Presentation # 69

Using A One Health Approach to Prevent Brucellosis in Georgia

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Objectives:

This work describes the ongoing *Brucella* surveillance program in the Kakheti region of Georgia. This region contains the majority of the country's sheep and cattle population. This program coordinates the efforts of the National Center for Disease Control (NCDC), the Laboratory of the Ministry of Agriculture (LMA), and the National Food Agency (NFA) to obtain optimal health conditions for both people and animals. The NCDC and LMA biosafety level 2 (BSL-2) laboratories perform diagnostic tests on human and animal specimens, while NFA veterinarians are responsible for collecting and handling animal samples in the field. Biological safety training and mentoring was given at the beginning of the program, and biosafety practices were followed based on a risk assessment conducted by or team. Sample collection was standardized; sample handling and epidemiological information were collected using international and local biosafety regulations.

Methods:

- From 2012-2016, biological samples (e.g., blood and milk) were collected from potentially infected human patients and registered animals (e.g., cattle) (Figure 1).
- Samples were tested (i.e. ELISA IgG and IgM) for *Brucella* spp., using standardized biosafety practices implemented at each institution.
- Data, which was collected using epidemiological investigation forms, and diagnostic test results were entered in the Electronic Integrated Disease Surveillance System (EIDSS) and analyzed.
- Any gaps found in the data were fixed using a quality control process.
- The information was shared through human and veterinarian networks by arranging workshops and conferences.

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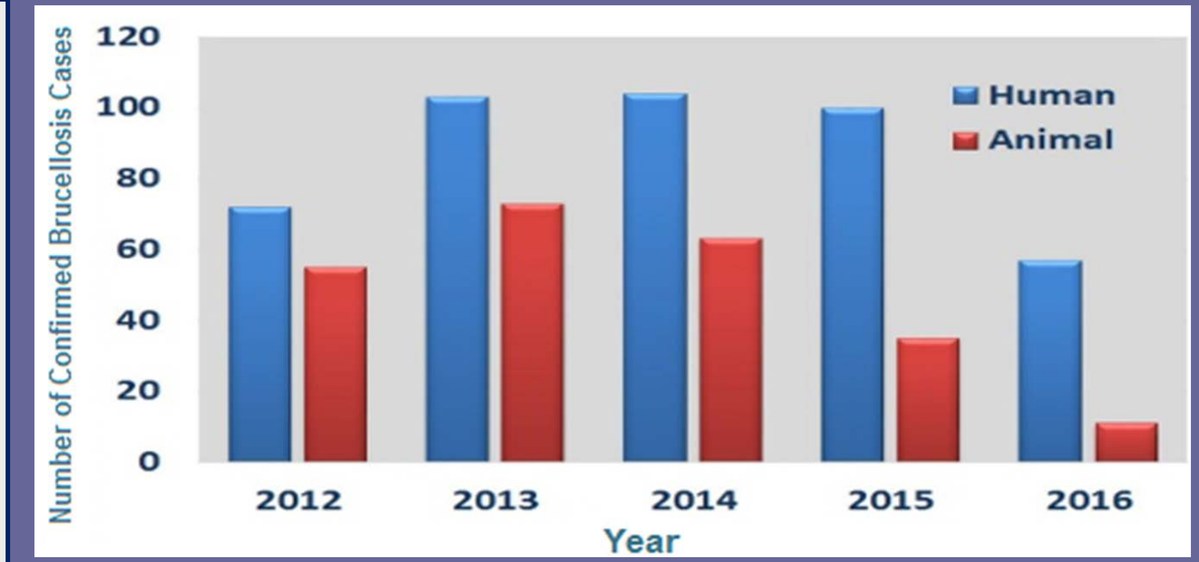

Figure 1. The number of confirmed brucellosis cases in humans and animals from 2012 to 2016.

Results:

In total, from 2012–2016, 744 suspect *Brucella* positive samples were collected from humans (n=473) and animals (n=271). Of the samples, 673 (18% human, and 72% animals - Figure 2) were confirmed by laboratory diagnostic tests to be positive for *Brucella* spp. Comparing the confirmed brucellosis samples from each year in the Kakheti region shows a 43% and 80% reduction of brucellosis cases in humans and animals from 2012 to 2016, respectively (see Figure 3).

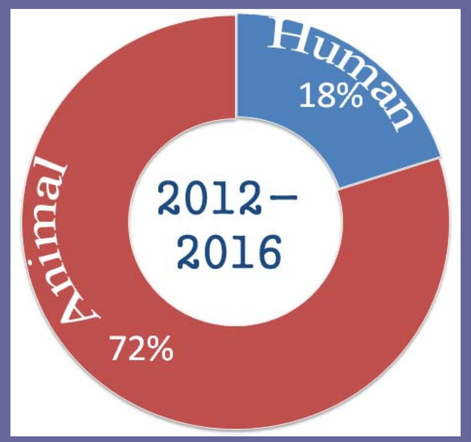

Figure 2. Percentage of biological samples collected.

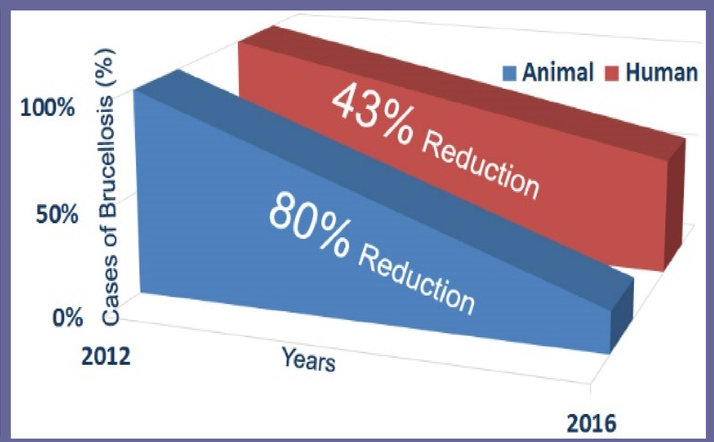

Figure 3. Case reduction: Brucellosis in humans and animals from 2012 to 2016.

Discussion and Conclusions:

As revealed by ELISA, the prevalence of brucellosis has a large impact on public and animal health in Georgia. Implementing a collaborative One Health approach to both human and animal disease surveillance, by using the safe collection and sample handling procedures, provides better prevention, detection, and control of Brucellosis cases and correspondingly mitigates the public health and agricultural threat.

Outcome:

Brucella surveillance program includes the monitoring of the both human and animal cases over time in order to detect and eliminate them in time and avoid exposure to hazardous *Brucella* agent through the work-related activities using good biosafety practices. The data collected correctly and analyzed by a trained specialists guarantees the effectiveness of the *Brucella* prevention program. And it also identifies new problems related that needs to be addressed.

The ongoing *Brucella* surveillance program in the Kakheti region of Georgia has been shown to strengthen communication and data sharing. This program is now used for other disease surveillance programs that promote the One Health approach throughout the country.