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A RETROSPECTIVE ANALYSIS OF THE PERFORMANCE OF VITEK®2 COMPARED TO MANUAL BROTH MICRODILUTION FOR COLISTIN SUSCEPTIBILITY TESTING OF ACINETOBACTER BAUMANNII CLINICAL ISOLATES

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Medicine in Clinical Pathology.

Johannesburg, August 2021

Declaration: Student's contribution to article and agreement of co-authors

I, **Vuyolwethu Fadana**, student number **705549**, declare that this **Research Report** is my own work and that I contributed adequately towards research findings published in the article stated below which are included in my **Research Report**.

Signature of Student ..... Date 04/08/2021

Name of Supervisor (1) DR TEENA SUSAN MARY THOMAS

Signature of Supervisor (1) ..... Date 5 AUG 2021

Name of Supervisor (2) Nina von Knorring

Signature of Supervisor (2) ..... Date 5.8.21

ABSTRACT

Studies comparing the performance of Vitek®2 against manual broth micro-dilution (mBMD) for colistin susceptibility testing have yielded conflicting results. Although the latter is the recommended reference method, it is not readily available. A retrospective analysis was performed to assess the performance of Vitek®2 against mBMD on colistin minimum inhibitory concentration determination in extensively-drug resistant A. baumannii isolates and to determine the epidemiology of these isolates at Charlotte Maxeke Johannesburg Academic Hospital. Vitek®2 performance as compared to mBMD was as follows: categorical agreement 89%, essential agreement 56%, major error rate 8% and very major error rate 55%. With these results Vitek®2 cannot be recommended as an alternative to mBMD for colistin susceptibility testing. Of the isolates analysed, 71% were from adult patients, 18% from neonates and the remainder (11%) from older paediatric patients. Differences in ward distribution between the age groups were noted. These require further investigation.

Keywords: Acinetobacter; colistin; broth microdilution; Vitek®2

ETHICS CLEARANCE

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R14/49 Dr Vuyolwethu Fadana

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M191048 MED 19-10-043

NAME: (Principal Investigator)	Dr Vuyolwethu Fadana
DEPARTMENT:	School of Pathology Charlotte Maxeke Johannesburg Academic Hospital
PROJECT TITLE:	A retrospective analysis of the performance of Vitek®2 compared to manual broth micro-dilution for colistin testing of susceptibilty Acinobacter baumanni clinical isolates
DATE CONSIDERED:	25/10/2019
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Dr Teena Thomas
APPROVED BY:	Dr C Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	03/12/2019

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 301, Third floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed October and will therefore be due in the month of October each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature

03/12/2019
Date

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