

SUDAN UNIVERSITY OF SCIENCE AND TECHNOLOGY



COLLEGE OF ENGINEERING

DEPARTMENT OF BIOMEDICAL ENGINEERING

A Project Submitted In Partial Fulfillment For The Degree Of B.Sc.

In Biomedical Engineering

***A Proposal Of Standard Operating Procedures
And Policies For Medical Laboratories
(Hematology & Microbiology) Instrument
In Sudan***

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ABBREVIATIONS

GHTF	Global Harmonization Task Force
ISO	International Standard Organization
CBC	Complete Blood Counts
RBC	Red Blood Cell
WBC	White Blood Cell
PLT	Platelet
CO2	Carbon dioxide
MOH	Ministry of Health
US	Ultra Sound
FDA	Food and Drug Administration

EC	<u>European Commission</u>
NHS	National Health Service
CE mark	<u>Council of the European Union</u>
EU	European Union
WHO	World Health Organization
RPM	Read Per Minute
PPE	Personal Protective equipment
CFU	<i>colony-forming unit</i>
ID	Identification
CT	<u>computed tomography</u>
MRI	Magnetic resonance imaging

ABSTRACT

Laboratory for the microbiological, hematological to examination of materials derived from the human body for the purpose of providing information for diagnosis, prevention and treatment of diseases in or assessment of the health of, human beings, and which may provide a consultant advisory service covering all aspects of laboratory investigation including the interpretation of results and advice on further appropriate investigation.

the project provide design an (SOPs) that provide guidance for which laboratories (hematology and microbiology) instruments to improve the quality of instruments in terms of safety and performance, Improve health care system as general and also provide a good riddance from waste comes from devices to prevent contamination that may occur, all these purpose can be achieved by follow the steps of SOPs:

List of technical specifications of hematology and microbiology instrument, operation, safety, contamination, environment, labeling, class.

The experimental result is checked for used hematology and microbiology instrument in some hospital.

These result show that all hematology and microbiology in some hospital under SOPs

المستخلص

ان معامل امراض الدم والاحياء الدقيقة تستخدم لفحص العينات الماخوذه من جسم الانسان لاغراض التشخيص والوقايه والعلاج من الامراض وتقييم حاله الصحيه والامداد بخدمه استشاريه توفر كل جوانب الفحوصات المعمليه والتي تتضمن تفسير النتائج واعطاء النتائج الملائمه .

هذا المشروع يمد بتوجيهات تشغيل قياسي لاجهزه المعامل (معامل امراض الدم-معامل الاحياء الدقيقة) لتحسين جوده الاجهزه بمفهوم السلامه والاداء وتحسين نظام الرعايه الصحيه وحمايه العاملين والاجهزه من التلوث.

اجراءات التشغيل القياسيه تتضمن المواصفات التقنيه , عمليه التشغيل , السلامه, ازاله التلوث والبيئه لاجهزه امراض الدم والاحياء الدقيقة.

نتائج التجارب التي تم الحصول عليها من خلال بعض المستشفيات التي تتوفر بها اجهزه امراض الدم والاحياء الدقيقة اوضحت ان هذه الاجهزه لا تتطابق مع الاجراءات القياسيه .

CHAPTER 1

INTRODUCTION

1.1 Project overview

The laboratory equipment is an integral part of the medicine practice and health care, There are a number of this laboratory equipment in hospital and laboratories which without exception were made out of Sudan.

This situation creates many problems like how to get the best of device and how keep them work safety and sustainability and efficiency and it is identical to the environment.

The used medical and laboratory equipment entered where imported a large number of equipment which were found contaminated and others do not include essential parts and accessories.

Recently many attempts began from number of institutions to put the foundations and controls to bring medical devices and management, one of those is council of pharmacology and toxicology.

The proposed of sops for devices that for guarantee the operation and specifications whether new or used is due to the absence of standard in Sudan for devices including laboratory devices.

1.2 Project problem statement

Absenteeism of standard operation procedures in Sudan which provide Guidance and crucial roles to guarantee the uniformity of the performance of the laboratories (hematology and microbiology) instruments.

1.3 Project objectives

- i. Design an (SOPs) that provide guidance for which laboratories (hematology and microbiology) instruments to improve the quality of instruments in terms of safety and performance.
- ii. Improve health care system as general.
- iii. Good riddance from waste comes from devices, to prevent contamination that may occur.

1.4 Project organization

Chapter one: presented the project introduction.

Chapter two: presented the Introduction of sops and hematology& microbiology equipment.

Chapter three: presented the literature review

Chapter four: Described the of project methodology.

Chapter five: shows results and discussions.

Chapter six: include Conclusion and the future work.