

Assessment of Awareness Level about Bio Risk Management among Staff of Different Academic Laboratories

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Abstract: This study was designed to survey the present Biosafety and Biosecurity levels of academic clinical laboratories in some universities of Baghdad and private clinical laboratories in order to evaluate the present awareness toward biosafety and biosecurity furthermore to determine the gaps and to evaluate the existing level of Biorisk management practiced in these laboratories and to keep surrounding community safe additional to safe workers from outbreak infectious diseases in the Baghdad. The survey was done in Baghdad city during the November and December 2016, composed from staff laboratories in (Al-Mustansiriyah, technology and Osol Alden universities) additional to workers in private and governmental laboratories (workers have different graduation background). The survey was designed depending on Sandia national laboratories global biorisk management curriculum library (GBRMC). Results of the survey were distributed to the relevant target audience and increased the level of information on these topics furthermore to accomplish biorisk management in corresponding with CWA 15793-2008, moreover the results have been reflected the current level of biosafety practices in clinical laboratories while the major gaps were fixed in all critical areas of Biosafety and Biosecurity, including risk assessment, standard microbiological practices, primary barriers/personal protective

equipment, secondary barriers /laboratory design and bioethics. The gaps implicated the following:

- Biosecurity is not clear or understood
- Didn't found protocol/ guidance for reporting laboratory acquired infection (LAIs)
- Most of Technicians that working in private laboratories didn't receive any training or workshops on Biorisk management and relevant topics while limited training for biorisk management is available for continual basis to top stockholders
- No regulatory organization monitor Biorisk/biosecurity activities or laboratory registration

Key words: biorisk management, biorisk assessment, global biorisk management.

Introduction:

Bio risk management play important role in prevention and control on infectious diseases especially in medical laboratories, in fact the laboratory services consider the essential and fundamental part of all health systems, moreover time and reliability of medical tests are the effective way in patients treatment, so accurate laboratory diagnostic information are demanded (1). A lot of therapeutic decisions depended on data from health laboratories, at the time of outbreaks diseases or other public health events, laboratories become a powerful tool in the public health investigation and response mechanisms (2). Now a day world cannot tolerant unreliable laboratory results, squandering precious time, squandering precious samples and precious live, laboratories present their services to many clients: physicians, patients, researchers and public health programs for make decisions. Fortunately many academic laboratories, private laboratories and hospitals be the public or private participate in public health and health care perfection through their diagnostic activities (3). The precise thinking, approach study of predominant practices and recommendations, review of international norms and standard, and relevant ethical consideration furthermore survey in resent advances and rends in the microbiology and pathology has obviously switched attention to the level of competency in treating with biohazards agents in laboratories especially clinical laboratories in Iraq. Unfortunately, until now a day there is a little attention is paid to the safe handling and disposal of biological samples and cultures coming for diagnostic and analysis so that play role in increase the level of hazard to the laboratory workers and participate in spreading infection to the community and environment (4). The main purpose of this study were to establish a culture in which Biosafety and Biosecurity practices become routine in these laboratories, increase awareness about Biosafety

and Biosecurity specially with current period that Iraq suffering from terror, focusing on gaps belong the coordination and establishing the committee in the universities laboratories and private laboratories.

Material and methods: the survey was done in Baghdad city, Iraq during the period November and December 2016, this survey was done depending on questionnaire was designed depending on Sandia national laboratories global biorisk management curriculum library (GBRMC) which provided reference of materials for this effort to comply with international policies for biosafety and biosecurity, the comprehensive survey questionnaire was consist of 40 questions, which highlighting on different aspects of biorisk management according to CWA 15793-2008 (European Commission for Standardization, 2008) and was relied in Baghdad laboratories (5). The persons participated in survey belong to different universities college of Science/ Al-Mustansiriyah university, technology university, osol Al-dein university those persons have different levels of educations (students of graduate, Academic staff) additional to some of workers in private laboratories.

Results and discussion

The survey was done by participating one hundred person belong to different universities as it appear in table (1)

Table (1): groups of participating in survey

University	Level of education	No. of participants
Al-Mustansiriyah	Graduate students	20
Al-Mustansiriyah	Staff members	30
Al-technology	Staff members	10
Osal Al-den	Staff members	20
Private laboratories	Staff members	20

All those participants' work with laboratories and 70% of these laboratories are clinical laboratories which dealing with blood and pathogens additional to research and developments work. Other laboratories 30% not handling any toxins or pathogens were fundamentally clinical diagnostic laboratories without any research responsibilities. Although the majority of participant work in public sector some participants work in private laboratories 20%, these laboratories 80% had facilities an organizational chart, and the survey was revealed the major size of these laboratories was small and the space of working is narrow furthermore each laboratory work in it at less 7 employee, additional to these laboratories didn't have full arrangement for work students, graduate students or trainees. The survey was revealed that 60% of laboratories display minimum level of awareness regarding to biosafety and

biosecurity, the questionnaire was divided into two sections, biosafety and biosecurity and the results are discussed according these topics

Biosafety: the survey was appeared the majority of laboratories belong to analysis of their activities, classified as BSL-2 labs, however the results were indicated that activates were carried out at GLP. The level of competency, belong to the qualifications, experiences and training of the technical and management staff work in the laboratory was planted to be adequate in the 80% of the surveyed laboratories despite of all owned the local qualifications by their local governmental authorities. However the employee in these laboratories were received few training program on biosafety and biosecurity and these training were appeared as very shorts lectures and not enough to draw full view on biorisk management, in addition 80% of these laboratories do not have any procedures for assessment of technical and professional performance in the place furthermore they do not have any association with any professionals organization. The research and development laboratories had very little corporation with national and international professional organizations. Also the level of biosafety management was not adequate in these laboratories with only 25% demonstrating commitment to biosafety and security at their facility with the plans were being developed while only small number had clearly defined roles and responsibilities as seen in table (2).

Table (2): Management commitment to biosafety/Biosecurity in the survey laboratories

Level of biosafety management at place of facility	No.	%
Management has not made a commitment biosafety/ biosecurity at the facility	50	50%
Management has stated acommitment to both and is working to implement it, but it is still in process	50	50%
Management has clearly defined roles and responsibilities for all aspects.	0	0%

The survey also revealed the laboratories didn't have any books or biosafety manuals just some of their have a little number of posters refer to safety guide. The requirements for a good laboratory design were not fully implemented and 20% have no specifications for basic laboratory design criteria such as adequate illumination, good secured shelving and ease of cleaning this results was agree with some of researches in same fields (6). However 30% of laboratories have all three of these essential conditions, unfortunately 50% of these laboratories didn't have enough storage space. Biosecurity: in 50% of laboratories was shown no commitment to security additional to 50% showed partial commitment moreover no strong

commitment to security. The risk assessment regarding to hazardous agents, procedures and the security were in place is primary evaluated furthermore no qualitative risk assessment had been performed to define the risks that a security system should protected against or to define a level of acceptable risk (7).

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