P0446
Poster Session I
Emerging viruses / viral infections

FIELD STUDY OF FAECAL EXCRETION AS A DECISION SUPPORT TOOL IN RESPONSE TO SILENT REINTRODUCTION OF WILD-TYPE POLIOVIRUS 1 INTO ISRAEL

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Objectives: Israel was certified as polio-free in 2002 and has used an inactivated poliovaccine (IPV)-only schedule since 2005 (95% coverage). Silent reintroduction of wild type poliovirus 1 (WPV1) into Israel in early 2013 was detected in Southern Israel via routine environmental surveillance and sewage monitoring without clinical cases. Following risk assessment, a field study was initiated to estimate prevalence of WPV1 excretion, according to age and residence in the Negev region and thereby inform decision-making regarding supplemental immunisation with oral poliovaccine (OPV).

Methods: Study population was a convenience sample of residents of Rahat and Beer-Sheva, the main Bedouin and Jewish cities in the epicentre of the incident, respectively,as well as surrounding towns, focusing primarily on the cohort of under 8 year-olds who have not been previously given OPV. Samples were collected at well-baby clinics, day-care centres, primary care clinics, and by aliquoting diagnostic faecal samples sent to routine microbiology laboratories. Demographic data and vaccine status were retrieved from national registries. All faecal samples were directly tested for WPV1 in the Israeli polio reference laboratory using a qRT-PCR assay developed and validated *ad hoc* during the incident investigation. Positive cases were confirmed by traditional cell culture. Two thirds of samples were independently tested at the CDC using gold-standard culture-based reference methods. All cases were confirmed by sequencing as highly related WPV1 South Asia genotype (SOAS).

Results: Overall, 2,196 non-duplicate faecal samples were collected and analysed by the Israeli MOH, 1,465 of which were also tested at CDC. Of the total, 48% were obtained from Bedouin residents and 52% from Jewish residents; 88.8% and 64% of samples, respectively, represented the 0-8y age-band and 55% of samples in respective groups represented residents of Rahat and Beer-Sheva. WPV1 was detected in 61 samples (2.8%), 55 of which (99.2%) were Bedouins, with a concordance rate of 99.2% between testing sites and methods. Point prevalence of WPV1 excretion was 5.4% amongst Bedouins and 0.6% amongst Jewish individuals. Age-specific rates amongst Bedouins were 4.9% for 0-2y and 7.2% for 2-8y age bands. Prevalence was 4.8% and 0.7% amongst residents of Rahat and Beer-Sheva, respectively. WPV1 excretors were vaccinated according to age in 86.2% of cases and 84.5% were considered protected from poliomyelitis (received >2 IPV doses).

Conclusion: The rapid performance of a field study to evaluate WPV1 excretion unequivocally demonstrated substantial WPV1 infection rates amongst under-8's in Southern Israel, thus informing the decision to vaccinate all under 8's with bOPV. Field study results also informed risk communication to both healthcare professionals and the public regarding the possible impact of polio reintroduction and urgency of supplemental vaccination.Our experience serves as proof-of-concept for rapid development and implementation of molecular screening for risk assessment and management in complex epidemiological situations.