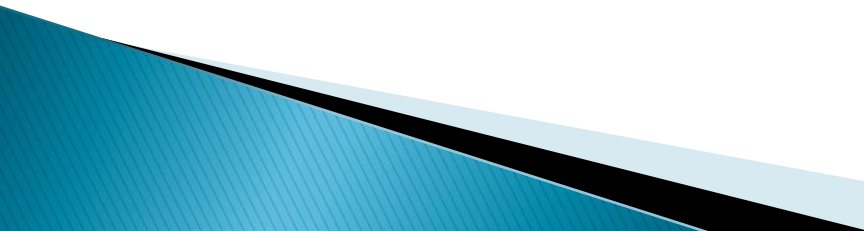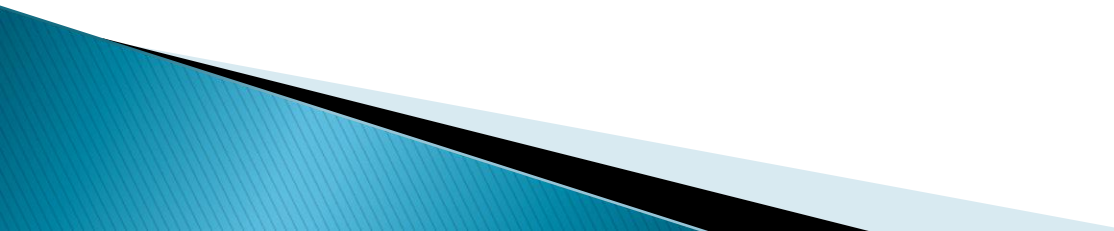# Multi Drug Resistant Tuberculosis (MDR-TB) Among HIV-Positive Patients in A Tertiary Health Institution in South Eastern Nigeria

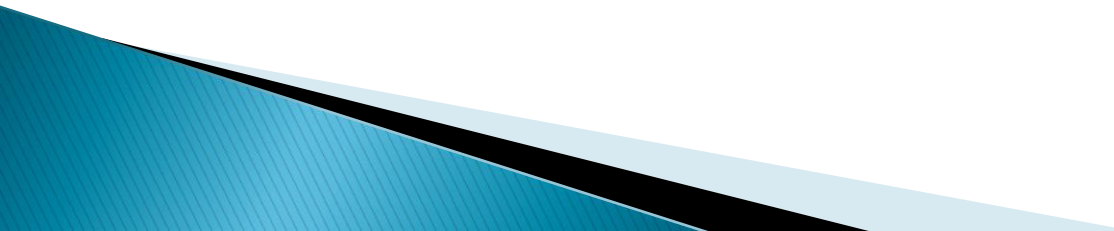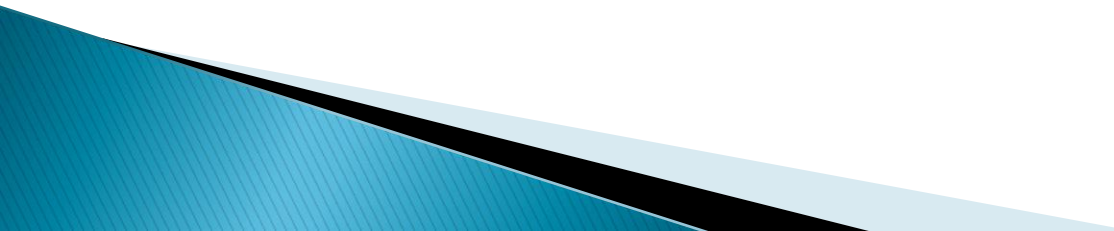Akujobi CN, Okoro CE, Anyabolu AE, Okonkwo RC, Onwunzo MC and Chukwuka CP

Introduction

- Tuberculosis (TB) is the most common opportunistic infection in Human Immunodeficiency Virus (HIV)-infected patients.[1]

- HIV-infected patients are known to have 10% risk of reactivation of TB per year.[2]

- They are more likely to die from TB than HIV negative patients.[3]

- In Sub-Saharan Africa, 30% of HIV-infected patients who are diagnosed with TB die 12 months after the initiation of treatment.[4,5]

- Nigeria has a HIV prevalence of 3.6% and has the world's third largest TB burden.

- It is also known that 26% of TB patients in Nigeria have HIV co-infection[7].

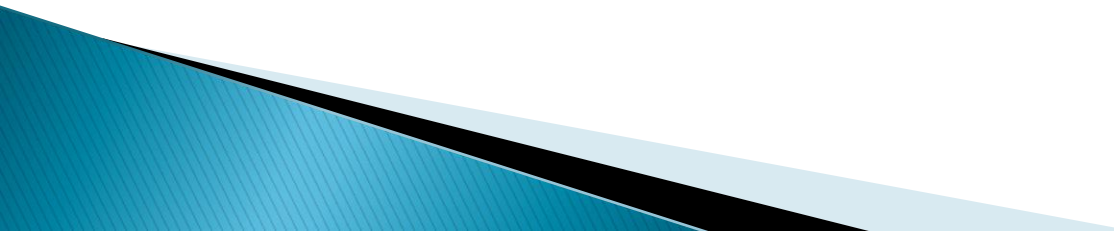# Introduction Contd

- Multi Drug resistant Tuberculosis (MDR-TB) is tuberculosis that is resistant to at least the first line anti-TB drugs, Rifampicin and Isoniazid.[8]

- The emergence of Multi Drug Resistant tuberculosis (MDR-TB) is of concern to both patients and clinicians because of the attendant increased mortality and morbidity.

Aim

- To determine the prevalence of MDR-TB among HIV seropositive and seronegative patients receiving treatment in Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, Anambra State, South Eastern Nigeria.

Materials and method

- The study population included:-
- HIV seropositive and
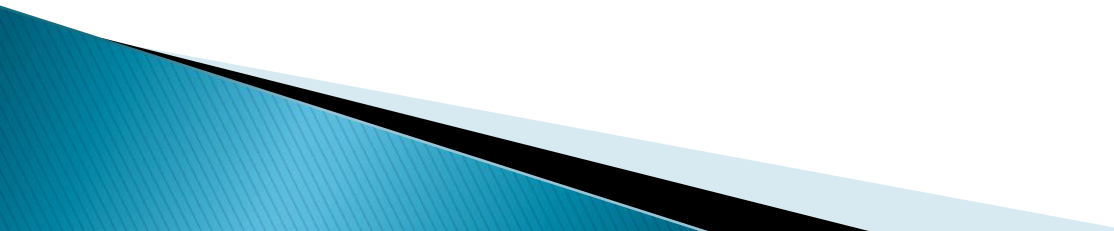- HIV seronegative TB patients receiving anti-Kochs therapy from January 2012 to June 2014.

Specimen collection/processing
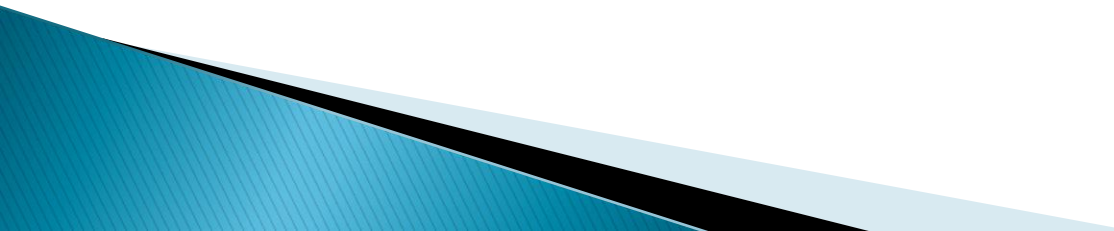
- Sputum samples of TB patients were collected using the Directly Observed Treatment Short Course (DOTs) strategy specification.

- This involves collecting three (03) samples: (1) on the spot assessment of patients, (2) Another sample early morning next day (3) A third sample as the patient submits the second sample. Samples are labeled 1,2, and 3 with patient's identification parameters.

Specimen processing

- Specimens were processed using the Ziehl-Neelsen staining method, fluorescent staining technique and confirmed using the Gene Xpert by Cepheid, especially HIV positive cases with cough.

- The positive TB cases were referred to the DOTs clinic where they were commenced on anti-Kochs treatment with the Intensive phase using Rifampicin, Isoniazid, Pyrazinamide, and Ethambutol for two months

Processing Contd

- After the intensive phase of therapy, a repeat sputum microscopy was done to determine if the patient still had open TB, before continuation phase was started with Rifampicin and Isoniazid.

-

- In patients who still had open TB, resistance was suspected and their samples were sent for Gene Xpert confirmation. (Category 1 failure)

- (Gene Xpert confirms Tuberculosis infection but most importantly, it confirms resistance to Rifampicin).

- At the completion of treatment i.e. after 6 months of anti-Kochs administration, the patients were rechecked to ascertain if they were cured.
- Any patient who still had a positive sputum sample was classified as Category 2 failure.
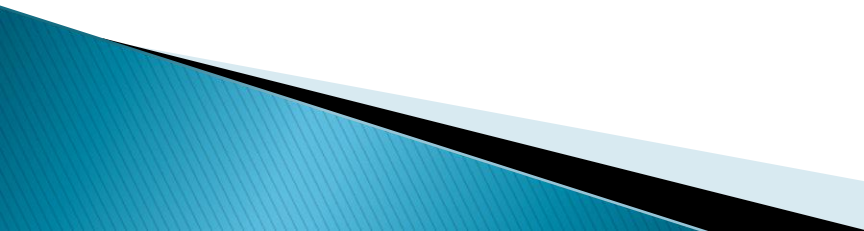
Results

❖ Out of 732 diagnosed TB patients seen between 2012 till date, only six (6) had MDR-TB (0.82%).
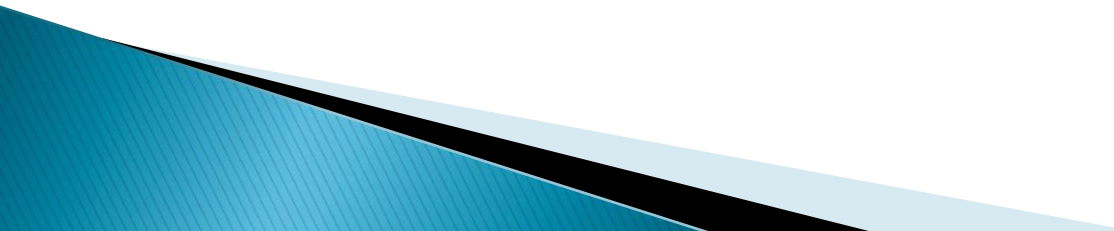Five (5) of the 6 were HIV-negative while only one (1) patient was HIV-positive.

❖ Of these 6 MDR-TB patients, two (2) have been completely treated, two (2) have died, one (1) patient is still receiving treatment while the other person is not on treatment because of the cost.

Discussion

- In Nnamdi Azikiwe University Teaching Hospital, the anti-Kochs regimen used is 2 months intensive treatment phase with Rifampicin, Isoniazid, Pyrazinamide and Ethambutol, followed by 4 months continuation phase using Rifampicin and Isoniazid.

- It is expected that by the end of the two months intensive phase of treatment, patients with open TB who adhered strictly to treatment should no longer have open TB.

- The conventional methods of detecting resistance involves growth/culture of *Mycobacterium tuberculosis* on liquid or solid culture medium and drug susceptibility testing.[10]

- They should no longer have the bacilli in their sputum. A re-check of the sputum is done at this stage to know those who have responded well to treatment.

- Patients who still have open TB are classified as treatment Category 1 failure.

- Their sputum samples are further subjected to resistance testing using Gene Xpert which detects rifampicin resistance and may not detect isoniazid mono resistance.
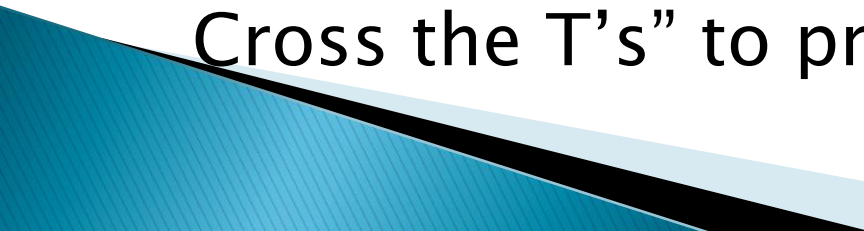
Discussion contd

- The prevalence of MDR-TB in the study was 0.82%. This is much less than what other researchers found. Dinic et al had 5.5%[11] in treatment naïve patients while Uzoewulu et al had 8%.[12]

- This could be due to the fact that Nnewi is an urban city and the teaching hospital is situated there so there is better access to medical care .

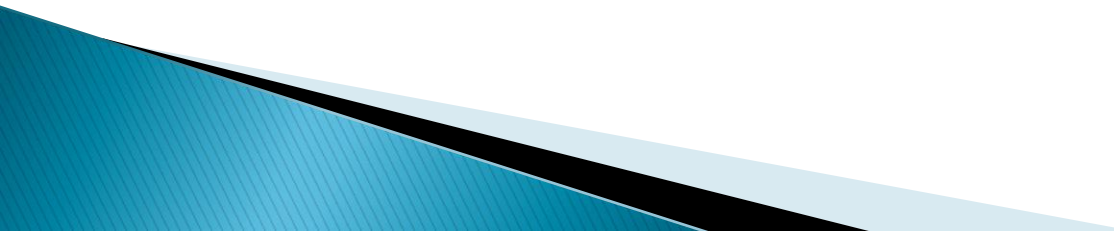- It is also pertinent to mention here that patients were closely observed/monitored during treatment .

Discussion Contd

▸ The result shows that most of the patients were Category 2 failure, and there was poor compliance to treatment irrespective of their HIV status.

▸

▸ It is important to note that although TB is a common opportunistic infection in HIV patients, HIV itself does not predispose to MDR-TB so long as the patient complies with anti-Kochs regimen[13-16].

Conclusion

- MDR–TB poses a challenge in the management of HIV/TB co-infection because of poor treatment outcomes, higher treatment costs, lack of adequate treatment centers.

- Prevention still remains the better option.

- All hands must be on deck to prevent or reduce MDR-TB by monitoring TB patients on treatment. As is usually said "DOT the I's and Cross the T's" to prevent resistance.
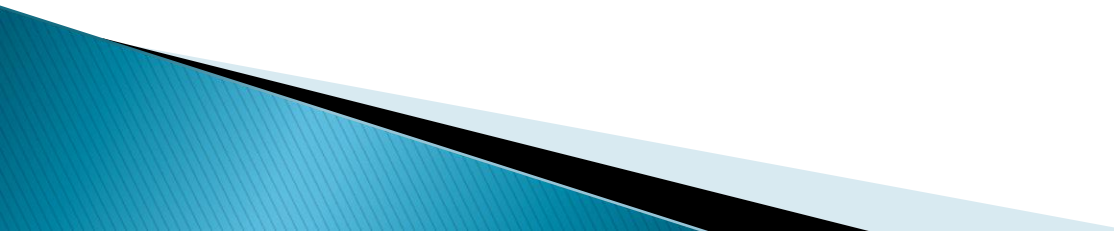
Shortcomings

- Only smear AFB and Gene Xpert testing were employed in the study.

- DST was not done due to unavailability of culture centres, but the future work would incorporate that and others.

- The study did not separate patients into those already on treatment and treatment naïve.
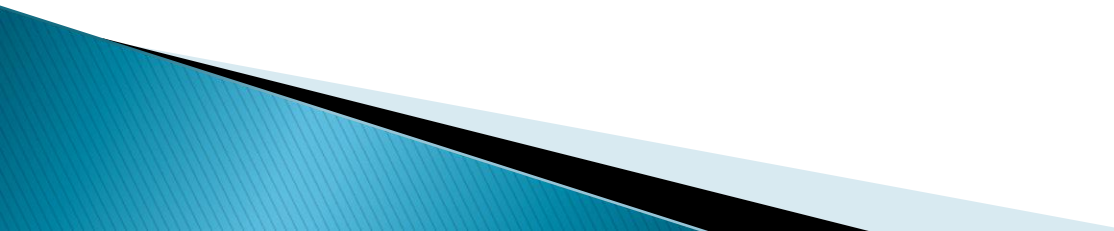
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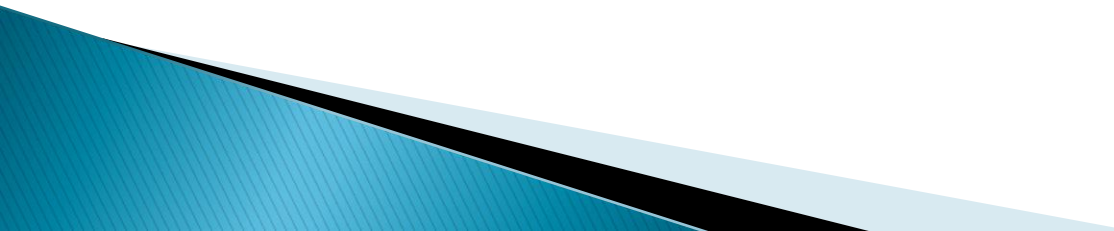
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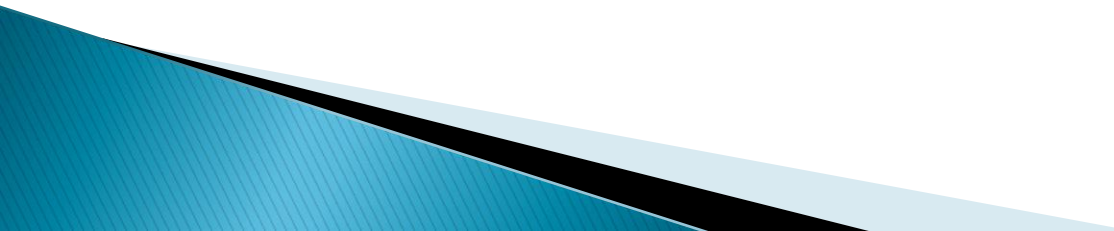9. World Health Organization (WHO): Drug-resistant tuberculosis now at record levels. http://www.who-int/mediacentre/news/releases/2010/drug_resistant_tb_20100318/en/

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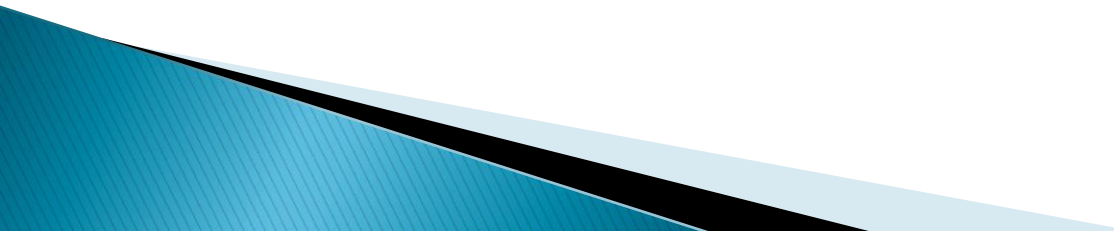
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Thank you.