

Report of Trend for Compliance of Infection Prevention and Control Standards in Tanzania from 2010 to 2017 in Tanzania Mainland

Hokororo J^{1*}, Eliakimu E¹, Ngowi R¹, German C¹, Bahegwa R¹, Msigwa Y¹, Kazaura K², Simbeye D² and Komba A³

¹Ministry of Health, Community Development, Gender, Elderly and Children, Dodoma, Tanzania.

²Centers for Disease Control and Prevention, Dar es Salaam, Tanzania.

³Jhpiego - an Affiliate of John Hopkins University, Dar es Salaam, Tanzania.

*Correspondence:

Hokororo J, Ministry of Health, Community Development, Gender, Elderly and Children, Dodoma, Tanzania.

Received: 02 April 2021; Accepted: 04 May 2021

Citation: Hokororo J, Eliakimu E, Ngowi R, et al. Report of Trend for Compliance of Infection Prevention and Control Standards in Tanzania from 2010 to 2017 in Tanzania Mainland. *Microbiol Infect Dis.* 2021; 5(3): 1-10.

ABSTRACT

Introduction: The Ministry of Health of Tanzania has been implementing activities to improve infection prevention and control (IPC) practices since 2004. Activities included development of guidelines and standards, procurement of equipment and supplies, training of health workers, and supportive supervision to enhance compliance to standards. Since 2010, a team of experienced National IPC Assessors has been visiting health facilities in Tanzania Mainland to supervise and assess compliance to Standards. This paper, aimed to determine level of compliance to IPC standards using data from 2010 to 2017.

Methods: National assessors carried out assessments using IPC Standards tools for Hospitals and Health Centers, through observation, simulations, records and documents review, and interviews. Data was entered in Excel Sheet and analyzed to get facility score in percentage as well as average score of all assessed facilities. Secondary data analysis from 2010 to 2017 has been done to determine compliance to the standards.

Results: The baseline IPC standards compliance in all assessed facilities was 32% in 2010, improved to 53% in 2014, and dropped to 34% in 2017.

Discussion: The increase in average scores between 2010 and 2014 was contributed by improved implementation of action plans, coupled with IPC advocacy and follow-ups done by partners and the Ministry. Inadequate trainings in some of the assessed facilities contributed to the decrease in compliance in 2017.

Conclusion: Compliance to IPC standards in health facilities between 2010 and 2017 is below expected level, and differ by levels of health care delivery. Continued training and follow-up are recommended.

Introduction

The Ministry of Health-Tanzania Mainland has been implementing activities to improve the adherence of infection prevention and control (IPC) guidelines and standards in health facilities including improvement of injection safety (IS) practices since the year 2004 [1,2]. While, having some focus on injection safety, the Ministry emphasized on the broader perspective of IPC - prevention of blood

borne, air borne and other pathogens through implementation of standard precautions and transmission-based precautions by training of health care workers (managers at various levels and frontline staff in health facilities, as well as tutors in health training institutions so that they can train the pre-services staff [i.e., their students]), supportive supervision, and provision of equipment and supplies, which included procurement of injection devices with

reuse prevention features and personal protective equipment such as gloves of various types [1,3-5]. The aspect of injection safety was made to stand-out of the broad aspect of IPC because of the then burden of unsafe injections, necessitating a greater attention to it in programmatic design in the context of IPC [3,4]. As a result of the activities, injection safety practices were improved in the country up to 98% [6-8]. Implementation of the IPC activities was supported by the United States - President's Emergency Plan for AIDS Relief, (PEPFAR) which was launched in 14 African and Caribbean countries including Tanzania in 2003 [9]. The activities aimed to address adherence to IPC guidelines, Standards and procedures in various levels of healthcare based on health system of Tanzania. The IPC standards were developed based on the recommendations of the principles of IPC by the World Health Organization (WHO) Centres for Disease Control and Prevention (CDC) and national guidelines. They were developed by experts of IPC at national level, health facilities and other stakeholders from governmental and non-governmental organization. Health facilities in Tanzania mainland are categorized based on the type of services provided and geographical locations as shown in table 1.

Table 1: Categories of HFs in Tanzania.

Category of Health Facilities	Geographical Area served	Type of services provided
Dispensary	Village	A health facility that provides primarily outpatient services and has a maximum of 4 observation beds. The key interventions include Out Patient Department services, Reproductive, Maternal, Neonatal and Child Health, Pharmaceutical Services, Laboratory services, basic Dental services and is supervised by a licensed Clinical Officer, Assistant Medical Officer or Medical Officer.
Health Center	Ward, which has several villages	Is a health facility that provides all services done at dispensary and in-patient services including Comprehensive Emergency Obstetric and Neonatal Care (CEmONC) with a minimum bed capacity of 15?
Level I Hospital	Council (Local Government Authority)	Refers to a hospital with a capacity of providing all basic care services including Medical, Paediatric and Child Health, Obstetrics and Gynecology, Dental and Surgical services. Bed capacity ranges from 26 to 150.
Level II Hospital	Region, which has several Councils	Refers to a hospital with a capacity of providing all five- core specialized health care services namely Internal Medicine, Paediatric and Child Health, Obstetrics and Gynaecology, Dental and General Surgery services. Such hospital has a bed capacity ranging from 151 to 400.
Level III Hospital	Zonal level, which covers several regions	It is a health facility, which has a capacity to provide all five core specialized services and at least eight super specialized services to both outpatients and in-patients. These hospitals may also be used as teaching hospitals for health personnel and as research centre. Bed capacity at this level ranges from 401 to 600.
Level IV Hospital	National level	It is referral hospital at national level, which has capacity to provide twenty or more super specialized care in all five- core specialties. At this level the bed capacity is 600 and above.

In order to track progress in implementation of the IPC standards, the Ministry combined supportive supervision visits with assessment of the standards building on lessons from implementation of standard-based management and recognition (SBM-R) that was being implemented in the area of maternal and new-born care [10]. Coupling supportive supervision with assessments has also been shown to have potential of giving evidence-based supervision results to policy and decision makers hence enabling tracking performance over a period of time [11]; hence, enabling implementation of the set IPC guidelines [12].

The emergence of life-threatening infections such as severe acute respiratory syndrome (SARS) and viral hemorrhagic fevers (e.g., Ebola and Marburg viral infections), Cholera, HIV and AIDS highlight the urgent need for efficient IPC practices in health care facilities [13]. If outbreaks hit weak health care settings without adequate IPC practices, the risk of disruption to health care system can be high [14-17]. Among many important lessons derived from the Tanzanians neighbours' with regard to the Ebola epidemics in the Democratic Republic of Congo (DRC) and Uganda, being prepared and having a culture of safe health care practices that can prevent and control pathogen dissemination is key to coping with outbreak situations [18]. In the DRC, sub-optimal IPC practices in primary health care facilities have been reported as contributing to persistence of Ebola virus transmission [19]. A rapid response to infectious threats of public health concern requires early detection. Hence, health-care settings are in the front-line of containment and as part of response strategies, the surveillance systems must be formally and efficiently linked to assure such early notice [20].

In Tanzania, huge gap still exists between the knowledge accumulated over the past decade in the health facilities [21,22] and compliance to IPC standards [23-31] that pose challenges in IPC practices in Tanzania. Other challenges are resource constraints that make it difficult to attain standard health facility waste management, linen processing, decontamination, hand washing facilities, and the like. These gaps are deeper in poor-resource settings like Tanzania with devastating consequences. Breaches in IPC measures undermine every advance and investment in health care. Hence, the need to strengthen the IPC best practices is hereby called for. Also, Antimicrobial Resistance (AMR) in our Health Facilities has been increasing to an alarming rate [32,33]. This has made the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) to develop a National Action Plan on AMR (2017-2022) to address the situation [34]. Among the priority areas articulated in the AMR Action Plan is "Infection Prevention and Control in health care". This means that the compliance to IPC guidelines is key for contributing to the efforts to control the spread of antimicrobial resistance in our healthcare settings. Therefore, all Health care workers need to comply with the recommended standards and guidelines to ensure patient and staff safety, as well as prevent spread of antimicrobial resistant pathogens to the environment within health facilities [35-38].

In 2012, the Ministry developed IPC Standards for Hospitals [39] and in 2015 developed IPC Standards for Health Centres [40] and Dispensaries [41] to be implemented as part of Standard- Based Management and Recognition (SBM-R) approach [10]. Also, other guidelines on phlebotomy, post-exposure prophylaxis, supportive supervision, quality improvement (QI) and IPC, implementation of 5S-KAIZEN-TQM approach, and recognition of implementation status for QI initiatives, were developed as part of strengthening QI in health facilities. The broad objective of the paper is to report on the trend of the level of compliance to IPC standards by hospitals and health centers supported by the programme between 2010 and 2017. Specifically, the paper aims to determine whether the healthcare providers offer healthcare services according to the set IPC standards; appraise the performance of IPC practices in the hospitals and health centers; and provide onsite guidance and coaching on IPC practices.

Methods

The report presents a retrospective analysis of IPC Standards assessments that were done in the health facilities (Hospitals at National, Zonal, Regional and District [Council] Level as well as Health Centers where a District/Council Hospital was not available) between 2010 and 2017. During assessment, all national, zonal and regional hospitals were included. The hospitals at council level were purposefully selected from some regions in each of the eight zones in Tanzania to represent others and health centers were selected based on two purposes: first, was to represent other health centers; and secondly, health centers were selected in councils with no hospitals at council level.

During the health facility assessments on IPC standards compliance, the Assessment Teams used the following methodology. Prior to assessment, the assessors usually have one day orientation on the principles and etiquette of assessments, how to score results, and proper provision of feedback. The above is done to ensure objectivity in the assessments, but more importantly minimize the chances for bias. Having considered the dispersion of the facilities to be assessed, the facilities were grouped in zones and the Assessors divided into small Assessment Teams that are assigned to zones. The teams visit all eight zones namely Lake zone, Northern zone, Eastern zone, Central zone, Western zone, Southern zone, Southern Highland zone, South-West Highlands zone. Also, due to large number of health facilities in Dar es Salaam, it was treated as a special zone (although geographically it is part of the Eastern zone).

The Assessment Teams comprised of more than three experienced National Assessors visited each facility and carried out the assessment using a standardized assessment tools for Hospitals and Health Centers [39,40]. The tool for Hospitals is comprised of 60 standards and for Health Centre 57 Standards all categorized into three (3) groups as the summary is shown in annex 1 and annex 2 respectively.

During the assessments, the following techniques were used:

observation; simulations; records and document review; and where necessary interviews were conducted. In observation, assessors conducted observation of staff, facility/service area environment, and patient-provider interaction using assessment tool to guide the observation. During simulation, assessor identify staff who typically carry out the activities or procedures and ask the staff to practice doing the procedure while the assessor observed objectively using the assessment tool. Records and documents review entailed identification of the correct sources of information, e.g., administrative forms, statistical records, and service records, and reviewing the records using the assessment tool, coupled with asking questions to staff responsible on areas, which needed clarification or information to complement.

In interviews, the assessors identify staff who carry out the activity or procedure and then interview the staff using the assessment tool [39,40].

The assessments are usually conducted in all functional areas based on applicability of the standards as shown in Annex 3: Hospitals; Annex 4: Health Centre's; after which, an average score for the whole facility is computed. Thereafter, a feedback was given (following the existing quality improvement organization structure) to the Regional Health Management Team (RHMT), Council Health Management Team (CHMT), Health Facility Management Team (HFMT), Quality Improvement Team (QIT), and Ward/Unit In-Charges in all functional areas [42]. The content of feedback included good things (strengths), gaps and recommendations for addressing the gaps that were found. The management teams were directed to give technical support to address the gaps. Letters and certificates recognized those who performed by 80% and above. The poor performers were given chance to establish action plan and address the gaps so as they can reach 80%.

Data analysis

The report has used secondary data collected between 2010 and 2017. Data was entered in the excel spreadsheet and analyzed to get facility score in percentage as well as average score of all assessed facilities.

Ethical Consideration

- Permission to conduct trend analysis was sought from National Institute for Medical Research Tanzania (NIMR), of Tanzania.
- The data were collected through normal IPC assessments in the country. The national teams from the ministry were given permission to conduct assessments by all authorities from national, regional, district and facility level.

Results

In all the years when the supervisions were done, generally the standard on availability of personal protective equipment did perform well while that of healthcare waste management perform badly.

Table 2: The table showing the summary scores of compliance of IPC principles by health facilities.

Year	Number of health facilities (HFs) assessed					Total HFs assessed	Average
	National level hospitals	Zonal referral hospitals	Regional referral hospitals	District hospitals	Health centres		
2010	3	3	22	6	0	34	32.44
2011	3	3	23	6	0	35	33.88
2012	4	3	22	7	0	36	43.46
2014	5	4	25	16	0	50	52.68
2017	1	2	21	131	25	180	33.73

In 2010, the Ministry of Health assessed 34 health facilities; these were the facilities where the health workers had got training of IPC. By then the tool was not finalized, it had only 36 standards. The facilities assessed included national (3), zonal (3) regional (22) and district (6) hospitals. There were no health centers, no dispensaries assessed, and the average score was 32.44%, the maximum score was 52.00%. The lowest score was 12.50%. There was no improvement of adherence of IPC standards. Hospitals at national level scored the average of 46.6%, Zonal levels had an average score of 60.3%, Regional Referral hospitals 29.7% and districts 21.3%.

In 2011, the assessment of health facilities was done in 35 health facilities. The facilities assessed included national (3), zonal (3) regional (22) and district (7) hospitals. There were no health centers and no dispensaries assessed and the average score was 33.88%. The highest score was 66.00%. The lowest score was 10.00%. There was no improvement of adherence of IPC standards. Hospitals at national level scored the average of 49.3%, Zonal levels had an average score of 40.6%, Regional Referral hospitals 33.3% and districts 23.1%.

In 2012, the assessment of health facilities was done in 36 health facilities. The average score was 43.46%. The highest score was 69.00%. The lowest score was 18.00%. There was some improvement of adherence of IPC standards. Hospitals at national level scored the average of 51.0%, Zonal levels had an average of 56.3%, Regional Referral hospitals 43.8% and districts 36.8%.

In 2014, the assessment of health facilities was done in 50 health facilities. Of which 5 were hospitals at national level, 4 were hospitals at zonal level, 25 were hospitals at regional level and 16 were at district level. The average score was 52.65%. The highest score was 88.00%. The lowest score was 21.00%. There was some improvement of adherence of IPC standards. Hospitals at national level scored the average of 53.0%, Zonal levels had an average of 79.9%, Regional Referral hospitals 59.9% and districts 38.1%.

In 2017, the assessment was carried out for 180. The zonal facilities assessed were 2 and at national level was one as indicated in the table. The results were categorized based on the level of health

facilities. The health centers were 25 that were involved in the assessment. The average score was 25.00%. The highest score was 50.00%. The lowest score was 5.00%. The team also managed to assess 131 hospitals across the country. The average score of the district hospitals at council level was 33.00%. Of those hospitals at council level, the highest was 73.00%. The lowest score was 04.00%.

The facilities that operate at regional level that were assessed were 21. The average score of these 21 facilities was 51%. The highest score was 79%, while the lowest score was 9%. Only one zonal hospital was assessed. It scored 72%. The specialized national hospitals that were assessed were two (2). Their average score was 21%.

The IPC standards compliance started from 53% in 2010. It improved in 2014 when the scores were 32%. The scores then started to drop in 2017 as shown in the trend of score from 2010 to 2017 in the figure 1 below.

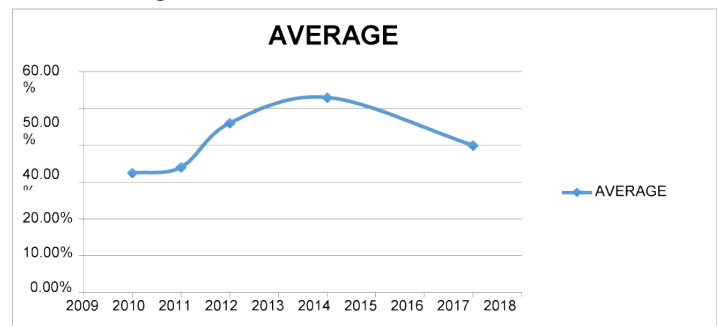


Figure 1: Overall, Trend of Scores for IPC compliance in the years: 2010, 2011, 2012, 2014 and 2017.

Discussion

The situation of IPC has been improving with slow pace since way back in 2003 when the program was officially started in Tanzania. In 2010, only 34 facilities were assessed and in 2011, only one facility increased. It was the hospital at district/council level. The average scores between 2010 and 2011 had no significant difference. This can be explained by the fact that there was no action plan to address the gaps, which were identified. Therefore, the gaps were not addressed by health facilities. One facility had increased from 35 that were assessed in 2011 to 36 in 2012. It was a hospital at national level. There was some improvement in 2012 compared with 2010 and 2011. In 2011, the action plan was developed for all assessed facilities. Also, a lot of IPC advocacy were conducted to raise level of awareness to IPC, hence the level of compliance increased as well.

There was no IPC assessment in 2013. This is because there were no funds to conduct assessment. In 2014, the assessment was conducted to 50 facilities. The average score increased to above 50%. During this period there were a lot of advocacy in IPC. There were also follow-ups in IPC implementation with partners and the ministry itself. During this period, some facilities got support of

IPC supplies from partners. After this period, the partners started to reduce support to the initiatives. The reduced funds to IPC led to reduced follow up and in hence, 2015 and 2016 no assessment was done. Level of IPC standards adherence went to the highest level in 2014/15. During this period, many interventions were implemented in the country with support from the United States of America. The support from USG for IPC ended in 2017.

The zonal hospital scored highest while the specialized hospitals and health centers scored low. The reason of this discrepancy was because the zonal hospitals and the regional hospitals received many trainings, advocacy in IPC than lower levels, that is, health centers and some higher-level facilities like specialized hospitals as well did not receive IPC training, and advocacy to enable them perform like their counterparts. As a way of IPC sustainability, the IPC have been included in pre-service curricula of health training schools at certificate and diploma levels. The tutors from these health-training colleges were trained on IPC as well. IPC was not included in the curriculum of high learning institutes.

Limitations

This study has a number of limitations: number of health facilities assessed in every year changed based on readiness of the facilities and availability of funds; limited funds hindered the assessments to be conducted annually; number of standards for hospitals changed from 36 in 2010 to 60 in 2012 in the cause of improvement of the IPC standards in the country; and selection bias could affect the results, as the participating facilities were hospitals compared with health centers and dispensaries that are majority.

Conclusion

There is general improvement of IPC standards adherence by healthcare workers though not to the expected level. The improvements differ at different levels of health care delivery. The pace of improvement is higher in upper levels that is from regional referral to national referral hospitals while it is slower in lower facilities namely from dispensaries to district hospitals. Internal assessment by QITs is not done as part of Standard Based Management and Recognition. IPC is not taught in all levels of pre-service health schools. It is recommended that the MoHCDGEC and the President's Office – Regional Administration and Local Government in collaboration need to continue making follow ups on implementation of IPC in all facilities with more emphasis to the lower facilities. Also, the two Ministries need to resume implementation of the Standard Based Management and Recognition (SBM-R) by conducting the internal assessment by QITs (i.e., a team formed by multidisciplinary staff from various departments and units in a health facility, which has role of overseeing quality improvement efforts and activities) [42] and external assessment by national assessors. The SBM-R is a quality improvement approach, which involves four main steps, which are: setting objective performance standards; implementing the standards in a systematic way, measuring progress to guide improvement process; and rewarding achievement of standards through social or peer recognition mechanisms, which may be a public event or ceremony including symbolic rewards such as

certificates or trophies [10,39-41]. The scope of IPC needs to be strengthened in all curricula of health training institutions from certificate level to high learning institutes in order to accommodate recent developments in the area of IPC [43]. This will help to equip all health personnel with knowledge and skills in IPC.

Acknowledgements

The authors acknowledge the support of the United States Government to Tanzania through PEPFAR for implementation of IPC activities since 2003. This has made tremendous achievements in many aspects including the areas of improving injection safety. The authors also thank the Management of the Hospitals and Health Centers that were supervised and assessed for the cooperation as well as efforts that they did to ensure improvement in IPC implementation. The National Assessors contributed so much to achievements documented in this study. Lastly, the authors thank CDC and Jhpiego for their technical support on IPC implementation.

Funding Source

IPC implementation in 2003 – 2017 was supported by PEPFAR through CDC. In the current secondary data analysis done to explore the trend in compliance, no funds were received by authors.

References

1. http://www.tzdpq.or.tz/fileadmin/documents/dpg_internal/dpg_working_groups_clusters/cluster_2/health/Sub_Sector_Group/Quality_Assurance/02_IPC_Guideline_Green_2004_.pdf
2. <https://apps.who.int/medicinedocs/documents/s15917e/s15917e.pdf>
3. https://www.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=13368&lid=3
4. https://www.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=13337&lid=3
5. https://www.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=13337&lid=3
6. http://www.tzdpq.or.tz/fileadmin/documents/dpg_internal/dpg_working_groups_clusters/cluster_2/health/Sub_Sector_Group/Quality_Assurance/07_IPC_Communication_Strategy_FINAL.pdf
7. Pépin J, Abou Chakra CN, Pépin E, et al. Evolution of the global use of unsafe medical injections, 2000-2010. *PloS One*. 2013; 8: e80948.
8. Hayashi T, Hutin YJF, Bulterys M, et al. Injection practices in 2011-2015: a review using data from the demographic and health surveys (DHS). *BMC Health Services Research*. 2019; 19: 600.
9. Fauci AS, Eisinger RW. PEPFAR- 15 Years and Counting the Lives Saved. *N Engl J Med*. 2018; 378: 314-316.
10. Necochea E, Tripathi V, Kim YM, et al. Implementation of the standards-based management and recognition approach to quality improvement in maternal, newborn, and child health

- programs in low-resource countries. *Int J Gynaecol Obstet*. 2015; 130: S17-S24.
11. Mboya D, Mshana C, Kessy F, et al. Embedding systematic quality assessments in supportive supervision at primary healthcare level: application of an electronic tool to improve quality of Healthcare in Tanzania. *BMC Health Serv Res*. 2016; 16: 578.
 12. http://www.tzdpq.or.tz/fileadmin/documents/dpg_internal/dpg_working_groups_clusters/cluster_2/health/Sub_Sector_Group/Quality_Assurance/02_IPC_Guideline_Green_2004_.pdf
 13. http://www.wpro.who.int/publications/docs/practical_guidelines_infection_control.pdf
 14. Elmahdawy M, Elsisy GH, Carapinha J, et al. Ebola Virus Epidemic in West Africa: Global Health Economic Challenges, Lessons Learned, and Policy Recommendations. *Value in Health Regional Issues*. 2017; 13: 67-70.
 15. Ratnayake R, Ho LS, Ansumana R, et al. Improving Ebola infection prevention and control in primary healthcare facilities in Sierra Leone: a single-group pretest post-test, mixed-methods study. *BMJ Global Health*. 2016; 1: e000103.
 16. Cooper C, Fisher D, Gupta N, et al. Infection prevention and control of the Ebola outbreak in Liberia, 2014-2015: key challenges and successes. *BMC medicine*. 2016; 14: 2.
 17. Soeters HM, Koivogui L, de Beer L, et al. Infection prevention and control training and capacity building during the Ebola epidemic in Guinea. *PLoS ONE*. 2018; 13: e0193291.
 18. Bonnie L Hewlett. Providing Care and Facing Death: Nursing During Ebola Outbreaks in Central Africa. Article in *Journal of Transcultural Nursing*. 2005; 16: 289-297.
 19. <https://reliefweb.int/sites/reliefweb.int/files/resources/UPDATE%203-Ebola-haemorrhagic%20feverDRC-13-Feb-2019.pdf>
 20. Undurraga EA, Carias C, Meltzer MI, et al. Potential for broad-scale transmission of Ebola virus disease during the West Africa crisis: lessons for the Global Health security agenda. *Infectious Diseases of Poverty*. 2017; 6: 159.
 21. Jones M, Whitfield A, Thomas S, et al. Educational innovation for infection control in Tanzania: bridging the policy to practice gap. *Journal of Infection Prevention*. 2014; 15: 94-98.
 22. Jones M, Gower S, Whitfield A, et al. Evaluation of practice change in Tanzanian health professionals 12 months after participation in an Infection Prevention and Management Course. *Journal of Infection Prevention*. 2015; 16: 200-206.
 23. Kilonzo SB, Gunda DW, Mpondo BCT, et al. Hepatitis B Virus Infection in Tanzania: Current Status and Challenges. *Journal of Tropical Medicine*. 2018.
 24. Nilsson J, Pembe AB, Urasa M, et al. Safe injections and waste management among healthcare workers at a regional hospital in northern Tanzania. *Tanzania Journal of Health Research*. 2013; 15.
 25. Matee VE, Manyele SV. Assessment of sharps waste management practices in a referral hospital. *African Journal of Environmental Science and Technology*. 2016; 10: 86-95.
 26. Kuchibanda K, Mayo AW. Public Health Risks from Mismanagement of Healthcare Wastes in Shinyanga Municipality Health Facilities, Tanzania. *The Scientific World Journal*. 2015; 16: 11.
 27. Manyele SV, Mujuni CM. Current status of sharps waste management in the lower-level health facilities in Tanzania. *Tanzania Journal of Health Research*. 2010; 12.
 28. Chalya G, Mbunda F, Chalya PL. Knowledge, practice and factors associated with poor compliance with universal precautions among healthcare workers at Bugando Medical Centre, Mwanza, Tanzania. *Tanzania Journal of Health Research*. 2016; 18.
 29. Kimaro L, Adinan J, Damian DJ, et al. Prevalence of occupational injuries and knowledge of availability and utilization of post exposure prophylaxis among health care workers in Singida District Council, Singida Region, Tanzania. *PLoS ONE*. 2018; 13: e0201695.
 30. Mashoto KO, Mubyazi GM, Makundi E, et al. Estimated risk of HIV acquisition and practice for preventing occupational exposure: a study of healthcare workers at Tumbi and Dodoma Hospitals, Tanzania. *BMC Health Services Research*. 2013; 13: 369.
 31. Mashoto KO, Mubyazi GM, Mohamed H, et al. Self-reported occupational exposure to HIV and factors influencing its management practice: a study of healthcare workers in Tumbi and Dodoma Hospitals, Tanzania. *BMC Health Services Research*. 2013; 13: 276.
 32. https://cddep.org/wpcontent/uploads/2017/06/garp-tz_situation_analysis-1.pdf
 33. Eliakimu E. Antimicrobial stewardship in Tanzania: A consideration of strengths, weaknesses, opportunities and challenges for maintenance and further development of efforts. *International Journal of Health Governance*. 2016; 21: 150-164.
 34. http://www.tzdpq.or.tz/fileadmin/documents/dpg_internal/dpg_working_groups_clusters/cluster_2/health/Key_Sector_Documents/Medicines_and_Medical_Supplies_Documents/NATIONAL_ACTION_PLAN_FNL_10_May_2017.pdf
 35. Nkuwi EJ, Kabanangi F, Joachim A, et al. Methicillin-resistant *Staphylococcus aureus* contamination and distribution in patient's care environment at Muhimbili National Hospital, Dar es Salaam-Tanzania. *BMC Res Notes*. 2018; 11: 484.
 36. Joachim A, Moyo SJ, Nkinda L, et al. Nasal Carriage of Methicillin-Resistant *Staphylococcus aureus* among Health Care Workers in Tertiary and Regional Hospitals in Dar es Salaam, Tanzania. *International Journal of Microbiology*. 2018.
 37. Ayukekbong JA, Ntemgwa M, Atabe AN. The threat of antimicrobial resistance in developing countries: Causes and control strategies. *Antimicrob. Resist Infect Control*. 2017; 6: 47.

38. Moremi N, Claus H, Silango V, et al. Hospital surface contamination with antimicrobial-resistant Gram-negative organisms in Tanzanian regional and tertiary hospitals: the need to improve environmental cleaning. *Journal of Hospital Infection*. 2018.
39. http://www.tzdpq.or.tz/fileadmin/documents/dpg_internal/dpg_working_groups_clusters/cluster_2/health/Sub_Sector_Group/Quality_Assurance/08_National_IPC_Standards_for_Hospitals_in_Tanzania_Final.pdf
40. http://www.tzdpq.or.tz/fileadmin/documents/dpg_internal/dpg_working_groups_clusters/cluster_2/health/Sub_Sector_Group/Quality_Assurance/08_National_IPC_Standards_for_Hospitals_in_Tanzania_Final.pdf
41. http://www.tzdpq.or.tz/fileadmin/documents/dpg_internal/dpg_working_groups_clusters/cluster_2/health/Sub_Sector_Group/Quality_Assurance/06_TQIF-Second-Edition-isbn.pdf
42. <https://www.mohfw.gov.in/pdf/National%20Guidelines%20for%20IPC%20in%20HCF%20-%20final%281%29.pdf>
43. <http://www.moh.go.tz/en/guidelines?start=40>

Annex 1: Summary of IPC Performance Standards for Hospitals.

No.	Standards Category	Number of Standards
A.	General Performance Standards	16
B.	Performance Standards for Clinical Areas (Surgical, Obstetrics and Gynaecology, Medical, Paediatrics, ICU, Casualty, Other Outpatient Clinics)	10
C.	Specific Performance Standards for Functional Areas	
	• Operating Theatre and Minor Theatre	08
	• Central Sterilization Supply Department/Instrument Processing Areas and Practices	02
	• Labour Room	01
	• Intensive Care Unit (ICU)	01
	• Medical Laboratory and/or Blood Bank	02
	• Radiology and Imaging	01
	• Pharmacy and Main Store	03
	• Laundry	02
	• Mortuary	01
	• Main Health Care Facility Kitchen	01
• Health Care Waste Management Final Disposal Point and Incinerator	04	
• Administration	08	
Total Standards		60

Annex 2: Summary of IPC Performance Standards for Health Centres.

No.	Standards Category	Number of Standards
D.	General Performance Standards	16
E.	Performance Standards for Clinical Areas: Reproductive and Child Health Services (RCHS); Paediatrics; Surgical War; Obstetrics and Gynaecology; Labour; Medical; Laboratory; Mortuary; Laundry/Washing Slab; Casualty, Other Outpatient Clinics) Theatre and Minor Theatre; Pharmacy and Store; X-Ray and Imaging; Instrument Processing/Central Sterilization Area; OPD(Injection, observation room, dispensing room, and reception).	10
F.	Specific Performance Standards for Functional Areas	
No.	• Operating Theatre and Minor Theatre	08
	• Central Sterilization Supply Areas/Instrument Processing Areas and Practices	02
	• Labour Room	01
	• Medical Laboratory and/or Blood Bank	03
	• Pharmacy and Main Store	02
	• Laundry/Washing Slab	02
	• Mortuary	01
	• Main Health Care Facility Kitchen	01
	• Health Care Waste Management - Storage and Final Disposal Unit	02
	• Administration	09
Total Standards		57

Annex 3: IPC Performance Applicable Standards for Hospitals.

STND. NO.	OT	CSSD	Labour	ICU	Lab/BB	Radiology	Mortuary	Dental	Medical	Paediatrics	Surgical	Ob/Gyn	CTC	OPD	Casualty	Physio.	Admin.	Pharmacy	Kitchen	Laundry	HCWM
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

