

The Need to Emphasise on Confirmatory Test in the Diagnosis of Syphilis in Low and Middle Income Countries

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Dear Editor,

Authors have done several studies on syphilis in different populations in this setting [1-4] and read different articles on syphilis from Low and Middle Income Countries (LMIC). Authors have noted that diagnosis of *Treponema pallidum* (*T. pallidum*), an aetiology of syphilis in most of LMIC is challenging due to poor understanding of the recommended algorithms by the World Health Organisation (WHO) [5]. This practice is largely contributed by lack of proper algorithm that is well understood by health professionals. The diagnosis of syphilis requires the use of both Treponemal and non treponemal tests. treponemal tests detect antibody specific to *T. pallidum* proteins while non treponemal tests detect antibodies against antigens from damaged host cells [6]. Lack of treponemal test in the past could have contributed to this practice. Here, authors report possibility of misdiagnosis of syphilis by using non treponemal test only which is the current practice in many of LMIC including Tanzania.

Currently, routine practice of *T. pallidum* diagnosis in Tanzania is based on the use of non treponemal test; Venereal Disease Research Laboratory (VDRL) or Rapid Plasma Reagin (RPR) only without confirmation by treponemal tests such as *Treponema pallidum* Haemmagglutination Test (TPHA) or *Treponema pallidum* Particle Agglutination test (TPPA). Analysis of the available data from few previous studies conducted, showed that about 1-4% of patients tested for syphilis were wrongly treated as syphilis cases [Table/Fig-1] [7-9], with false positive of 8.2% reported in a study in Ethiopia [10]. Treating wrongly diagnosed patients as syphilis cases will somehow contribute to progression of some other diseases which could have been diagnosed and managed well at the earliest time. In addition, this also exposes the patients unnecessarily to antimicrobials hence, exacerbate the problem of antimicrobial resistance.

S. No.	Study population	Sample size	Non treponemal test	Treponemal test	% wrongly treated
1	Adults HIV seropositive [9]	450	63/450 (14%)	45/450 (10%)	18/450 (4%)
2	Women with macerated stillbirth [8]	300	30/300 (10%)	18/300 (6%)	12/300 (4%)
3	Women opting for Intrauterine Contraceptive Device (IUCD) [7]	150	10/150 (6.7%)	8/150 (5.3%)	2/150 (1.3%)

[Table/Fig-1]: Summary of treponemal and non treponemal test results from studies in Mwanza [7-9].

Human Immunodeficiency Virus (HIV)

In High Income Countries (HIC), an improved diagnostic assays has much reduced the consequences of misdiagnosis especially on infectious diseases including *T. pallidum*. In LMIC some efforts have been made, however, effectiveness in the diagnosis has not been well emphasised. The key step to control these infections is

having reliable laboratory results based on the approved algorithms. Forward algorithm that involves non treponemal followed by treponemal tests has been widely recommended in many countries due to its cost-effectiveness as compared to reverse algorithm which is commonly practiced in HIC [11-13]. Non treponemal tests are non specific because they detect antibodies that can be produced in response to antigens as a result of host cells damage while treponemal tests detects antibodies specifically produced in response to *T. pallidum* infection [6]. Despite being expensive reverse algorithm has advantage of diagnosing past infection that would have been missed in the forward algorithm [11].

With this regard, authors recommended proper diagnosis of syphilis based on recommended algorithms to avoid unnecessary treatments. In line with this, authors recommend further studies to evaluate cost-effectiveness of reverse algorithm in managing patients with syphilis in LMIC where syphilis is endemic. The recommended practice is possible due to the fact that treponemal tests are available in the markets in many LMIC underscoring the need to change the attitude of health professionals for the betterment of managing patients.

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