

Reasons for missed opportunities to screen and test for TB in healthcare facilities

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Missed opportunities for TB screening and/or passive testing in clinics continues to contribute to the number of missed cases. To understand reasons for these missed opportunities, we conducted focus group discussions with clinic-based nurses. Nurses described low indices of suspicion, prioritization of seemingly more urgent ailments and clinic operational challenges as barriers to TB screening and testing. To improve TB screening and testing in clinics, standard patients should be used to identify real-time factors that impact nurses' clinical decision-making and engage in real-time feedback and discussion with nurses to help optimize opportunities for TB screening and testing.

Prior to the COVID-19 pandemic, approximately 10 million people contracted TB, of which ~2.9 million were not diagnosed or reported.¹ South Africa's National TB Prevalence Survey reported a prevalence-to-notification ratio of 1.75, mirroring the large global gap of missed cases.² Missed diagnosis of TB significantly contributes to ongoing community transmission. Clinic-based passive case detection remains the dominant mode for detecting TB.³ Unfortunately, sub-optimal implementation of clinic-based screening and testing continues to result in significant missed opportunities to diagnose and treat TB.^{4,5}

Recent work estimated that primary and community health clinics (PHC/CHC) in Buffalo City Metro Health District (BCM-HD), Eastern Cape Province, South Africa, missed upwards of 63–79% of TB patients presenting for their TB-related symptoms.⁴ Towards this, we sought to explore the reasons for missed TB screening and testing opportunities by clinic staff.

METHODS

In August 2019, we conducted three focus group discussions (FGDs), each consisting of five to six clinic nurses. A representative convenience sample of nurses from PHCs and CHCs from BCM-HDs, three sub-districts was selected in consultation with health department leadership and clinic managers. FGD participants included TB focal nurses and non-TB focal nurses with TB work experience ranging from 2 to 15 years. FGDs were conducted by two senior researchers (AMM and EM) (>10 years' facilitation experience) in English. Participants provided written consent and agreed to be audio-recorded. Based on existing litera-

ture and our prior research,^{4,6} we developed a FGD protocol with the following domains: clinical index of suspicion and symptom presentation, sputum collection processes, and clinic environment. Audio recordings were transcribed and analyzed using a constant comparison⁷ and exploratory approach. Transcripts were independently open-coded by three members of the qualitative research team. Codes were then discussed, refined, merged into a final codebook, and applied to all transcripts. Memos about presenting TB patient characteristics as reported by nurses, including screening processes and gaps, were also drafted. Findings were consolidated into matrices, supported by field notes and illustrative quotes, and complemented by literature reviews. These findings were iteratively refined at team meetings with study investigators to define factors influential in nurse decision-making.

Ethics

Human research ethics approval was provided by The University of Pretoria Research Ethics Committee, South Africa (445/2014). The Buffalo City Metro Health Department, Eastern Cape Province provided approval and permission to conduct FGDs with clinic nurses.

RESULTS

We categorized nurses' discussion of missed opportunities to screen and/or test individuals for TB into three domains: clinical decision-making, deprioritizing of TB screening and testing, and clinic environment. Illustrative quotes are presented in the Table.

Clinical decision-making

When patients presented with symptoms, nurses discussed how their decision to screen and/or collect sputum was influenced by the type and duration of the patient's cough and symptom severity (Quote 1.1). Although most nurses did not understand why a patient with cough would not be screened (Quote 1.2), others reported treating a short or dry cough as a common cold. When a patient's symptoms were perceived as ambiguous, or other illnesses were suspected, patients were typically asked to return if their symptoms persisted or increased in severity. Deterioration of symptoms would instigate TB screening. In other situations, rather than always administer South Africa's standard screening questions,³ nurses described asking alternative versions of these questions (e.g., 'Are your clothes fitting you well?'), especially for patients with ambiguous symptoms (Quote 1.3).

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TABLE Main findings gaps in TB screening

Theme	Illustrative quotes
1. Clinical decision-making	<p>1.1 Type and duration of cough: I saw this patient but I saw her maybe in June or July... and she was coughing for 2 days [with] no other symptoms. And, then today, she came in and...said she has been coughing...but I didn't give her antibiotics; it was just paracetamol because when I checked I can see she's having common colds....So I saw her again, that is third time, and then she said she's having [this] cough, and then I looked and I said: 'Yoh, this patient was coughing when I saw her.' Although it was 2 days, and I was thinking: 'Why did I not give her like a sputum bottle?' So today I gave her [a sputum bottle to collect a sample for testing]</p> <p>1.2 Incomprehension for missing TB cases: ... I don't know whether it's personal, because for me, when a patient is coughing, one thing I think of is TB. I screen for TB. I collect sputum, even if you [patient] came for a headache. Once you cough, I just know that I need to screen for TB, and have this sputum so that I can send to the lab.</p> <p>1.3 Re-phrasing TB-symptom screening questions: The truth is that we get familiar and get used to that book [TB screening register], and see the patient is asymptomatic. And then you just write it over [tick no symptoms but don't ask screening questions] because there's no symptoms. She's not coughing. She's healthy. She's fine. And then the truth is that we don't screen... Others maybe they are not coughing, maybe they say: 'When I'm walking, I feel tired or difficulty in breathing'. Others say: 'I am not eating and maybe the way I was eating before'. Or, the other [type of patient] is not losing weight, we say we can ask them: 'Are your clothes fitting you well, like the same it was fitting you?'</p>
2. Deprioritizing TB screening and testing	<p>2.1 Prioritization of other health conditions/non-TB-related symptoms Maybe it could be, let's say, this client comes with, let's say, 4–5 different things [symptoms] right. Then, you ask about the TB symptoms first. Then, this client says 'I've got also stomach-ache', and this and this, then you end up focusing more on this one [symptom], and then forgetting about the TB treatment and then they go [leave the clinic]. And also at our clinic, we had a patient who comes often with a headaches, abdominal pains. We treat this patient. Also, [the patient] comes back again, but the other day, I gave this patient a sputum jar....When it comes back from the lab, she was MDR with no symptoms of TB.</p>
3. Clinic environment	<p>3.1 System barriers including high patient loads Sometimes you see a pile of patients. The waiting room is full, and some people are even standing with their feet. So, you just want to get the job done without properly 100% screening the patient. So, I think that's one of the issues that we have. Well, that I have.</p> <p>3.2 Patient-provider communication challenges ... I think the patients, or the communities, it should be instilled that they should respect the health care workers, because with their lack of respect, it makes it difficult for you to do like the proper screening...the patient on the entrance [at first meeting], he gives you a bad attitude, and you [can lose] what is on your mind, what you are supposed to do [TB screening], like: 'No, I'm just fed up with this one. I just want to treat for whatever that she came here for and she must leave....'</p> <p>3.3 "Difficult" patients with no obvious TB symptoms There are those patients that come to the clinic like...I'm going to speak the truth now. Those patients that come to the clinic, like three times a week, they come late. Maybe the patient will come at half past three, and then you are sitting there, you want to go home. The patient does not have a cough of cause, and she will tell you about general body pains and things, and you know the patient was here on Monday, today is Thursday, the patient is still here [coming to the clinic]. She is not coughing. She's not losing weight, but she likes to come. I think she likes to come to the clinic. Then, let me make it clear, I think she likes to come to the clinic, then she comes late, and you just give paracetamol and rubbing stuff, then you don't screen. So it happens [that you don't screen with such types of patients].</p> <p>3.4 Male patient perceptions The men's are [have a] "I don't care" [attitude]. Even if he is coughing, even if he has come for a headache, although he is coughing, he says: 'I said to you I've got a headache [but] don't mind about that thing, coughing'. Although you see that maybe he needs to be screened for TB, then he takes that bottle and says: 'I will come tomorrow'. But he doesn't come that one, and they don't want to be followed because they said 'I am coming for a headache now'. Although it's difficult for-for them, maybe they need a campaign, I don't know, or they need a talk [about TB testing and treatment] maybe in community halls or what.</p>

Prioritizing more urgent ailments

In addition, nurses discussed difficulties in arriving at an index of suspicion to screen and/or test for TB when patients presented with multiple ailments. Nurses described situations where patients presenting with other conditions unrelated to TB, including headaches and abdominal pain (Quote 2.1), may have resulted in TB investigations being deprioritized relative to the patient's more urgent or severe health conditions.

Clinic environment and perceived patient behaviors

Deprioritization and deterrents for screening can also be explained by commonly reported barriers to service delivery, includ-

ing staff shortages, workload, and operational issues (Quote 3.1). Nurses also described how poor patient-provider communication and patients with a "bad attitude" negatively impacted their decision to conduct TB screening and testing and the flow of patient care (Quote 3.2 and 3.3). If patients presented with no apparent TB symptoms, nurses described addressing the symptoms for which these patients sought care.

In general, men were viewed as more difficult to screen, less likely to complete treatment, and more likely to be 'hiding' from community health workers who check up on them (Quote 3.4). The perception that men were less cooperative in producing a spot sputum at the clinic led nurses to send men home with a

sputum collection jar. This was even though they suspected that men would not return with a specimen. Nurses suggested that men may require support and engagement outside the clinic such as community health campaigns.

DISCUSSION

We found intersecting barriers that influenced nurses' decision to conduct TB screening and testing. Ambiguous symptoms, prioritization of seemingly more urgent ailments, and operational challenges were discussed as barriers to TB services.

Our findings align with other studies from sub-Saharan Africa that focused on understanding gaps in TB screening and testing services.⁶ Symptom ambiguity deprioritized TB screening, or modifications thereof, for more urgent health concerns or patients. There was also a perceived lack of patient readiness to complete the TB screening process. Recent work revealed risk screening may improve TB case-finding vs. standard symptom screening.⁸ Incorporating risk screening into policy and guidelines may address barriers relating to symptom ambiguity and deprioritizing of screening relative to more severe symptoms.

Although nurses receive continuous training on TB screening and testing guidelines and procedures, implementation barriers remain, and there is limited knowledge of how well such training interventions influence clinical practice to include communication with patients. Towards this, standard patient (SP) approaches may be useful to understanding nurses' screening practices during a clinical consultation. In consultation with local health departments, SPs can be trained to assess nurse screening practices. While SPs have been deployed to assess quality of TB care with

real-time feedback,⁹ similar SP approaches should be considered for nurses to address symptom ambiguity and improve care of multiple health conditions in one visit. Furthermore, such an approach may build upon existing nurse continuing education for TB testing and treatment such that SPs can assess service gaps and provide immediate feedback to nurses as they apply skills learned for improved patient communication and TB screening and testing.

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Les occasions manquées de dépistage de la TB et/ou de tests passifs dans les cliniques continuent de contribuer au nombre de cas manqués. Pour comprendre les raisons de ces occasions manquées, nous avons organisé des discussions de groupe avec des infirmières travaillant dans des cliniques. Les infirmières ont décrit les faibles indices de suspicion, la priorité accordée à des affections apparemment plus urgentes et les défis opérationnels

des cliniques comme des obstacles au dépistage de la TB. Pour améliorer le dépistage et le test de la TB dans les cliniques, il faudrait utiliser des patients standard pour identifier les facteurs en temps réel qui influent sur la prise de décision clinique des infirmières et engager une rétroaction et une discussion en temps réel avec les infirmières pour aider à optimiser les occasions de dépistage et de test de la TB.