Quantifying the magnitude of hazardous incidents among laboratory staff in Kenya: Preliminary results of a national health care workers survey, 2014-2015

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Background

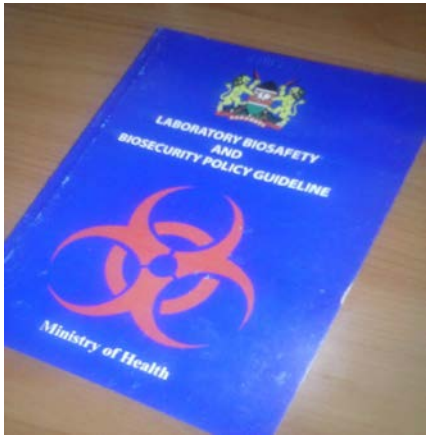
- Clinical laboratories in health care facilities receive clinical specimens with requests ;
  - infectious nature of clinical material is unknown
  - a broad request for microbiological examination for multiple agents is usually made (e.g., sputa submitted for “routine,” acid-fast, and fungal cultures).
  - US Department of Health and Human services CDC, NIH, 2009, Biosafety in microbiological and biomediacl laboratories 5th edition

Background

- Laboratory staff therefore exposed to risks in the course of handling infectious materials
- Bio-safety training programs should take into account the needs assessment of the learners
  - includes assessment of the safety climate at health facilities and prevalence of occupational injuries (WHO manual, 2004)

Objective

- To quantify the magnitude of hazardous incidents among laboratory staff in Kenya



Methods

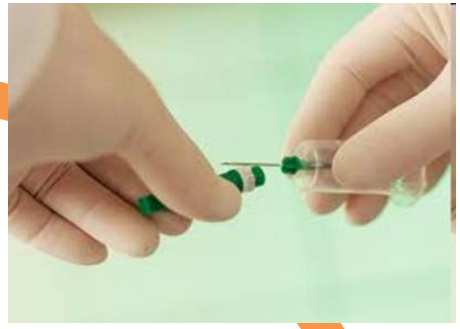
- As part of the Kenya's premier national public health laboratory's training on bio-safety and bio-security between August 2014 and March 2015, a survey on occupational hazards and the safety climate in laboratories in Kenya was conducted among laboratory staff
  - Descriptive statistics was used to summarize types of hazardous incidents experienced by laboratory personnel
  - Logistic regression was used to describe factors associated with reporting hazardous injury

Characteristics of laboratory staff who took part in the survey

- 294 laboratory personnel participated
  - Excluded from the analysis
    - 10 from Research laboratories
    - 2 from Reference laboratories
- 282 included in final analysis
  - 204 (72%) from government-owned health facilities
  - 145 (51%) had worked at the same facility for 4+ years
  - 142 (50%) Vaccinated against Hepatitis B virus
  - 48 (17%) ever trained on biosafety & biosecurity
  - 68 (24%) had an incident reporting mechanism present

Prevalence of Occupational hazards

6% falls



41% Sharps injuries

7% Hazardous agents ingestion

Ever experienced a hazard 238/282 (84%)

33% Hazardous spills

17% Hazardous gases inhalation

18% Subcutaneous chemical exposure

Conditions under which incidents occurred

47% Lab procedure

29% Spillage

14% Waste handling

11% Contaminated work surfaces

9% Lifting heavy object

5% equipment maintenance

5% Use of devices

3% Inappropriate dressing

Personal Protective Equipment donned at time of injury

11 (5%) Respirator

189 (79%) Gloves

164 (68%) Lab coat

5 (2%) face shield

3 (1%) goggles/safety spectacles

6 (2%) Other PPE
3 cotton surgical gown
1 mask
1 shoes covers
1 closed shoes)

Reporting of incidents

- Only 132/238 (55%) injuries reported
  - 11/14 (76%) of falls
  - 69/98 (70%) of sharp injuries
  - 44/79 (56%) of hazardous spills
  - 22/43 (51%) of subcutaneous chemical exposures
  - 19/41 (46%) of inhalation of harmful gases
  - 3/7 (43%) of ingestion of hazardous agents

Reporting of incidents

Participant characteristics		Reported an injury/Total 132/282 (47%) n/N(%)	Crude Odds ratio (95% CI)	P value
Ever been trained	Yes	30/50 (60)	1.8 (0.9-3.3)	0.06
	No	105/232 (45)	Ref	
Vaccinated against HepB	Yes	79/164 (49)	0.9 (0.6-1.6)	0.91
	No	57/116 (49)	Ref	
Presence of reporting mechanism	Yes	47/75 (63)	2.1 (1.2-3.5)	0.007
	No	89/205 (43)	Ref	
Work duration in facility	<4 years	56/110 (51)	1.2 (0.7-1.9)	0.57
	4+ years	80/170 (47)	Ref	
Facility type	Governme nt owned	119/256 (46)	0.5 (0.2-1.2)	0.17
	Other	15/22 (68)	Ref	

Intervention Instituted upon reporting a hazardous incident

- Remedial action instituted for 110/132 (83%) of reported incidents
  - 3/3 (100%) of ingestion of hazardous agents
  - 64/69 (93%) of sharp injuries
  - 18/22 (82%) of subcutaneous chemical exposures
  - 35/44 (80%) of hazardous spills
  - 14/19 (74%) of inhalation of harmful gases
  - 8/11 (73%) of falls

Limitations

- Incidents surveyed were by self report and were not verified by review of facility incident-reporting logs

Conclusion

- High incidence of injuries maybe attributed to low rates of PPE use at the time of incidents [4]
- Rates of reporting of incidents was higher in the laboratory than has been observed among other cadres [5]
  - Maybe attributed to the safety climates at these institutions [6.]

Recommendations

- Institute training on bio-safety and bio-security for laboratory staff [7]
- Site assessments to
  - Verify the safety climate where laboratory staff were drawn from
  - propose infrastructural changes and equipment to improve the safety climate in laboratories
- Implement an efficient, multifaceted legislation covering all aspects of occupational exposure
  - E.g. an integrated information and incident management system to routinely document occupational hazards [8]

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