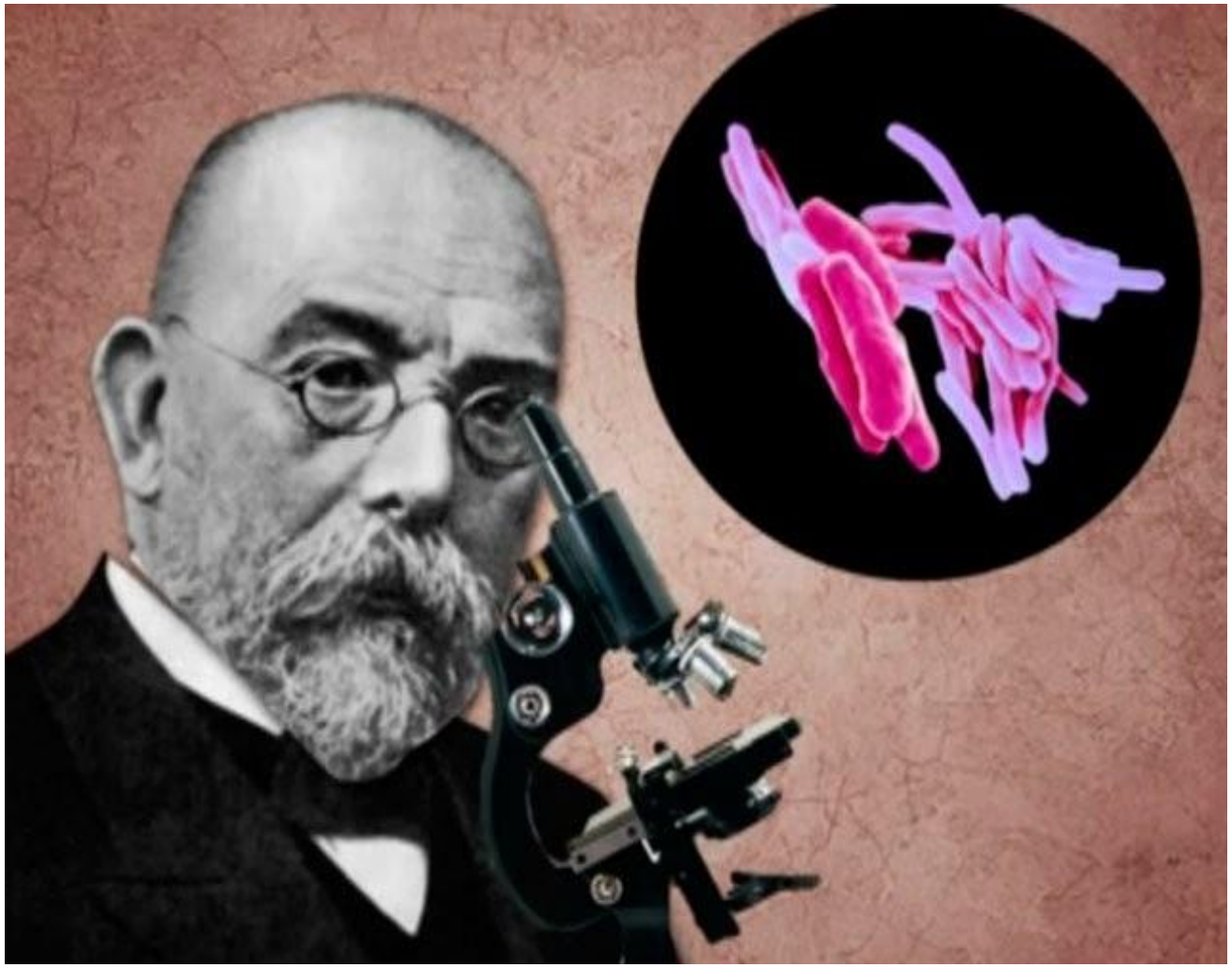
EPIDEMIOLOGY AND OVERVIEW OF TUBECULOSIS

Introduction



- Causative agent :

bacteria – Mycobacterium Tuberculosis

- **Robert Koch** –

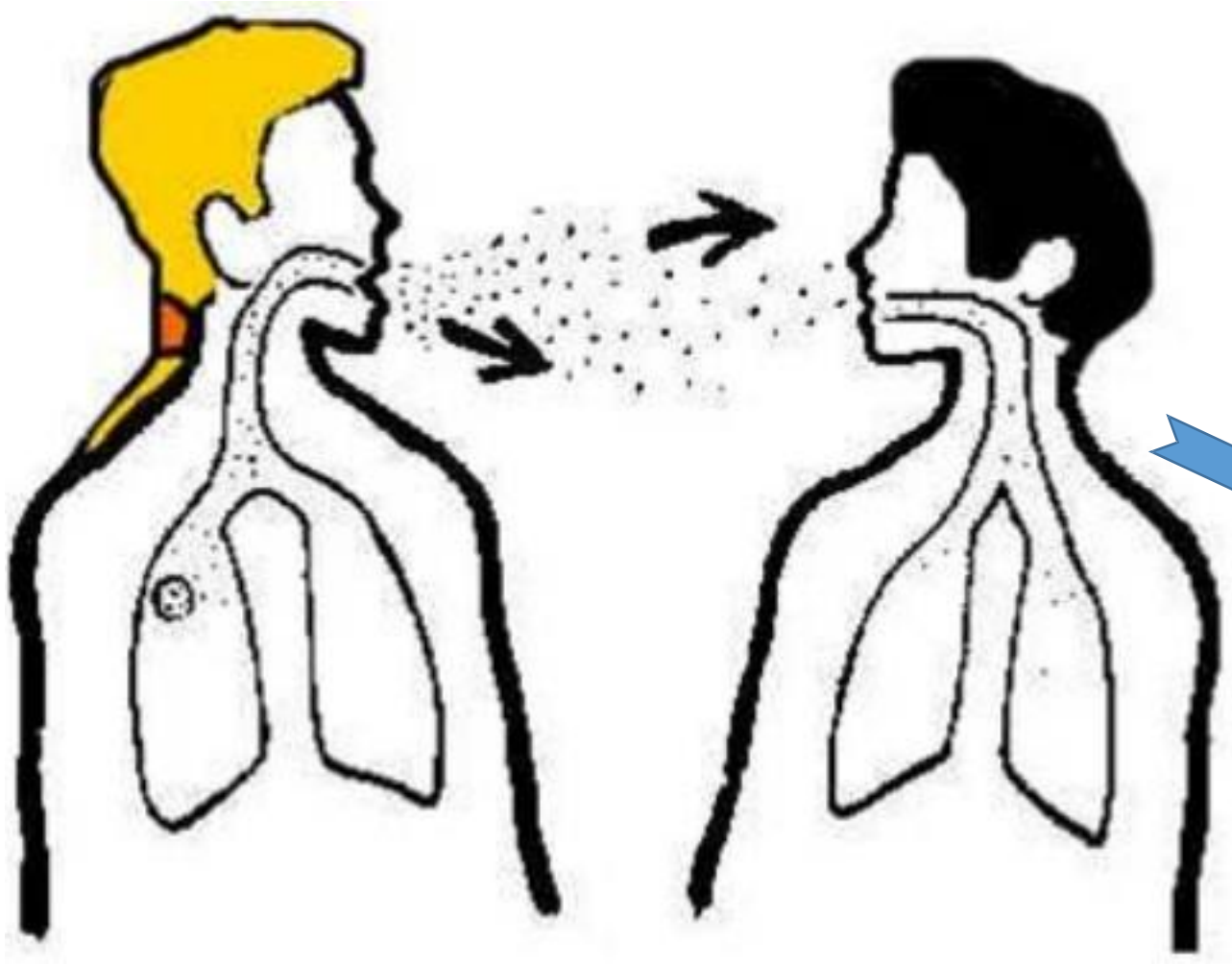
Saintis Jerman yang menemui kuman TB pada 24 Mac 1882

- TB World Day – **24 Mac**

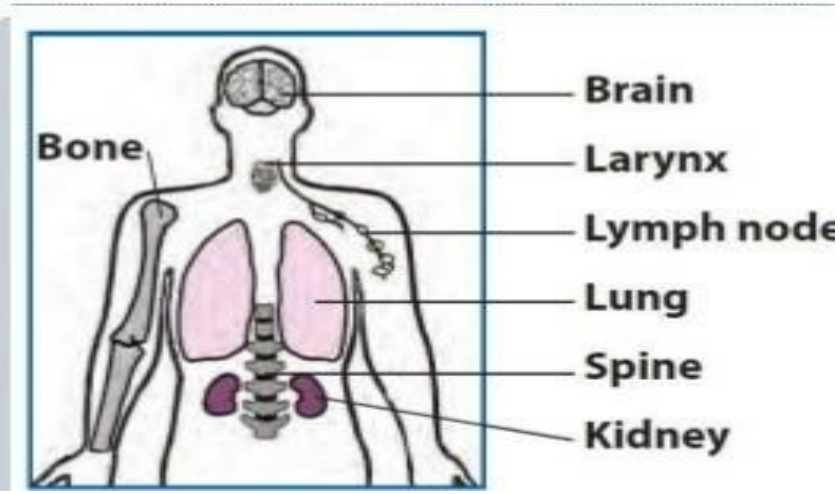
TIMELINE HISTORY

- 1882 TB bacilli identified by Koch
- 1907 TST - tuberculin skin test (von Pirquet)
- 1919 BCG – Bacille Calmette & Guerin vaccine
- 1943 Schatz & Waksman discover streptomycin
- 1948 BMRC trial of streptomycin vs bed rest
- 1952 Development of isoniazid
- 1966 Development of rifampicin
- 1978 Short course chemotherapy

TRANSMISSION



- Person to person spread through the air when an infected person **coughs, sneezes, sings or speaks**
- The droplets nuclei are inhaled by another person directly into the lungs



TRANSMISSION

- One cough - generate 3000 droplet nuclei
- Talking for 5 mins - generate 3000 droplet nuclei
- Singing in 1 mins - generate 3000 droplet nuclei
- Sneezing - generates 10,000 droplet nuclei, which can spread up to 10 feet away

HIGHER RISK OF INFECTIVITY IF:

- 3C :crowd, close, confined
- Duration of exposure
- Index case: advanced infection

Epidemiology and Statistics of TB

END TB Vision, goal, targets, milestones

Vision:

A world free of TB

Zero TB deaths,
Zero TB disease, and
Zero TB suffering

Goal:

End the Global TB epidemic

	MILESTONES		TARGETS	
	2020	2025	SDG* 2030	END TB 2035
Reduction in number of TB deaths compared with 2015 (%)	35%	75%	90%	95%
Reduction in TB incidence rate compared with 2015 (%)	20%	50%	80%	90%
TB-affected families facing catastrophic costs due to TB (%)	0%	0%	0%	0%

Kami Sedia Membantu • KEMENTERIAN KESIHATAN MALAYSIA •

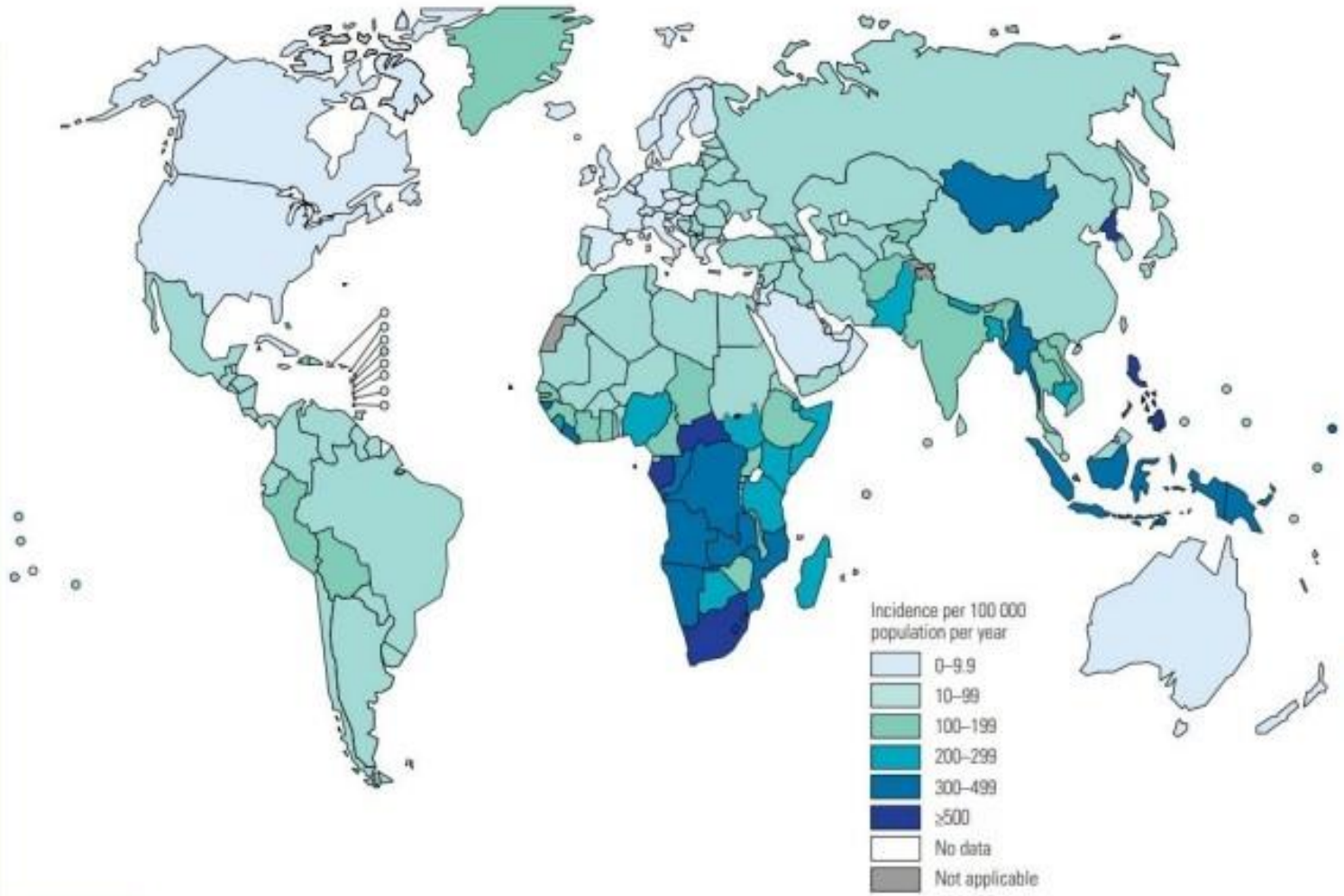
Bahagian Kawalan Penyakit

OBJECTIVES OF TB CONTROL PROGRAM

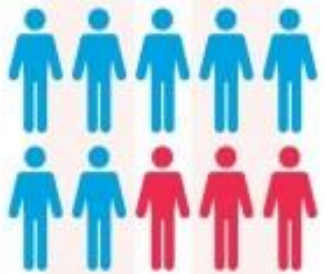
1. To increase case detection rate of TB (92 per 100,000).
2. To reduce no. of TB death (reduction 5% from previous year).
3. To achieve treatment success rate of 90% (including MDR-TB cases).
4. To strengthen management of LTBI: screening, diagnosis & preventive TB treatment.
5. To promote TB awareness by strengthening collaboration with NGOs, local agency and communities.

WHO ESTIMATED TB INCIDENCE 2019

Estimated TB incidence rates, 2019



MORE PEOPLE REACHED WITH QUALITY TUBERCULOSIS CARE



In 2019, an estimated

10 MILLION PEOPLE FELL ILL WITH TB*

7.1 Million people reported to have access to TB care, up from 6.4 M in 2017.

≈2.9 Million people were undiagnosed or not reported.

Better reporting, diagnosis and access to care will close this gap

*The 95% uncertainty interval for TB incidence is 8.9-11.0 million.

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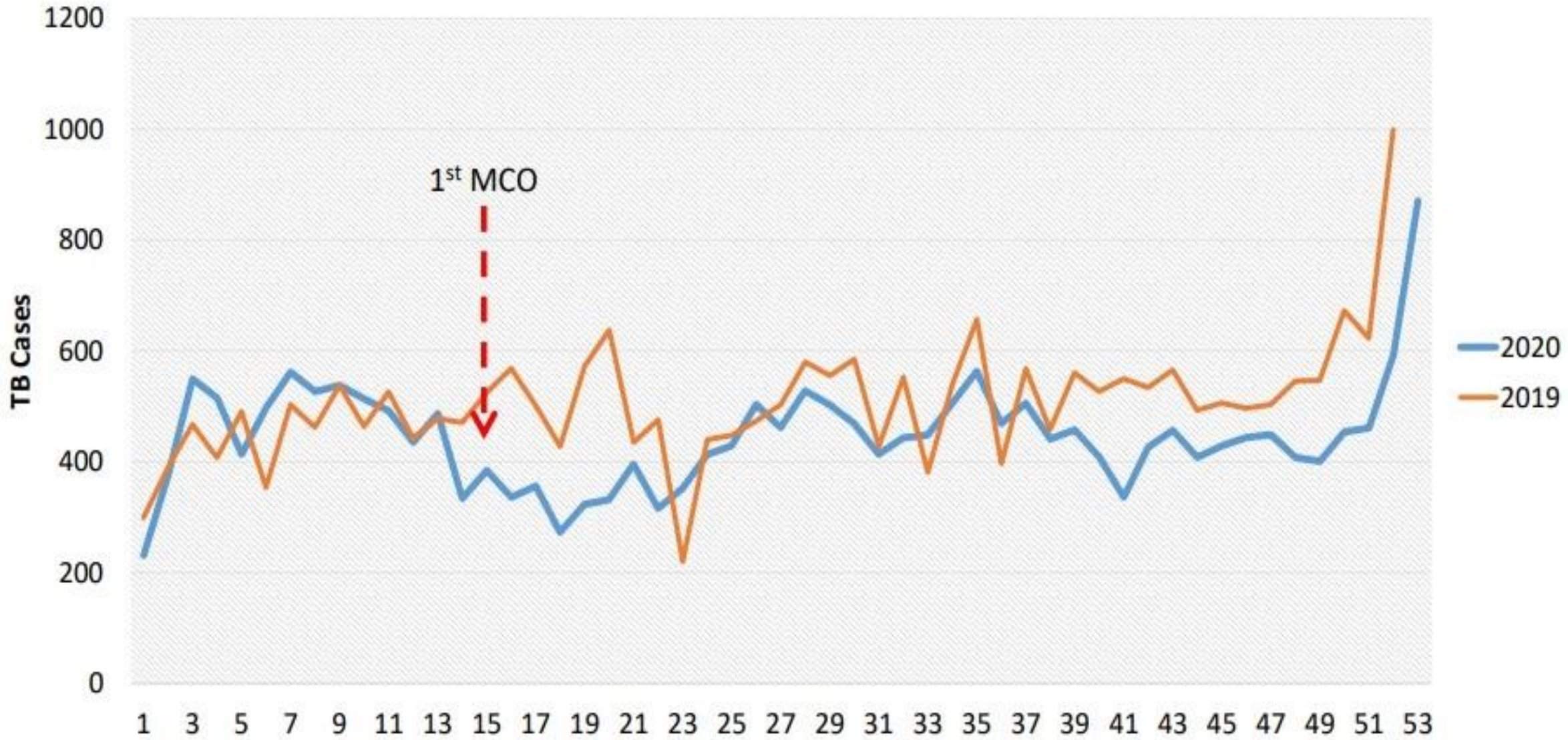
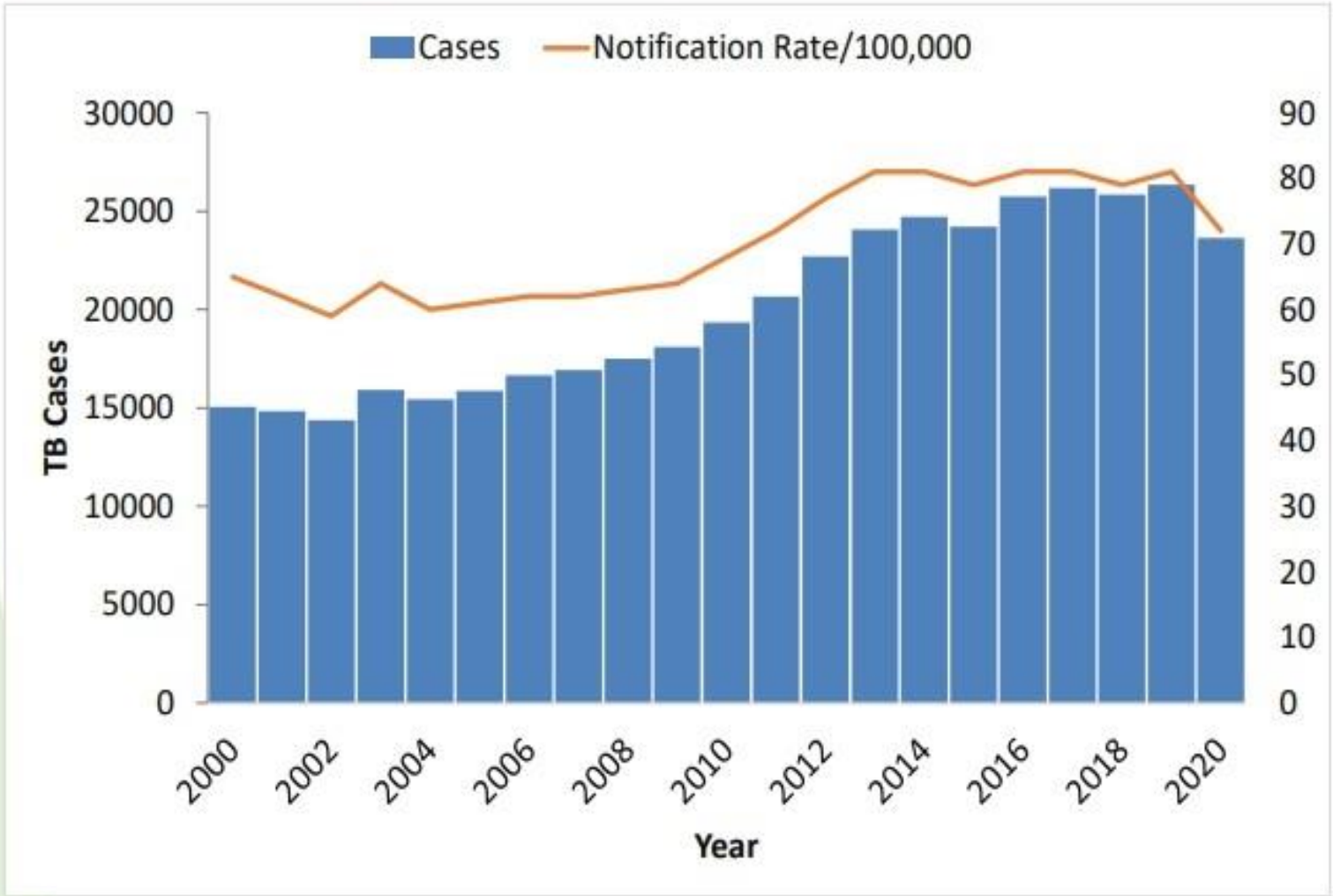
KEMENTERIAN KESIHATAN MALAYSIA

Bahagian Kawalan Penyakit
Kementerian Kesihatan Malaysia

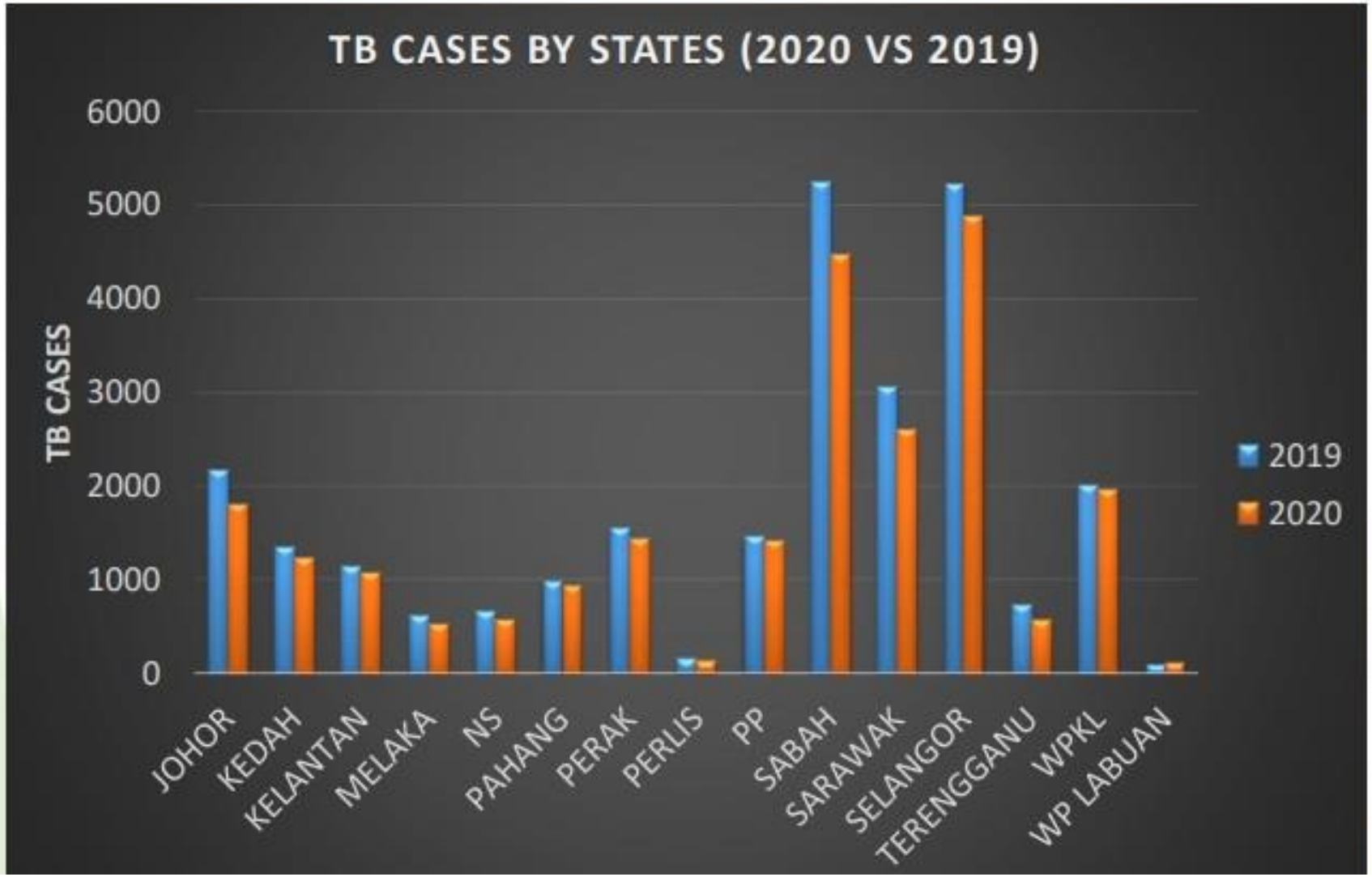

Registered TB Cases by Epid Week 2020 vs 2019
1200
1000
800
600
400
200
0
TB Cases
1st MCO
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53
2020
2019

TB CASES (ALL FORM) & NOTIFICATION RATE, MALAYSIA (2000- 2020)



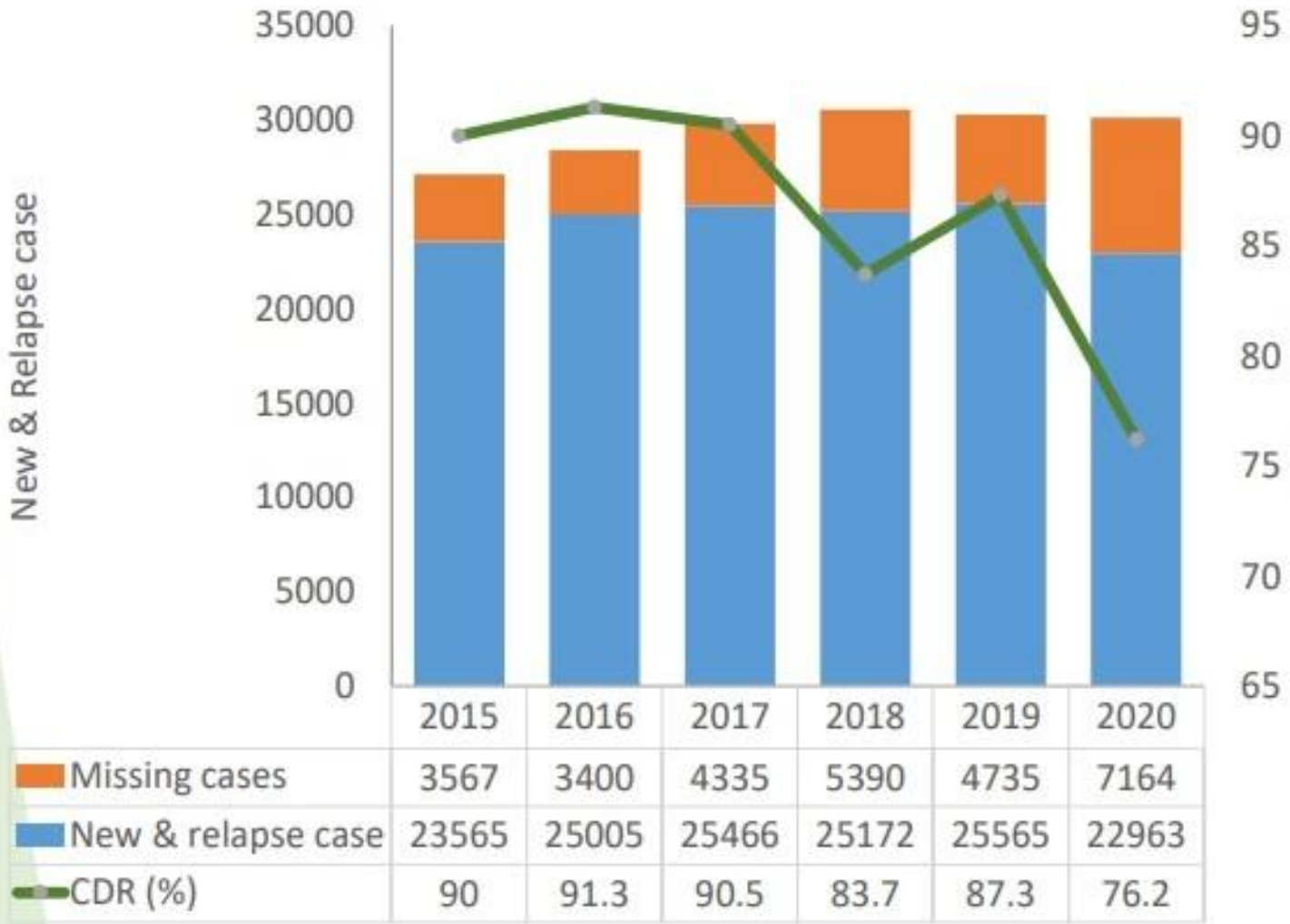
States	TB Cases	NR (per 100k population)
Johor	1804	47.7
Kedah	1233	56.4
Kelantan	1060	55.6
Melaka	524	56.2
NS	572	50.7
Pahang	929	55.3
Perak	1433	57.1
Perlis	122	47.9
Penang	1413	79.7
Sabah	4453	113.9
Sarawak	2592	92.0
Selangor	4884	74.7
Terengganu	553	43.9
WPKL	1967	104.4
WPLabuan	105	105.4
MALAYSIA	**23644**	**72.4**

TB CASES BY STATES (2020 VS 2019)



STATES	difference	%
JOHOR	-357	-16.5
KEDAH	-112	-8.3
KELANTAN	-76	-6.7
MELAKA	-84	-13.8
NS	-86	-13.1
PAHANG	-39	-4.0
PERAK	-107	-6.9
PERLIS	-32	-20.8
PP	-50	-3.4
SABAH	-785	-15.0
SARAWAK	-464	-15.2
SELANGOR	-327	-6.3
TERENGGANU	-165	-23.0
WPKL	-33	-1.7
WP LABUAN	9	9.4
MALAYSIA	**-2708**	**-10.3**

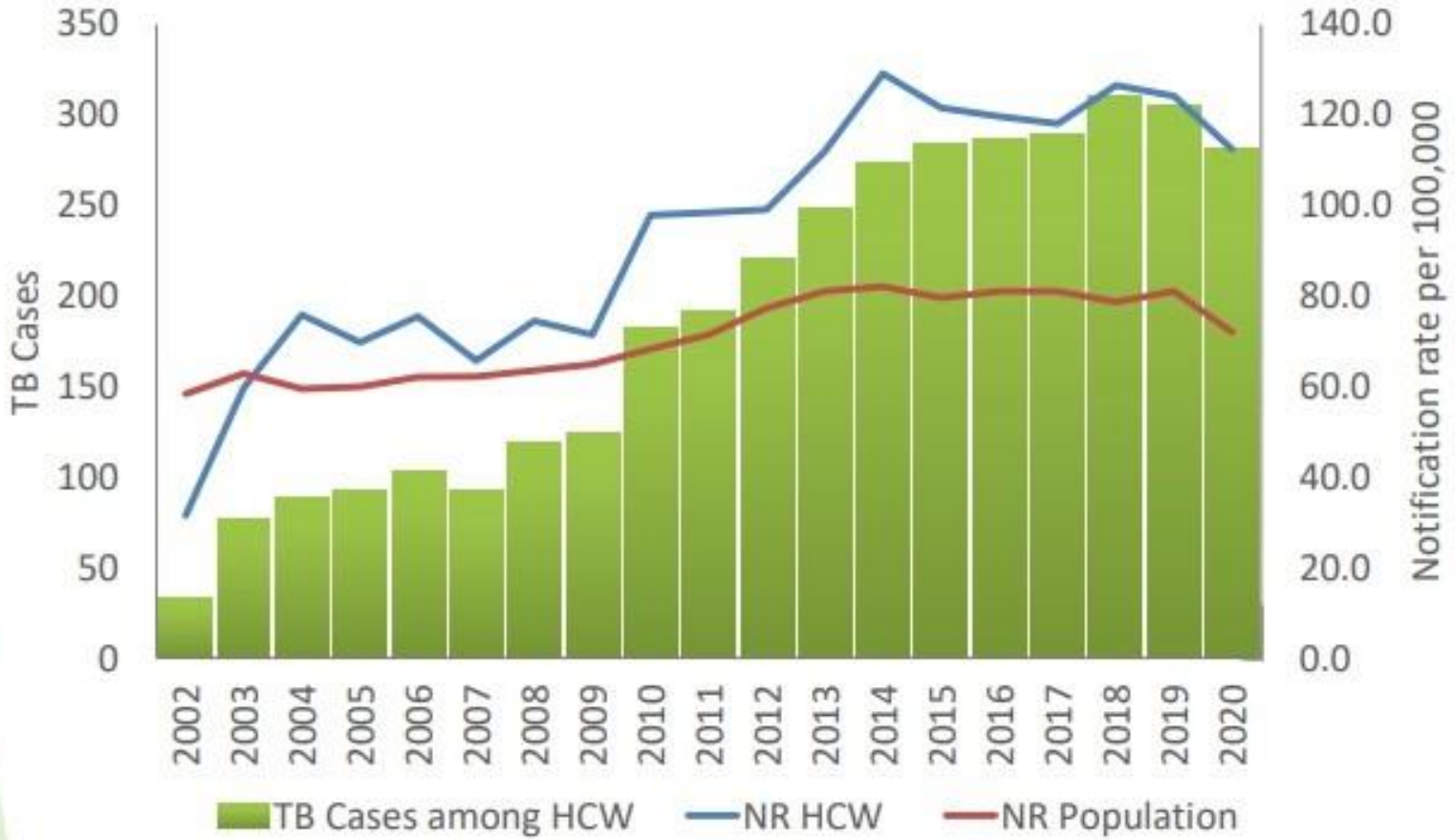
CASE DETECTION RATE, MALAYSIA, (2015- 2020)



	2015	2016	2017	2018	2019	2020
Missing cases	3567	3400	4335	5390	4735	7164
New & relapse case	23565	25005	25466	25172	25565	22963
CDR (%)	90	91.3	90.5	83.7	87.3	76.2

State	New &relapse cases	CDR(%) Target 95%	Achievement
Johor	1738	65.2	BT
Kedah	1197	78.0	BT
Kelantan	1030	66.9	BT
Melaka	515	72.1	BT
NS	554	75.0	BT
Pahang	910	83.0	BT
Perak	1410	75.2	BT
Perlis	121	74.2	BT
Penang	1376	87.5	BT
Sabah	4386	72.7	BT
Sarawak	2546	77.8	BT
Selangor	4673	83.5	BT
Terengganu	549	60.7	BT
WPKL	1853	81.0	BT
WPLabuan	105	78.4	BT
Malaysia	**22963**	**76.2**	**BT**

TB AMONG HCW, MALAYSIA, (2002- 2020)

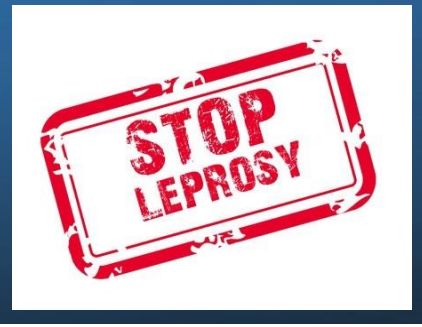


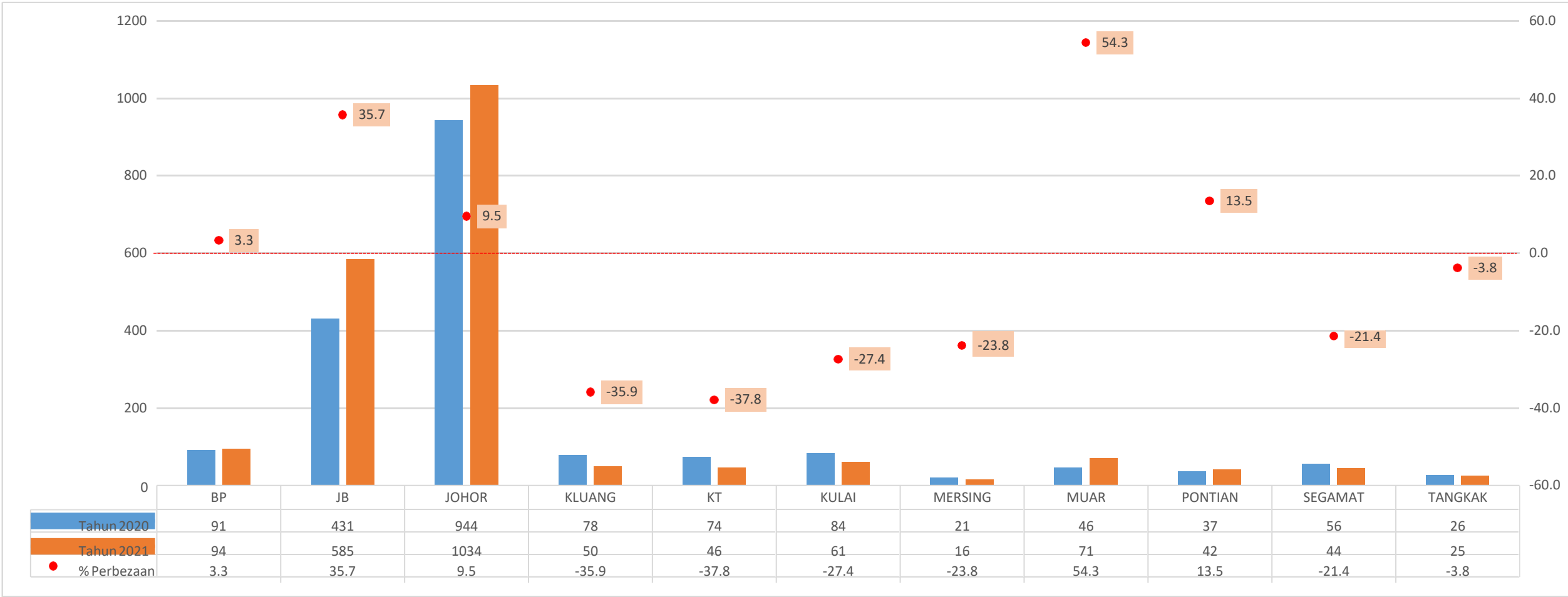
NEGERI	JUMLAH TB ANGGOTA KKM
JOHOR	23
KEDAH	23
KELANTAN	20
MELAKA	11
NEGERI SEMBILAN	8
PAHANG	17
PERAK	19
PERLIS	2
PULAU PINANG	17
SABAH	41
SARAWAK	12
SELANGOR	56
TERENGGANU	15
WPKL	16
MALAYSIA	281

TB AMONG MOH HEALTHCARE WORKERS, MALAYSIA (2020)

	MO	PPP	PPKP	JT	JM	Juru X-ray	JTMP	Ass Pharm	PPK	Others	Total
Johor	11	2	1	4		1	1			3	23
Kedah	4			9	2	1	1		2	4	23
Kelantan	3			4	3		1		3	6	20
Melaka	4	1		2					1	3	11
NS	2	2		1			1		1	1	8
Pahang	3		1	4					5	4	17
Perak	2	2		5	1	1			4	4	19
Perlis				1					1		2
Penang	3	2		6					3	3	17
Sabah	7	7		13	1		1		4	7	41
Sarawak		2		2	2				2	4	12
Selangor	20	4		17	2		1		3	8	56
Terengganu	3	2	1	2	2	1		1	1	2	15
WPKL	2	1	1	7	3					2	16
Labuan	0			1							1
Malaysia	64	25	4	78	16	4	6	1	30	51	281

Perbandingan Bilangan Notifikasi TB Sehingga ME26/June (2020 vs 2021)

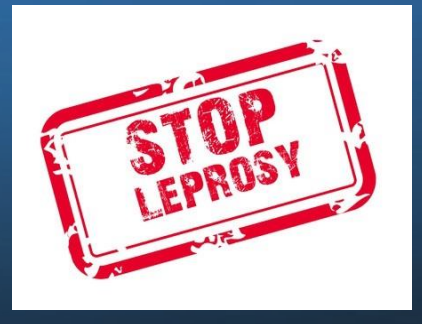


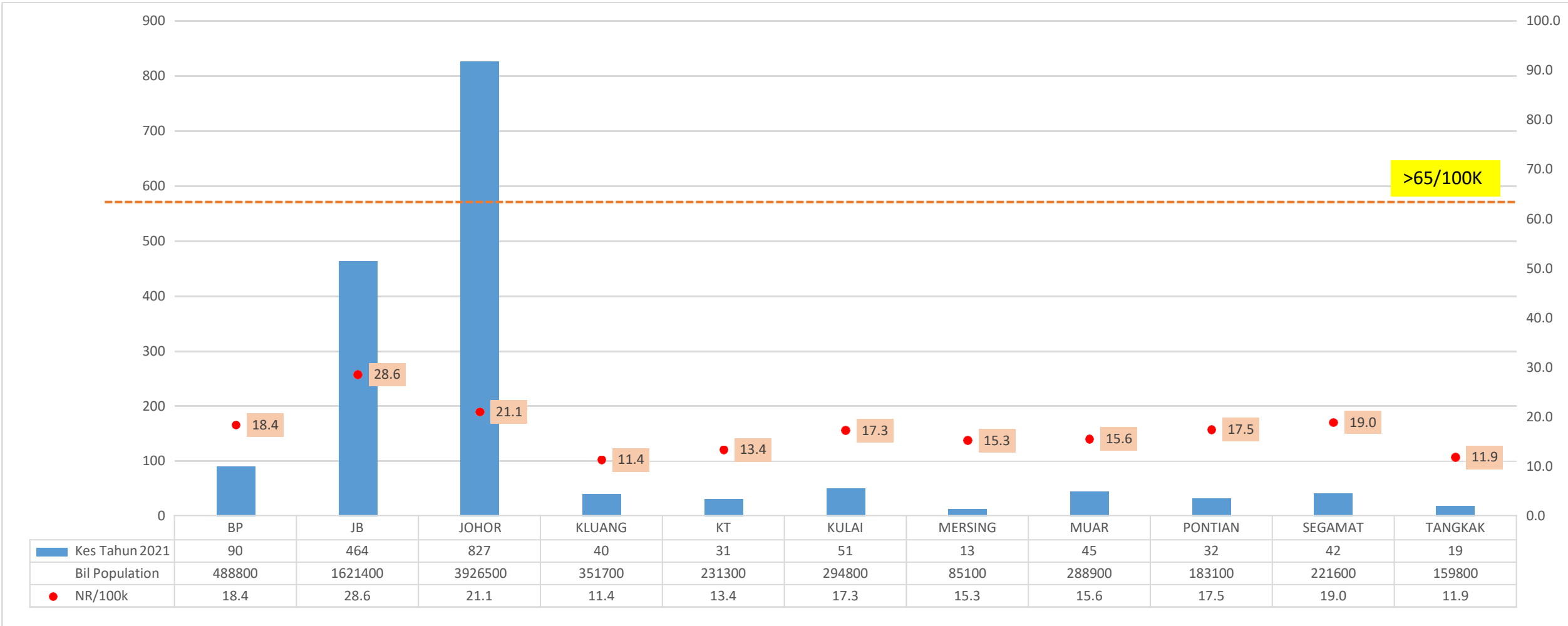


	BP	JB	JOHOR	KLUANG	KT	KULAI	MERSING	MUAR	PONTIAN	SEGAMAT	TANGKAK
Tahun 2020	91	431	944	78	74	84	21	46	37	56	26
Tahun 2021	94	585	1034	50	46	61	16	71	42	44	25
% Perbezaan	3.3	35.7	9.5	-35.9	-37.8	-27.4	-23.8	54.3	13.5	-21.4	-3.8

Hanya BP, JB, Muar dan Pontian menunjukkan peningkatan bilangan notifikasi yang lebih tinggi dari tahun 2020, manakala daerah yang lain mengalami penurunan bilangan notifikasi kes TB. Negeri Johor menunjukan peningkatan bilangan notifikasi yang lebih tinggi (9.5%) berbanding tahun 2020. (Sumber: e-Notifikasi)

Kadar Notifikasi (NR/100k Population) Kes TBSehingga ME26/June2021

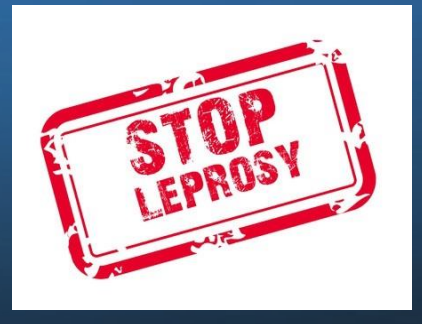


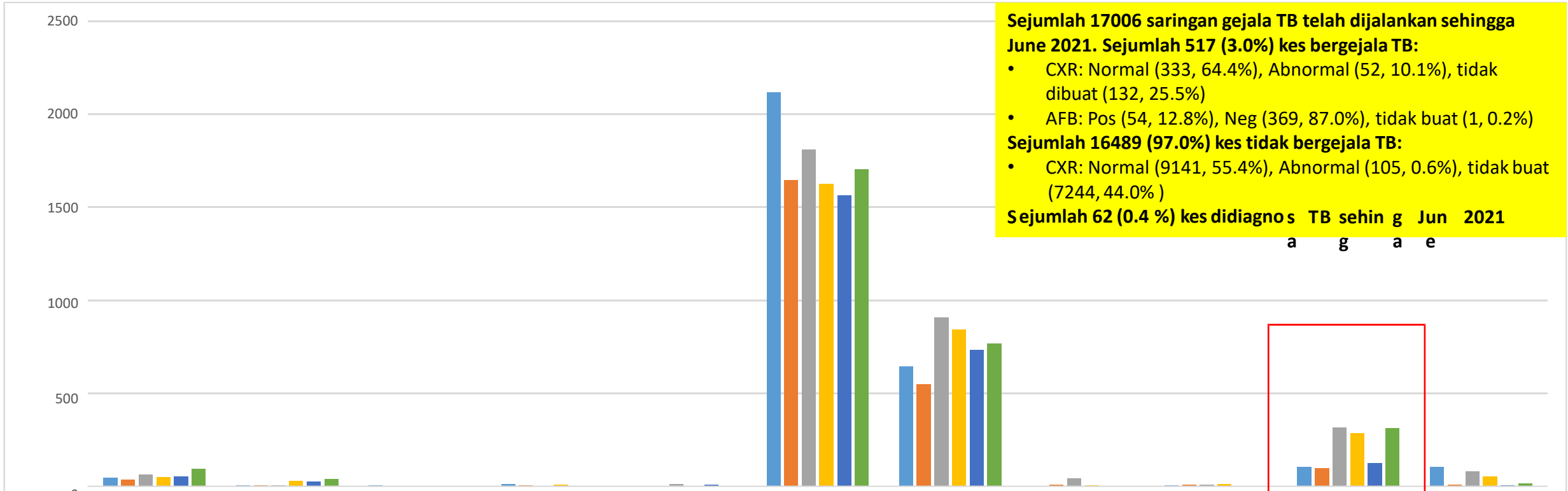


	BP	JB	JOHOR	KLUANG	KT	KULAI	MERSING	MUAR	PONTIAN	SEGAMAT	TANGKAK
Kes Tahun 2021	90	464	827	40	31	51	13	45	32	42	19
Bil Population	488800	1621400	3926500	351700	231300	294800	85100	288900	183100	221600	159800
NR/100k	18.4	28.6	21.1	11.4	13.4	17.3	15.3	15.6	17.5	19.0	11.9

Kadar Notifikasi kes TB sehingga May 2021 adalah pada kadar 21.1 bagi setiap 100000 penduduk. Sasaran NR bagi tahun 2021 adalah 65/100k

Pencapaian Saringan HRGdi KKSehingga June 2021 (Mengikut Kumpulan Sasar)





Sejumlah 17006 saringan gejala TB telah dijalankan sehingga June 2021. Sejumlah 517 (3.0%) kes bergejala TB:

- CXR: Normal (333, 64.4%), Abnormal (52, 10.1%), tidak dibuat (132, 25.5%)
- AFB: Pos (54, 12.8%), Neg (369, 87.0%), tidak buat (1, 0.2%)

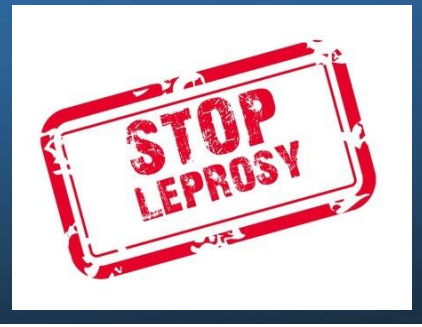
Sejumlah 16489 (97.0%) kes tidak bergejala TB:

- CXR: Normal (9141, 55.4%), Abnormal (105, 0.6%), tidak buat (7244, 44.0%)

Sejumlah 62 (0.4 %) kes didiagnosa TB sehingga June 2021

JAN	48	4	5	12	0	2116	644	2	5	105	106
FEB	34	4	0	5	0	1647	547	9	7	97	8
MAC	63	5	0	0	13	1810	907	41	9	316	82
APRIL	50	31	0	8	0	1626	842	4	11	286	51
MEI	51	26	0	0	8	1564	732	3	1	123	5
JUN	94	39	0	0	0	1703	768	1	2	311	14

TB Dalam Kalangan HCW Sehingga ME26/June 2021



DEARAH	Klinik Swasta	Hospital Swasta	Klinik Kerajaan				Hospital Kerajaan				TOTAL
			Doktor	Nurse	MA	others	Doktor	Nurse	MA	others	
BP	0	0	0	0	1	0	1	1	0	0	3
JB	1	0	0	0	0	1 (MLT)	1	0	0	1 (PPK)	4
KLUANG	0	0	0	0	0	0	0	1	0	0	1
Mersing	0	0	0	0	0	0	0	1	0	0	1
Muar	0	0	0	0	0	0	0	1	0	1 (PT)	2
JOHOR	1	0	0	0	1	1	2	4	0	2	11

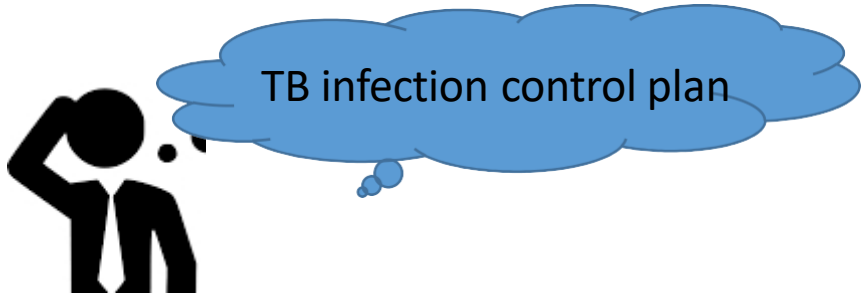
Sehingga June 2021: Sejumlah 11 orang HCW dijangkiti TB (1 dari GP, 2 dari KK dan 8 dari hospital kerajaan). Hanya 3 kes indeks HCW mempunyai kontak disaring (total 43). Saringan kontak bagi kes HCW perlu giat dijalankan terutamnya kontak di tempat kerja

Infectiousness Factors of a TB Patient

- Health-care settings:
- Emergency medical services
- Correctional facilities
- Home-based health-care
- Outreach settings
- Long-term care facilities
- Homeless shelters

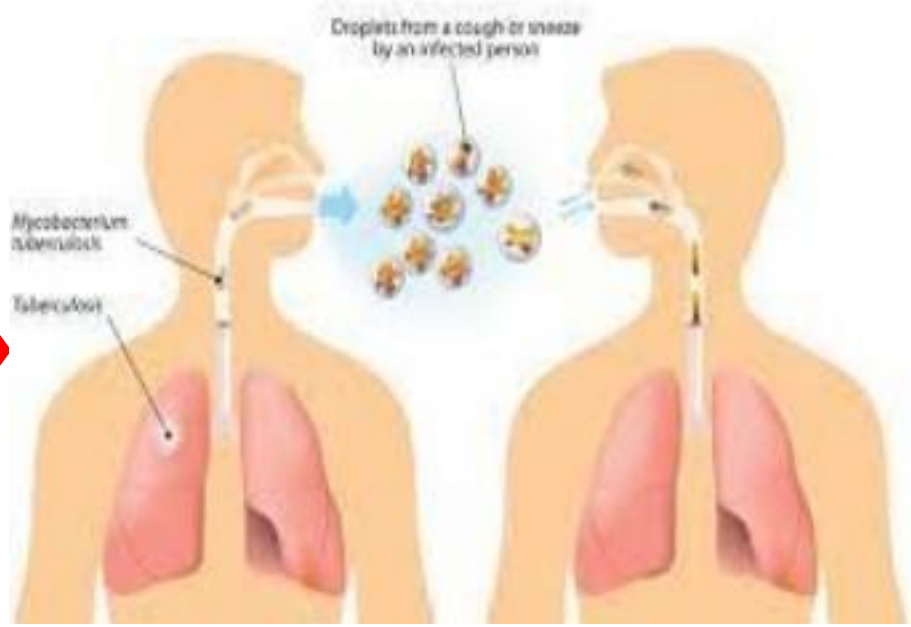
Risk to HCW when:

- Have unsuspected TB
- Have not received adequate or appropriate treatment
- Have not been separated from others



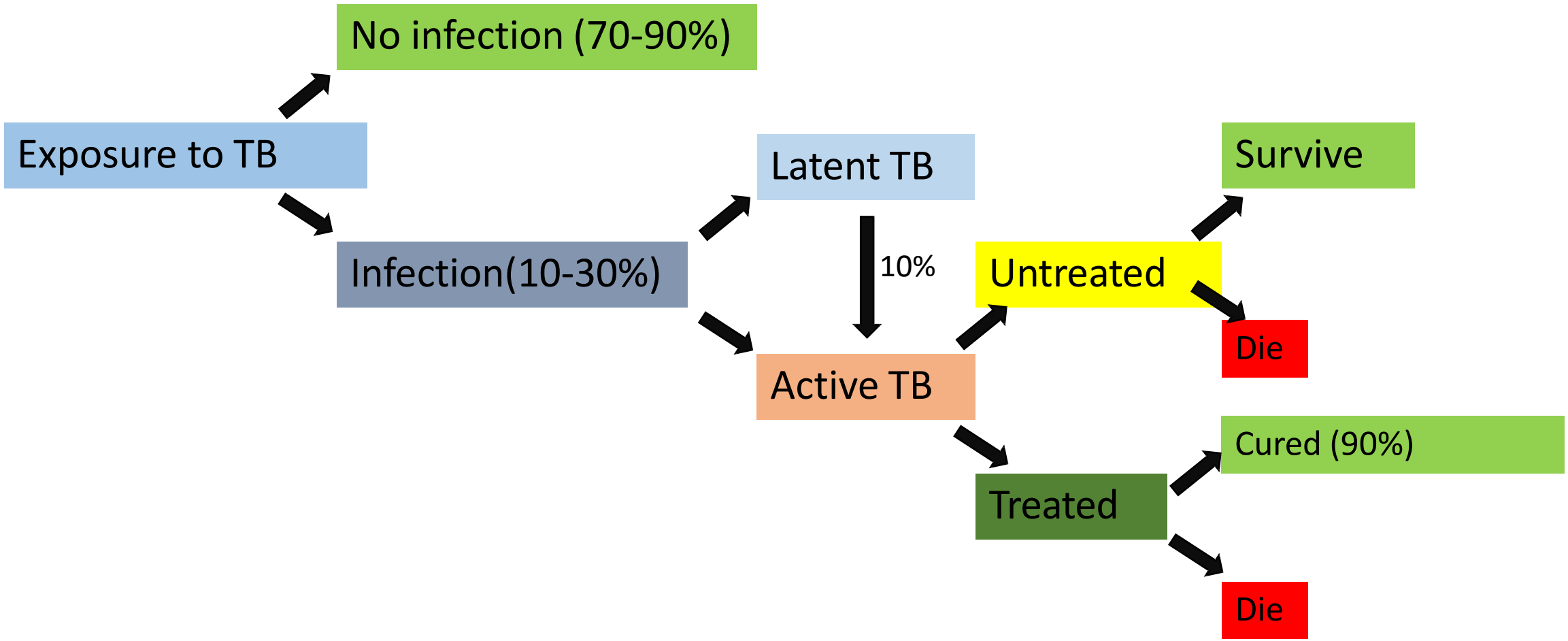
Infectiousness Factors of a TB Patient

- Number of droplet nuclei carrying MTB
- Depending on the environment, MTB can remain for several hours
- Transmitted through the air, not by surface contact



Infection occurs when a person inhales droplet nuclei containing MTB, and the droplet nuclei traverse the mouth or nasal passages, upper respiratory tract, and bronchi to reach the alveoli of the lungs

POSSIBLE OUTCOME FROM TB INFECTION



HOUSEHOLD CONTACT
0R: 9.6

DM PATIENT
OR: 3.1

PLHIV
OR: 2.3

COAD PATIENT
OR: 3.0

DRUG CHASER
0R: 3.0

SMOKER
OR=3.1

HIGH RISK GROUP OF TB INFECTION?

NON-HOUSEHOLD CONTACT
0R: 2.5

PRISONER
OR: 23.0

IVDU
OR: 6.0

Institutionalisation
OR=3.6

MULNUTRITION
OR: 37.5

CANCER PATIENT
0R: 3.7

HCW
0R: 2.9

HOMELESS
OR: 2.9

TBinfection Control Plan

- Prompt detection of TB cases
- Airborne precautions
- Treatment of persons who have been suspected or confirmed TB