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2. Malawi

2.1. General information

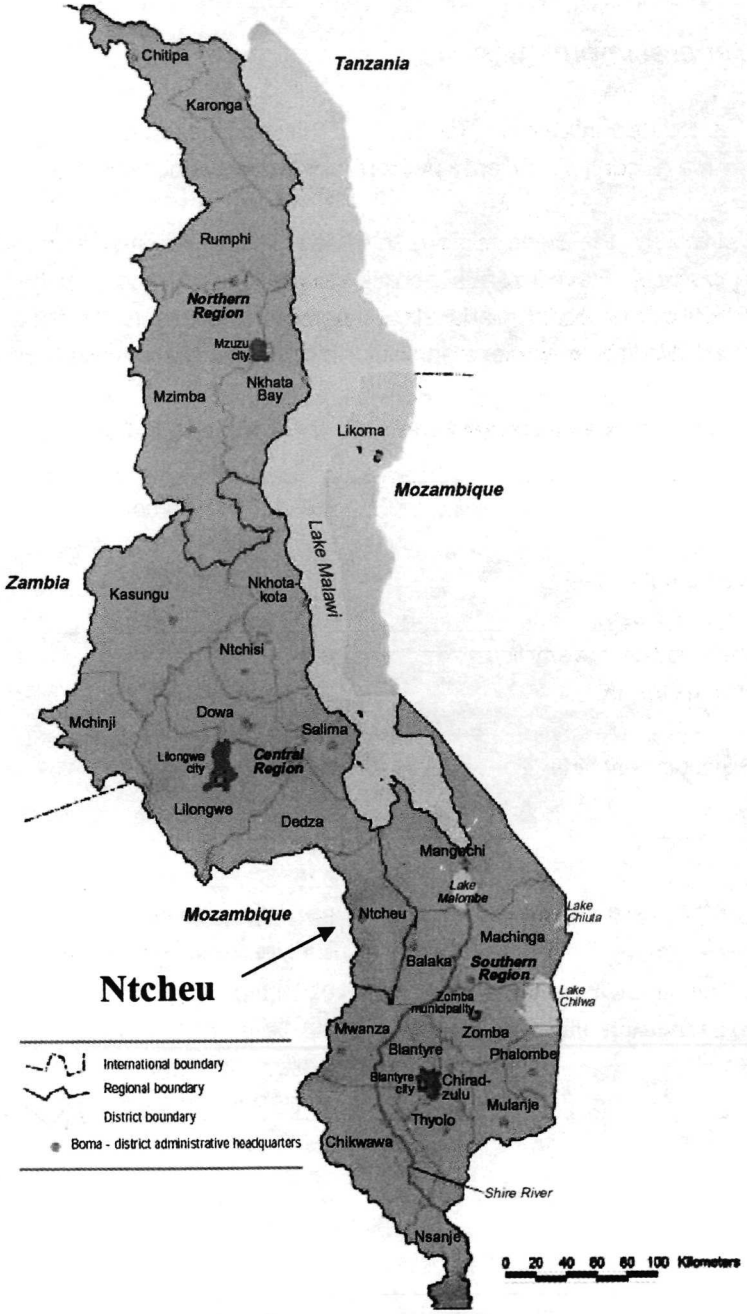
Malawi is located in Central/Southern Africa, landlocked by Mozambique, Tanzania and Zambia (Figure 1). Twenty percent of the area is occupied by lakes. The climate is tropical.

Administratively, the three regions in Malawi (North, Central and South) are divided into 25 districts. Paved roads permit easy access to most district capitals and a further network of earth roads allows peripheral areas to be reached most of the year round. Main human development indicators for Malawi are found in table 1.

Table 1. Human Development Indicators for Malawi in 2001 [1]

Area	118,480 sq. kilometres
Districts	25
Traditional Authorities	202
Population (Urban)	10,346,382 (15%)
Population below poverty line	60%
Population Growth	2.1%
TFR	6.3
Life Expectancy at birth	39 years
IMR	102
Under 5 Mortality	193
MMR	620
Illiteracy Total/Male/Female	39%/25.0%/52.4%
GDP (per capita)	1.7 billion USD (USD 170)
UNDP Human Development Index	0.334 (no. 161)
Health Expenditure (per capita)	2.8 % of GDP Public, 3.5% of GDP Private, 6.3% of GDP total 10 USD (36 USD PPP) per capita

Figure 1. Map of the Republic of Malawi



2.2. *Tuberculosis Control in Malawi*

The National Tuberculosis Control Programme (NTP) in Malawi was launched in 1964 when Malawi became an independent nation. The Ministry of Health has implemented directly observed treatment (DOT) in a hospital setting by health care workers for TB patients since 1983. In 1984, Malawi started receiving technical support and assistance from the International Union against Tuberculosis and Lung Disease [2].

The NTP is organised on three tiers: central, regional and district. Central and regional levels support the district level where TB activities are fully integrated. The functions of the Central Unit are :

1. Planning, coordinating, monitoring and evaluating standard anti-tuberculosis measures
2. Training and supervision of personnel involved in TB work
3. Budgeting, procuring and distribution of supplies, e.g. drugs and laboratory supplies and equipment
4. Compilation and analysis of TB data
5. Carrying out operational research

The functions of the Regional TB Office are :

1. Co-ordinating TB control activities in the respective regions while working closely with the Central Unit staff
2. Supervision and training of district TB officers and other peripheral workers
3. Ordering supplies, e.g. drugs, stationary, sputum containers for the region and arranging distribution to the districts.
4. Compilation and analysis of TB data for the region and discussing these with the Regional Health Office before transmission on to the Central Unit

The District TB Officer has the responsibility of implementing the NTP in the district through the staff of the district and the peripheral units.

Tuberculosis is the main cause of hospital admissions (considerable higher than admissions due to diarrhoea or malaria) and considering only hospital bed-days, this would represent for the year 1995, if all TB patients were hospitalised two months, an overall burden of USD 2,400,000 (at USD 2.09 per bed-day) [3]. In view of the overall economic situation, TB has significant socio-economic costs on the community and health services.

Table 2. Tuberculosis treatment outcomes in Malawi

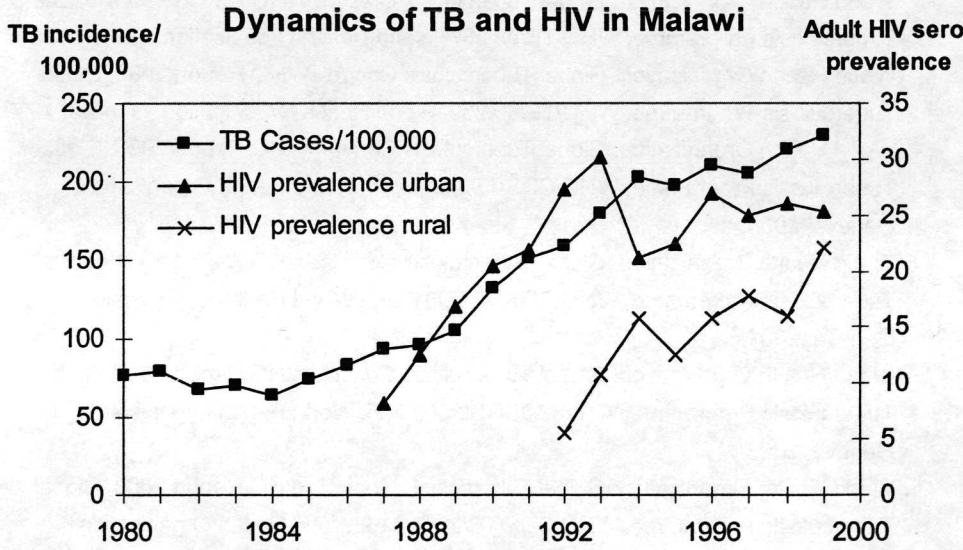
	Cases	Rate	SSm+	Rate	Cured	Comp	Def	Fail	Dead	Trans	Not eval	Ref
1995	19155	198	6293	65	65	6	0	1	19	4	6	4
1996	20630	210	6703	68	63	5	6	1	21	5	0	5
1997	20676	205	7587	75	68	3	4	1	21	3	0	6
1998	22764	220	8853	86	66	3	4	1	22	4	0	7
1999	24384	229	8130	76	69	3	4	1	21	3	0	8
2000	23637	209	8 296	73	70	3	6	1	23	3	0	9

SSm+ : new sputum smear-positive cases
Comp : treatment completed
Ref : reference
Def : defaulter
Fail : failure
Trans : transfer out
Not eval : not evaluated

The regimens used in Malawi from 1984 onwards were two months of streptomycin, rifampicin, isoniazid and pyrazinamide followed by 6 months of isoniazid and thiacetazone (2SRHZ/6HT) for patients with new smear-positive PTB and serious forms of EPTB and one month streptomycin, isoniazid and thiacetazone followed by 11 months of isoniazid and thiacetazone (1SHT/11HT) for patients with smear-negative PTB and less serious forms of EPTB. Thiacetazone was replaced with ethambutol (E) in case patients reacted against thiacetazone.

The country is badly affected by the HIV/AIDS epidemic [10-15]. Figure 2 shows how the HIV sero-prevalence rose amongst the urban adult population up to 25 to 30%, followed by an increase in the rural adult HIV sero-prevalence. The graph also shows that the increase of adult HIV sero-prevalence is accompanied by an increase in TB incidence.

Figure 2. Impact of HIV on TB cases in Malawi [8,15]



2.3. Ntcheu district

Ntcheu district is situated in the Central Region of Malawi and had an estimated population of 478,000 in 1996. The main township (Ntcheu) in which the district

hospital is situated is halfway on the national highway between the two largest cities, Lilongwe and Blantyre.

The District Health Officer of the district (author of the thesis) was co-opted as a member of the National TB Programme management team and was the principal investigator for most of the studies presented. In 1997 the NTP allocated a Deputy Regional TB Officer for Research to each region, the one for the Central Region being based in Ntcheu and taking part in data collection for all studies, whether in Ntcheu only or part of a larger national sample.

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