Trends of Reported Human Cases of Brucellosis, Kingdom of Saudi Arabia, 2004 – 2012

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Introduction

- Brucellosis is a systemic infectious disease transmitted mainly to humans through ingestion of raw or unpasteurized milk infected with Brucella organisms
- Main animals affected are sheep, cattle, camels, pigs, and dogs
- Brucellosis is endemic in Kingdom of Saudi Arabia (KSA) and classified as notifiable disease by Saudi Ministry of Health (MoH)

Methods

- Brucellosis data was collected from Infectious Disease Department of KSA MoH, while population data was collected from Ministry of Economy and Planning, Saudi Central Department of Statistics and Information
- Exploratory and descriptive analyses were conducted for cases and overall population
- Cumulative numbers calculated by age group and month of year from 2004 – 2012
- Trends of incidence rates (IRs) per 100,000 persons were determined by gender and nationality from 2004 – 2012 and by region from 2007 – 2012

Table 1: Reported Cases and Incidence Rates° of Human Brucellosis, by Year, Kingdom of Saudi Arabia, 2004 – 2012

<table>
<thead>
<tr>
<th>Year</th>
<th># Cases</th>
<th>95% CI</th>
<th>IR per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>5,169 (22.9)</td>
<td>22.3 – 23.5</td>
<td></td>
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<tr>
<td>2005</td>
<td>3,604 (16.3)</td>
<td>15.8 – 16.8</td>
<td></td>
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<tr>
<td>2006</td>
<td>3,907 (16.3)</td>
<td>16.1 – 17.1</td>
<td></td>
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<tr>
<td>2007</td>
<td>4,194 (16.8)</td>
<td>16.3 – 17.3</td>
<td></td>
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<tr>
<td>2008</td>
<td>3,447 (13.4)</td>
<td>12.9 – 13.9</td>
<td></td>
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<tr>
<td>2009</td>
<td>4,903 (19.0)</td>
<td>17.5 – 18.6</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>4,085 (15.6)</td>
<td>15.6 – 16.7</td>
<td></td>
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<tr>
<td>2011</td>
<td>3,042 (13.9)</td>
<td>13.5 – 14.3</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>3,209 (12.6)</td>
<td>12.1 – 13</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>37,477</td>
<td></td>
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</tr>
</tbody>
</table>

Results

- Total of 37, 477 reported human brucellosis cases from 2004 – 2012
- IRs significantly decreased from 22.9 in 2004 (95% CI=22.3, 23.5) to 12.5 in 2012 (95% CI=12.1, 13)
- Those aged 15 – 44 years had greater number of cases (19,130) than any other age group
- Most cases reported during spring and summer seasons
- Males had consistently higher IR than females
- IR of Saudi citizens was significantly greater than that of non-Saudis, but this difference shrank over time
- IRS of Al-Qassim, Aseer, and Hail were in the highest 25th percentile
- IRS of Al-Jouf, Jazan, Makkah, and Al-Riyadh were in the lowest 25th percentile

Discussion

- Results show that brucellosis is major health problem in Saudi Arabia
- From 2004 to 2012, the incidence rates of brucellosis fell, but IR was still higher than that of developed countries and most other developing countries
- Young, male Saudi citizens living in highly endemic areas were at greatest risk of contracting brucellosis

Recommendations

- Implement governmental surveillance program for brucellosis prevention
- Enforce animal importation protocols and implement compulsory vaccination for all susceptible animals
- Increase level of education and awareness among people, especially people who are at risk, such as shepherds, abattoirs, and laboratory workers
- Encourage rural health centers to be major participants in awareness and education campaigns
- Increase biosafety level in laboratories to level 3

Acknowledgments

- Special thanks to Dr. Scott McNabb and King Abdullah Fellowship Program team for their support
- Thank you to the entire Infectious Disease Department staff at the Saudi MoH

Figures

- Figure 1: World Incidence of Human Brucellosis, 2006
- Figure 2: Incidence Rates° of Reported Cases of Human Brucellosis, by Year, Kingdom of Saudi Arabia, 2004 – 2012
- Figure 3: Reported Cases of Human Brucellosis, by Age Group, Kingdom of Saudi Arabia, 2004 – 2012
- Figure 4: Reported Cases of Human Brucellosis, by Month of Year, Kingdom of Saudi Arabia, 2004 – 2012
- Figure 5: Incidence Rates° of Reported Cases of Human Brucellosis, by Region, Kingdom of Saudi Arabia, 2004 – 2012

Objectives

- Analyze reported human brucellosis disease trends in KSA over 9 years (2004 - 2012)
- Discuss distribution and determination of cases by region, gender, age group, and nationality, taking into account occurrences per month
- Identify potential endemic foci
- Make evidence-based recommendations for enhancing public health action

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Figures

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