

TABLE 3. PRIMARY RESISTANCE

Author(s)	Year	% Resistance to:			No. of strains	% Resistance	Source
		Isoniazid	Streptomycin	PAS			
Furtos, M. C. & Doane, E. A., <u>USA</u>	1949	-	1 (case)	-	385 pat.	-	<u>J. Amer. med. Ass.</u> , 1949, <u>140</u> , 1274
Brennan, A. I. & Wickelhausen, R. H., <u>USA</u>	1949	-	1 (case)	-	-	-	<u>J. Amer. med. Ass.</u> , 1949, <u>140</u> , 1275
Baudot, J., Delaude, A. & Gay, <u>France</u>	1951	-	23	-	52	23	<u>Rev. Tuberc. (Paris)</u> , 1952, <u>16</u> , 51
Wilking, V. N., Nemir, R. L., Lincoln, E. M., Martin, J. D., <u>USA</u>	1952	-	4.6	-	187	4.6	<u>Amer. Rev. Tuberc.</u> , 1952, <u>66</u> , 63*
Thomas, O. F., Horne, N. W., Borthwick, W. M., Crofton, J. W., <u>UK</u>	1954	-	4 (cases)	4 (cases)	-	-	<u>Lancet</u> , 1954, <u>1</u> , 1308
Cummings, M. M. & Livings, D. C., <u>USA</u>	May-December 1952	-	2.6	-	1 166	-	<u>Amer. Rev. Tuberc.</u> , 1954, <u>70</u> , 637
Frapplier, A., Desjardins, R., Panisset, M., <u>Canada</u>	1953-1954	0.6 Rimifon 41.1 (Marsilid)**	10.8	0.6	686	-	<u>Canad. med. Ass. J.</u> , 1957, <u>76</u> , 653
Katz, S., Storey, P. B., McCormick, G. F., <u>USA</u>	1954	2.3	1.6	-	385	-	<u>Amer. Rev. Tuberc.</u> , 1954, <u>70</u> , 887
Chaves, A. D. et al., <u>N.Y.</u>	July 1953-January 1955	2.3	1.6	-	385	-	<u>Amer. Rev. Tuberc.</u> , 1955, <u>72</u> , 143
Chaves, A. D. et al., <u>N.Y.</u>	1955	1.0	0.5	-	390	-	<u>Amer. Rev. Tuberc.</u> , 1956, <u>74</u> , 293
Meissner, G., <u>Germany</u>	1954	6 (cases)	-	-	-	12.0	<u>G. ital. Chemioter.</u> , 1954, <u>1</u> , 320

* This study concerned children only.

** According to the author, the very high resistance to the isopropyl form of isoniazid (Marsilid) is attributed to a natural rather than an acquired resistance of the strains of tubercle bacilli tested.

TABLE 3. PRIMARY RESISTANCE (continued)

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		Isoniazid	Streptomycin	PAS			
Beck, F., <u>USA</u>	1955 (five-year study)	-	1.6	-	600	-	<u>Amer. Rev. Tuberc.</u> , 1955, <u>72</u> , 1
Fox, W., Wiener, A., Mitchison, D. A., Selkon, J. R., Sutherland, I., <u>UK</u>	1955-1956	0.7	2.3	2.2	1 404	-	<u>Tubercle</u> , 1957, <u>38</u> , 71
British Tuberculosis Association, <u>UK</u>	1959-1960	-	-	-	-	4.5	<u>Tubercle</u> , 1963, <u>44</u> , 1
Madras Chemotherapy Centre	1956-1957	3.6	2.2	2.6	192	-	
Bell, W. & Brown, P. B. (1960) Ashanti, <u>Ghana</u>	1958	9.1	8.5	5.5	343	15.4	<u>Tubercle</u> , 1960, <u>41</u> , 277
Bell, W. & Brown, P. B. (1961)	1960	18.4	8.8	4.8	125	23.2	<u>Amer. Rev. Tuberc.</u> , 1961, <u>84</u> , 1
Chaves, A. D. Dangler, G., Abeles, H., Robins, A. B., & Widelock, D.	1960	4.1	3.5	2.1	428	(16.4)	<u>Amer. Rev. Tuberc.</u> , 1961, <u>84</u> , 1
Pepys, J., Mitchison, P. A., Kinsley, B. I., <u>Uganda</u> JH/PH	III 1953- II 1955	-	-	-	56		
Sulfone	III-X 1956	7.9	-	2.9	-		
Kenya	1956-1959	6.8	-	-	191		
TB1-Pilot	I-IV 1957	3.75	-	-	40		
Isoniazid	V-XII 1957	12.6	-	10.7	-		
TB1/DPT	VIII 1958- II 1959	16 9.9	- -	12.9 4.1	- -		
WHO TB Chemotherapy Centre, Nairobi, <u>Kenya</u> -4	1958-1961	-	-	-	32	6	Report from 29 November 1961
Dissmann, E. & Iglauer, E., Klagenfurt	1955 1956 1957 1958	3 4 7 9	- - - -	- - - -	190 166 190 157		<u>Tuberk.-Arzt</u> , 1961, <u>14</u> , 1-9
Short, G. M., <u>Uganda</u>	1959-1960	8.7	2.1	1.1	242	-	<u>Tubercle (Lond.)</u> , 1961, <u>42</u> , 51
Public Health Laboratory Service, <u>England & Wales</u>	1960	-	-	-	1 371	3.1	<u>Tubercle (Lond.)</u> , 1961, <u>42</u> , 31
Hershfield, E. S., Karlson, A. G. & Carr, D. T.	1955-1962 Mayo Clinic	2c	2c	3c	372	1.9	Proceedings of the Staff Meet. of the Mayo Clinic, 1963, <u>31</u>

TABLE 1. PRIMARY RESISTANCE

Author	Country/ Territory	Year	Resistance to:			No. of strains	% Resistance	Remarks
			Isoniazid	Streptomycin	PAS			
A. S. Moodie	Hong Kong	1958-1962					12	No less than 12% of positive cases who have strongly denied previous treatment
A. Omodei Zorini	Italy	1960-1961	4	4			11-12	Data from Istituto C. Forlanini
G. L'Eltore	Italy	1960	4	4			12	Data from Istituto C. Forlanini
Et. Bernard	France	until 1957	2.0	3.6	1.6	707	5.1	Hôpital Laennec
		1961-1962 1963					3-5 10	Hôpital Laennec Centre d'Etude de la Resistance (prévu pour tout le pays)
R. Neubauer	Yugoslavia	1958-1960 /1958 1959 1960 last years				1 501	10.6 11 10.2 10.3 5	B. Fortic Slovenia Goldman, Kamanicu
B. A. Dormer	Union of S. Africa		1/2 (5 gamma)					Previously untreated admissions to King George V Hospital
Chaves et al.	USA	1955	1					Different criteria were used
US Public Health Service	USA	IX 1960- XII 1962	1.6	2.3	0.8	2 400	4.0	To at least one of three drugs
Cummings & Livings	USA (Vet. Admin.)	1952 1956-1957						No significant increase
N. L. Bordia	India (Mysore State)			2-3	1		12	Tumkur Survey

TABLE 6. PRIMARY RESISTANCE (continued)

Author	Country/ Territory	Year	% Resistance to:			No. of strains	% Resistance	Remarks
			Isoniazid	Streptomycin	PAS			
I. Macgregor	UK	1955-1956	0.7	2.3	2.2	1 000	4.5	Too few patients to be truly representative
Med. Res. Council Brit. Tub. Assoc.	UK	1959-1960				171	11.1	
Pub. Health Lab. Service	England and Wales	1960				1 300	3.1	
Thomas	England (Birmingham)	1963					2.5 ⁷	
Sir Harry Wunderly	Australia						uncommon	5 Australian States and Papua, New Guinea
Ph. V. Šebanov	USSR						6.6-8.2	of all new cases
K. Styblo	Czechoslovakia						4-5	
A. L. Cochrane	Wales		1.0	2.1	1.0			No change over last 5-10 years
O. Garcia-Rosell	Peru	1959 IX 1960- VIII 1961					29.3 26.09	Thorax Hospital Orbegozo Dispensary
L. Šula	Czechoslovakia	1961, 1962, 1963				78	7.8	Bohemia and Moravia (children & adolescents)
		1961, 1962, 1963				230	<u>2.5</u> 3.5	Adults in Kolín
Sauter	Switzerland	1963					12.5	Provisional data
T. I. Gökçe	Turkey	1960, 1961, 1962, 1963	7.6-30.7	7.6-23.1		13		Sanatorium d'Erenköy
		1953-1955	4	8		400	12)	Sanatorium
		1955-1962	4.2	3.1		1 300	7.3)	Atatürk
		1958-1963				124	12	Sanatorium Valdebag
		1960					20.4)	TB Clinic of University
		1961					20.8)	of Istanbul
		1962					23.5)	
		1956-1960	17 (5 gamma) 15 (3 gamma)	18 (10 gamma) 30 (5 gamma)		100		Sanatorium Heybeliada

TABLE 6. PRIMARY RESISTANCE (continued)

Author	Country/ Territory	Year	% Resistance to:			No. of strains	% Resistance	Remarks
			Isoniazid	Streptomycin	PAS			
K. N. Rao	India						1.3-14 1-4	
P. K. Sen	India (Calcutta)						0.5-5	
Raj Narain	" (NTI, Bangalore)						8.3	
K. T. Jesudian	" (Madanapalle)	1956-1962	1.3	1.2	3.7	441		
N. K. Menon	" (Hyderabad)	1959-1960	15	4			17	
B. K. Sikand	" (New Delhi, TB Centre)	1961 1962	14 14			451 550		
H. B. Dingley	" (Mehrauli TB Hospital)					150	17.34	
J. Frimodt-Møller	" (Madanapalle)	1959	6	6				
Madras Chemotherapy Centre	" (Madras)	1956-1962	4.7	3.1		838 829		

TABLE 8. ACQUIRED RESISTANCE

Author(s)	Country/ Territory	Year	% Resistance to:		No. of strains	% Resistance	Remarks
			Isoniazid	Streptomycin			
A. S. Moodie	Hong Kong	1958	37*	74*	?		1/3 of positive cases attending the public clinic
		1962	82*	58*			
A. Onodei-Zorini	Italy	1960-1961	39.1	38.6	6.4	55	Data from Istituto C. Forlanini
G. L'Eltore	Italy	1960-1961	39.1	38.6	6.4	55	Data from Istituto C. Forlanini
Et. Bernard	France	1955				47)	Hôpital Laennec
		1956				45)	
		1957				68.5)	
		1958				56)	
		1959				57.8)	
		1960				54)	
		1961				57.8)	
R. Neubauer	Yugoslavia				31	18 pat.	Simeonov, Sarajevo
American National Tuberculosis Association	USA				All ad- missions of US Admin.	40	Tucker
	USA					ov. 40	United States Public Health Service
I. Macgregor	UK				410	82	British Tuberculosis Association
Sir Harry Wunderly	Australia					7-10	5 Australian States & Papua, N. Guinea
Ph. V. Šebanov	USSR					42-65	of treated and re-admitted patients
K. Styblo	Czechoslovakia (Kolín)				63	22.2	In-patients with relapse

* Of all resistant cases

TABLE 8. ACQUIRED RESISTANCE (continued)

Author(s)	Country/ Territory	Year	% Resistance to:			No. of strains	% Resistance	Remarks
			Isoniazid	Streptomycin	PAS			
Sauter	Switzerland	1963	26.52	19.53	3.65	1 071	32	Sanatorium D'Erenköy
T. J. Gökçe	Turkey	1960-1962	50.4	56.3	13.6	220)		
		1963	55.8	57.8	16.9	242)		
		Last 10 years	31.12	34.05	3.23			Sanatorium Atatürk
		1958-1963				124	20	Sanatorium Valdebag
		1957				117	58.1)	TB Clinic, University of Istanbul
		1958				146	58.2)	
		1959				217	53.9)	
		1960				158	43)	
		1961				172	47.1)	
		1962				173	46.8)	
						983	Total 50.9	
			(5 µg)	(10 µg)				
		1955	23.5	38.2		387)		Sanatorium Heybeliada
		1956	25.6	53.6		407)		
		1957	27.1	48.6		432)		
		1958	20.1	38.3		529)		
		1959	24.9	39.3		539)		
		1960	23.3	49.9		685)		
		1961	23.3	53.5		842)		
		1962	27.6	58		910)		
		1963	28.1	58.7		925)		
K. N. Rao	India	Last 5- 10 years	10-48	5-27				
P. K. Sen	India (Calcutta)						2-15	
H. N. Sengal	India (Kasauli)	1956-1959				123	24	
		1959-1963				303	80	
K. T. Jesudian	" (UMT Sana- torium, Madanapalle)	1956-1962				1 489	14.3	
N. K. Menon	" (Hyderabad)	1959-1960					52	
B. K. Sikand	" (New Delhi TB Centre)	1961	48			451		
		1962	44			550		
H. B. Dingley	" (Mehrauli TB Hospital)					150	37.35	
J. Frimodt-Møller	" (Madanapalle)	1959					20-25	Sample survey in 12 towns Discharged from UMT Sanatorium
		1959-1960				283	61	
B. C. Roy	" (Research TB Institute)					166	55	