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Strengthening national One Health disease surveillance with open-source EIDSS

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Background: Kazakhstan, Georgia, Azerbaijan, Armenia and Ukraine by 2005-2013 were running human, veterinary and vector disease surveillance on paper with rare application of software for selected vertical programs. This traditional method did not meet the modern requirements of information timeliness, data quality, data analysis and one-health integration of veterinary and human data.

Methods & Materials: Electronic Integrated Disease Surveillance System (EIDSS) is developed to address the shortcomings of the paper-based systems particularly in especially dangerous infections surveillance as well as all reportable diseases. Development is based on more than 100,000 man-hours of expertise from the Centers for Disease Control and Prevention (CDC) and other US and international organizations.

EIDSS provides support for desktop application, web application, Android app and mobile-phone web platforms. The Android and mobile-phone platforms are especially suited for low-resource environments where ongoing mobile network revolution provided connectivity to a significant part of a country recently (e.g. in Tanzania to 98% of district centers with significant growth in rural areas).

Starting in January 2014 EIDSS becomes open-source and freely available for use, modification and distribution under open-source license. The *eidss.codeplex.com* project will initially have about 50 core international participant community and is expected to expand.

Results: EIDSS is currently deployed and sustained at 436 sites with 780 workplaces in the Republics of Kazakhstan, Georgia, Azerbaijan, Ukraine and Armenia as a part of a program sponsored by the U.S. Defense Threat Reduction Agency (DTRA). Plans for expansion include additional 350+ sites with 500+ workplaces in Kazakhstan, Iraq and other countries. EIDSS has fully replaced paper disease reporting with electronic reporting in Azerbaijan and Georgia with the rest of the countries on the way for complete acceptance. Tens of thousands cases and aggregate counts are entered into the EIDSS systems across these countries.

Conclusion: Strengthening of national One Health disease surveillance system with EIDSS improves timeliness (few minutes to distribute notification), increases data collection quality through standardized formats, integrates exchange from district (or even hospital) to national level, and provides ability for integral data analysis.

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Training health workers for enhanced monkeypox surveillance, Democratic Republic of the Congo

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Background: Monkeypox (MPX) is an endemic disease of public health importance in the Democratic Republic of the Congo (DRC). In 2010, the DRC Ministry of Health joined with external partners to improve MPX surveillance in the Tshuapa Health District of DRC. A pivotal component of the program is training of health zone personnel in surveillance methods and patient care. In this report we evaluate outcomes of the training program.

Methods & Materials: In early February 2011 and again one year later, five representative health care workers from each of the 12 health zones in Tshuapa District attended a monkeypox surveillance training program. Health care worker knowledge of key concepts in the MPX training curriculum was assessed using an anonymous self-administered survey. Additionally, evaluators collected feedback about the capacity of participants to perform the surveillance tasks. Training impacts were determined by assessing various performance metrics for surveillance.

Results: Fifty-eight healthcare workers participated in the pre and post-knowledge evaluations. Correct trainee responses to questions about MPX symptoms and patient care increased significantly upon completion of training events. During the 12 months after the initial training, the proportion of suspected cases investigated increased significantly (from 6.7 to 37.3%), as compared to the 5 months prior. An improvement was also observed in the correct identification of vesicular fluid and lesion crusts (rather than blood) as preferred samples for laboratory testing. However, the proportion of reported cases that were ultimately confirmed remained unchanged, 20.1% (5/24) vs. 23.3% (60/257). When specifically asked how often the necessary PPE was available for collection of MPX samples, 47.7% responded 'sometimes' and 3.1% responded