

Strengthening the implementation of potentially infectious materials, poliovirus regulations in poliovirus surveillance and research programs

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ABSTRACT

Introduction: Malaysia's National Polio Laboratory (NPL) has been appointed as the National Poliovirus Containment Coordinator (NPCC) in 2000 to minimize the number of facilities retaining potentially infectious materials, poliovirus (PIM). PIM is defined as respiratory, faecal, or environmental sewage samples, and derivatives such as permissible poliovirus cell culture, Oral Polio Vaccine (OPV), collected for any purpose before 31 December 2020. However, all monitoring activities were disrupted by the COVID-19 pandemic in early 2020. In addition, Polio outbreaks occurred in Sabah and WP Labuan at the same time which leads to the large-scale use of OPV to respond to widespread vaccine-derived poliovirus (VDPV) outbreaks, it could generate new PIM, which requires an update in the NPCC record database. **Materials and Methods:** The main objective of the study is to ensure compliance of all country states to the requirement of the Global Polio Eradication Initiative (GPEI) by WHO by providing a database and evidence of action. As per the WHO Global Action Plan III (GAP III) guidelines, meetings and site visits were conducted with the government and non-government bodies that are keeping and handling PIM. In 2019, 588 survey forms were sent to 141 government hospitals, 6 government agencies (veterinary, fishery, chemical, research institutions), 19 major private laboratories, 209 private hospitals, and 16 public universities. **Results:** Out of the 588 facilities that received the survey forms, only 177 facilities have completed the survey. 173 facilities declared that they did not store any PIM, whilst 4 institutions had informed that they had completed inventories for their PIM storage and had discarded the identified materials accordingly. The other 411 facilities have informed the NPCC that they did not have any PIM and are still completing the survey forms. **Conclusion:** The NPCC actively adhered to the recommendation by GAP III guidelines for the containment activities by conducting national surveys, laboratory inspections, consultations, and inventories of records. Based on the findings, most of the laboratories that responded to the survey did not keep any PIM and follow the procedures as per the guideline. Continuous monitoring of PIM is required although the Polio outbreak was declared ended on 9th September 2021 in Malaysia. This study will be a reference for future planning by the ministry and authorities with regards of the Biosafety and Biosecurity regulations involving laboratories working with infectious materials.

Keywords: Potentially Infectious Materials, Poliovirus (PIM), National Poliovirus Containment Coordinator (NPCC), Oral Polio Vaccine (OPV), vaccine-derived poliovirus (VDPV), WHO Global Action Plan III (GAP III)

An analysis of the types of skull fractures and intracranial haemorrhages found in autopsies of road traffic accident victims in the year 2015-2017 and a comparison with a previous study done 20 years ago (1995-1997); in Manipal a town in southern part of India

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ABSTRACT

Introduction: Development of a place brings changes to road traffic accident profile. A decadal report (2005-2015) by Transport Research Wing New Delhi showed a rise of road length by 43.66%. This was corresponded by a 53.88% rise in total number of people killed and 34.72% increase in accident severity. Manipal, being an educational hub has seen rapid development. Since head injury is the biggest killer in road accident victims, we wanted to analyse the changes in the types of skull fractures and intracranial haemorrhages over the period of 20 years. This study was compared to another study involving cases from 1995-1997, entitled; Pattern of Fatal Head Injuries due to Vehicular Accidents in Manipal. The previous study was published in Journal of Indian Academy Forensics Science, 2005: 27 (1). ISSN 0971-0973. **Materials and Methods:** Data was collected from autopsies done in the Department of Forensics Medicine, Kasturba Medical College, Manipal from 2015 to 2017. There were a total of 316 cases. The previous study had only 100 cases and data was presented mainly in the form of percentage. Thus to compare both studies, percentages were calculated in this study as well. **Results:** In our study, 68.67% (n=216) cases had skull fractures which is higher compared to 62% cases in the previous study. Linear, comminuted and depressed fractures have increased; from 57% to 70.51% (n=152), 18% to 53% (n=115) and 9% to 22.58% (n=49) respectively. However, it is noted fractures involving only the vault are lesser; from 38% to 23.96% (n=52%). As for intracranial haemorrhages, both extradural and subdural haemorrhage have shown reduction; from 26% to 10.13% (n=32) and 77% to 68.99% (n=218) respectively. Whereas subarachnoid haemorrhage has increased, from 55% to 79.75% (n=252). In this study, 1.58% (n=5) of cases had no intact brain matter found. This was not found in the previous study. **Conclusion:** Fatal head injuries have increased in Manipal over the 20 years due to more high-velocity accidents. This is supported by the increased number of skull fractures and rise in subarachnoid hemorrhage. High impact injuries cause brain contusions and tearing of pial vessels that result in subarachnoid haemorrhage. Further, only in high impact accidents, the skull breaks open and there is spillage of brain matter. Safety helmet mainly protects the cranial vault. Over the 20 years, more strict legislation of law to wear helmets have resulted in decrease in fractures involving the cranial vault only. In a nutshell, Manipal has to curb over-speeding and promote usage of safety helmets. We suggest stringent law enforcement and public-awareness campaigns.

Keywords: Fatal head injuries, skull fractures, intracranial haemorrhages, autopsies