Ultra Xpert in Blood and Urine and Myco/F Lytic Blood Culture in Patients with Advanced HIV Disease (AHD)

Nguyen Quang Dieu[1*], Nguyen Thi Hao[1*], Do Dang Anh Thu[1*], Nguyen Le Quang[1], Vu Quoc Dat[1], Trinh Le Phuong[1], Dang Hoang Khanh[1], Pham Ngoc Thach[2], Nguyen Thanh Dung[4], Vo Trieu Ly[3], Nguyen Phu Huong Lan[4], Do Duy Cuong[5], Nguyen Thuy Thuong Thuong[1#], H Rogier van Doorn[1#], **Thuy Le**[6#]

[1] Oxford University Clinical Research Unit, Vietnam, [2] National Hospital for Tropical Diseases, Hanoi, Vietnam, [3] University of Medicine and Pharmacy at Ho Chi Minh City, Vietnam, [4] Hospital for Tropical Diseases, Ho Chi Minh City, Vietnam, [5] Bach Mai Hospital, Hanoi, Vietnam, [6] Division of Infectious Diseases and International Health, Duke University School of Medicine, Durham, NC, USA

* And # indicate authors contributed equally

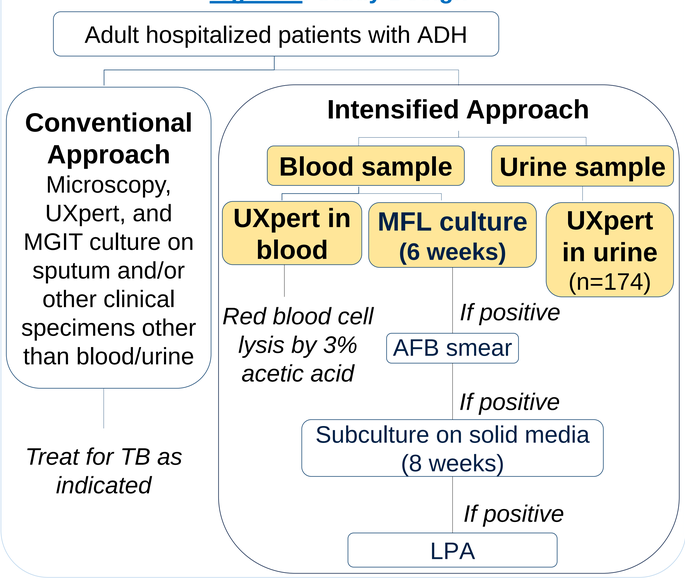
BACKGROUND

- TB is a leading cause of death in patients with advanced HIV disease (AHD). Current TB screening in AHD relies on Xpert in sputum and urine LAM testing; both have low yield.
- We conducted a multi-center prospective study testing an intensified approach of screening for TB and other mycobacteria using Ultra Xpert (UXpert) directly on blood and urine and Myco/F lytic blood culture (MFL) compared to the current symptom based diagnostic approach for TB and mycobacterial infections in hospitalized patients with AHD.

METHODS

- The study was conducted at three hospitals for HIV care in Vietnam: National Hospital for Tropical Diseases and Bach Mai Hospital in Hanoi, and the Hospital for Tropical Diseases in Ho Chi Minh City.
- Inclusion criteria: Adults aged ≥ 18 years who were hospitalized with a CD4 count ≤ 100 cells/μL OR WHO stage III or IV disease; not on ART, on ART ≤ 3 months, OR on ART > 12 month
- Participants were followed in hospital and monthly over 6 months to ascertain mycobacterial diagnoses.
- Diagnostic yield was compared between conventional and intensified approaches.

Figure 1. Study Design



1. The **intensified screening approach** using **Utra Xpert in blood and urine** and **MycoF/Lytic blood culture** increases the number of mycobacterial diagnoses by **56%** compared to the conventional approach, enabling earlier TB therapy initiation.
2. **Mycobacterial infections** accounts for **33% of OIs** (TB 25%; 3.2% MAC)
3. **High mortality** highlights need for **earlier screening**.

RESULTS

- 901 patients were recruited from February 2021 to July 2023. Follow up was completed by Jan 2024.
- 82.9% were men. Median age was 36 (IQR: 29-44) years.

Figure 2. Incidence of mycobacterial infections by conventional and intensified approaches

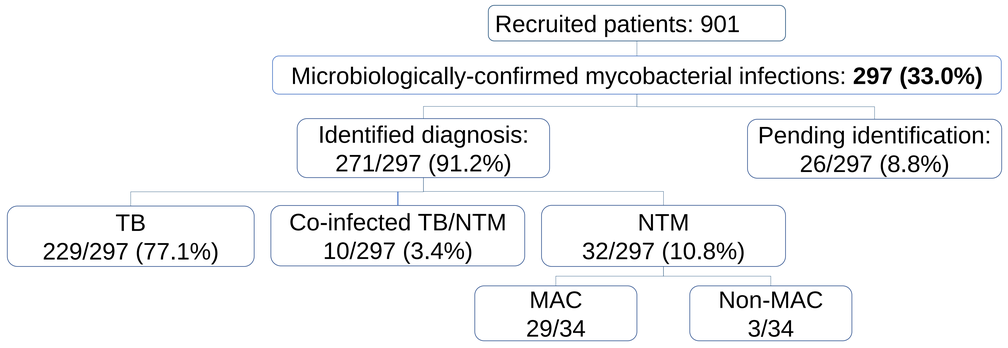
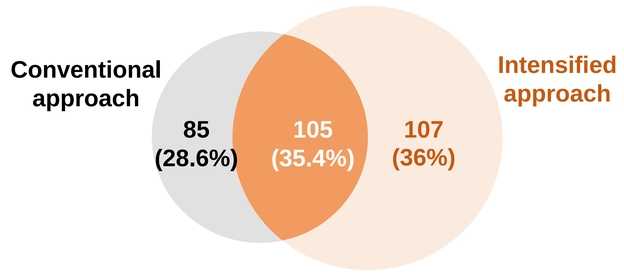


Figure 3. Venn diagram of 297 mycobacterial infections identified by conventional approach alone (grey), intensified approach alone (light orange), and both approaches (dark orange)



RESULTS

Figure 4. Venn diagram of the 107 additional mycobacterial infections identified by the intensified approach

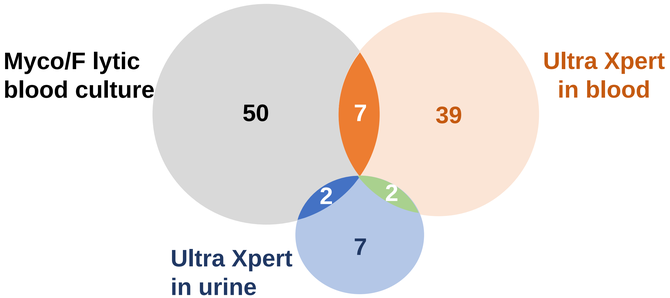


Figure 5. Time to positivity of TB and NTM in MFL blood culture

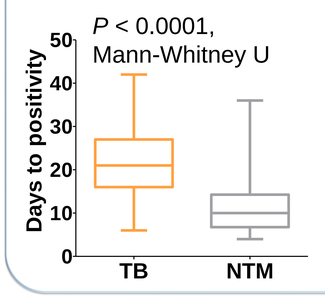
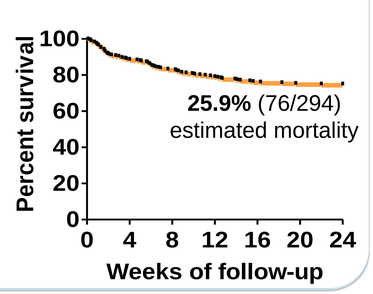


Figure 6. Survival over 24 weeks in patients with mycobacterial infections



CONCLUSIONS

- Mycobacterial infections account for 33% of OIs in hospitalized patients with AHD (TB 25%; NTM 4% [3.2% MAC]).
- The intensified screening approach increases the number of mycobacterial diagnoses by 56% (from 190 to 297) compared to the conventional approach alone.
- In 107 additional cases detected by the intensified approach only, 57 (53%) were diagnosed by UXpert directly from blood and/or urine, enabling earlier initiation of TB therapy.

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Contact: Dieu Q Nguyen, MD, Email: dieunq@oucru.org