Estimating TB incidence and mortality in HIV+ people

Where are we now? Where are we going?

Brian Williams

Task Force Meeting September 2008
Incidence: all forms 328/100k/yr

HIV+ve

IRR or direct data

HIV—ve

smear-positive 45%

smear-negative 55%

DOTS 79%

Non-DOTS 6%

Untreated 15%

DOTS 98%

Non-DOTS 0%

Untreated 2%

DOTS 79%

DOTS 98%

Non-DOTS 0%

Untreated 2%

DOTS 98%

Non-DOTS 0%

Untreated 2%

IRR or direct data

Kenya
Intercept = ln(odds ratio): Odds ratio = 5.9 (5.4-6.0)
Prevalence of HIV in ANC women

Prevalence of HIV in TB patients
OR = 10.8 (1.5)

OR = 15.6

2006 data for districts in Kenya

Still problematical

- Higher in men than women
- Higher than previous
Associative sorting

In concentrated epidemics marginalized people may be more likely to get TB and HIV so that the IRR will be higher.
Incidence of TB doubles each time the CD4 counts fall by 150/μL.

Antonucci, 2005
Badri, 2002
Rising epidemic
ART drives
CD4 back up
Falling epidemic


cd4 cell counts

Time to death (years)

Years since start of treatment

CD4 cell counts/microL
We can try to understand what is going on but we really need to measure it directly.
SS+ TB incidence in HIV positive people

\[ I = p \pi \sigma \]

- Incidence
- Proportion SS+
- Prevalence of HIV in adults
- Annual risk of TB if HIV-positive

Case detection rate

\[ CDR = \frac{n}{p \pi \sigma} \]

- SS+ notification rate
• We need to measure the prevalence of HIV in TB patients directly.
• We need to measure the incidence of TB in HIV-positive people directly.
• If we do this we can make better estimates of TB incidence and mortality in HIV-positive people.
• We can also make much better estimates of the impact of control by monitoring TB in HIV-negative people.
Questions for the Task Force

• How can we ensure better collaboration and sharing of data between TB and HIV programmes at all levels?
• What data can we and should we collect?