

The literature review entailed reviewing articles describing outbreaks in humans and animals from 1926 till 2009, but more emphasis was put on those describing outbreaks from 2004 to 2009. Anthrax cases in humans from African countries were only reported to the OIE up to 2004 (Handistatus II). The GAR (Global Alert and Response) of the WHO contains a report of an anthrax outbreak in Ethiopia only in 2002. No details of incident cases and deaths are provided in this report. Until 2004, there were more suspected outbreaks in humans reported in ProMED Mail than in the OIE database. There were also more reports of anthrax outbreaks in cattle in the OIE than other livestock species.

Mali produces an own anthrax vaccine base on the Stearns strain. Approximately 1% of Malian animals were reportedly vaccinated against anthrax from 2004 to 2008 (species not registered). Recently the locally produced vaccine production was discontinued because of contamination problems. No systematic vaccination of livestock is practiced. In the case of outbreaks, vaccination of affected and surrounding herds is practiced.

Nine outbreaks in cattle were reported from Mali to the OIE from 2004 to 2009. Ninety Five percent of reported cattle cases died; meanwhile 2% of reported cattle cases were destroyed and no cattle were slaughtered. No outbreaks were reported in 2007 and 2009. The highest number of outbreaks (3 outbreaks) was reported in 2005 from the whole country. One out of 2 outbreaks in animals – reported by interviews with livestock owners - was reported at all levels, i.e. LCV, mission and country reports and OIE, but only in cattle. Outbreaks in small ruminants and donkeys were not reported in the country report, or in the OIE database. All outbreaks found in the official country report were reported to the OIE. In addition, 2 other outbreaks which were not in the official country report were found in the OIE. Still, not all outbreaks registered at the LCV and reported by livestock owners were included in the country report (outbreaks in Kangaba, Gao and Ségou). We can thus assume that in Mali, while official reporting of outbreaks in cattle is approximately done in every second outbreak, the reporting of other species such as donkeys and small ruminants is not done. Approximately 1 in 100,000 anthrax cases in cattle were reported to the OIE from 2004 to 2009, assuming that the cattle population in the country (in 2002) is 6.9 million cattle (FAO, Livestock Sector Brief, Mali, 2005). However, this covers only 1 outbreak. Because there were 3 outbreaks from other areas in the country (2004 – 2009), we can estimate that 1 in 300,000 cases were actually reported to the OIE.

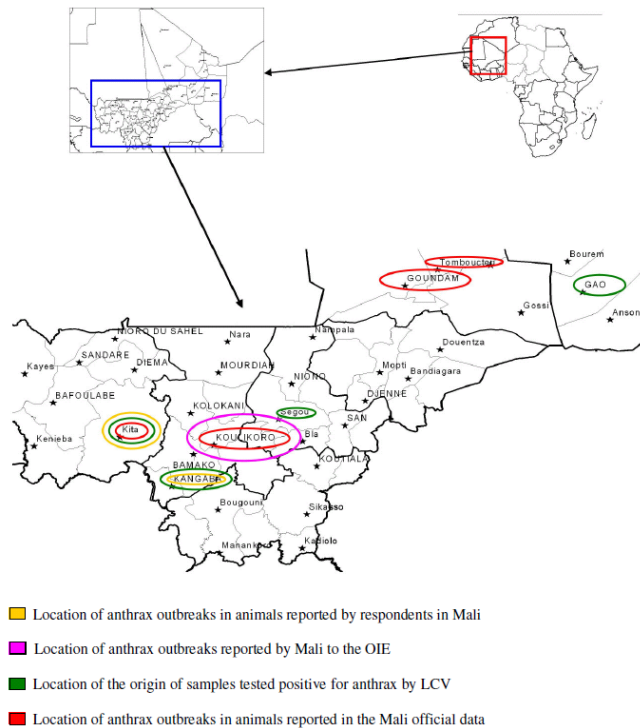
Year	Region	Cercle	Commune	Locality	No. Out-break	No. Inf-ected	No. Sick	No. Dea-d	No. Killed
2004	Koulikoro	Koulikoro <sup>(G)</sup>		Banankoro	1	100	8	8	0
	Koulikoro	Koulikoro <sup>(G)</sup>	Naréna	Sébékouran	1	600	6	5	1
2005		Diré <sup>(C)</sup>	Diré	Diré	1	900	5	5	0
	Tombouctou	Goundam <sup>(F)</sup>	Goundam Ville	Goundam	1	338	3	3	0
2006	Tombouctou	Goundam <sup>(F)</sup>		Goundam	1	65	1	1	
				Alafia	1	83	1	1	
2008	Koulikoro	Kati <sup>(A)</sup>	Daban	Daban	1	232	10	8	2
<b>Total for the period of 2004 - 2008</b>					<b>7</b>	<b>2318</b>	<b>34</b>	<b>31</b>	<b>3</b>

Source of data	Cercles						
	Kati	Kangaba	Diré	Gao	Ségou	Goundam	Koulikoro
Interviews (Kati only)	A <sup>1,2</sup>	B					
LCV Register	A <sup>1</sup>	B	C	D	E		
Mission Reports	A <sup>1,2</sup>					F <sup>1,2,3</sup>	
Country Report	A <sup>1</sup>		C			F <sup>1</sup>	G
OIE	A <sup>1</sup>		C <sup>1</sup>			F <sup>1</sup>	G <sup>1</sup>
ProMED Mail							

**A – G:** Outbreaks reported from the different Cercles

**A<sup>1,2</sup>, F<sup>1,2,3</sup>:** According to the mission reports, outbreaks in Kati (A) and Goundam (F) affected cattle (1) and small ruminants(2) and further in Goundam, donkeys (3). However, only the outbreaks in cattle were reported in the official country report and in the OIE from both Cercles..

**A<sup>1</sup>, C<sup>1</sup>, G<sup>1</sup>, F<sup>1</sup>:** It is assumed that all outbreaks reported in the official country data were also reported to the OIE. This is because the number of cases reported to the OIE matched the number of cases found in the official country report in Mali. Furthermore, outbreaks reported to OIE were reported from “The Whole Country”, without specification of the Cercles involved, from 2004 to 2006. In 2008, outbreaks were reported to the OIE from Koulikoro. However, this does not indicate whether it concerned Koulikoro Cercle, or the whole Région of Koulikoro.



Human cases in Mali are not reported to the national authorities, and thus are not found in the official report of the country or the OIE database, even though they are reported in the mission reports. Out of 3 outbreaks in humans reported in Mali, none was reported to the OIE. Furthermore, it has been estimated that 10 cows with anthrax can result in 1 human case. Thus, out of 2318 animals reportedly infected with anthrax in the official report in the country (assuming that these cases were cattle cases, as the species affected were not specified), we would expect that approximately 232 humans might have become infected with anthrax from 2004 to 2009. Twenty human cases were reportedly seen in Daban and Kangaba between 2005 and 2009. Out of these cases, 6 humans reportedly died, and 14 others reportedly got cured. Eleven of the human infected cases were reportedly seen to have an inflamed neck with a blackish scar, as well as a cutaneous lesion on the skin. Other symptoms observed by respondents were restlessness, death and digestive problems.