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Epidemiology desk of the ministry of agriculture in-service applied veterinary epidemiology training (ISAVET) program

Ebsa Gemechu (DVM)
Mokeninadiss (M. Sc Associated Prof)
Sodo Woreda, Central Ethiopia

Keywords

Accuracy, Completeness, Data quality, Surveillance Data, Timeliness

Abstract

Good surveillance data quality is vital for accurate planning and to apply timely and appropriate interventions. Data quality refers to completeness, accuracy and timeliness of data gathered. Retrospective case study was conducted in sodo woreda of east guraghe zone central Ethiopia regional state. The objective of the study is to assess the animal health surveillance data of the woreda and to provide new recommendations. The DOVAR format of the woreda from 2023-2024 were reviewed for the completeness, accuracy and timeliness. The records of data quality indicators in each variable of source document was counted and entered into Microsoft excel sheet. It then line listed and displayed in proportion. The overall data quality and related issues of the woreda were assessed by using a structured interview questions. The study shows that the assessed DOVARs are 83.3% complete. The data shows a total of **30 DOVAR report** 23/30(76.7%) are **Zero report** and 7/30(23.3%) are outbreak registered within three years of a total of **36 month from January, 2023 – December 2025** In the assessed reports there are 23.3% missing data, 76.7% inaccurate data and 16.6% late reports. The surveillance data of the woreda have the problem of completeness, accuracy and timeliness. Data collectors didn't received training on surveillance. The woreda retain the collected data but do not analyze it. The woreda do not have clearly stated objectives for collecting surveillance data. These gaps lead them to have poor data quality DOVARs. Therefore the woreda should develop clear objectives about the data that is needed; develop a clear plan about the best way of obtaining the data; use standardized formats that can capture the data required; train people on how to collect accurate and reliable data; store and retain data.

1. Introduction

High-quality data is essential for effective monitoring, accurate planning, and the timely implementation of appropriate actions. Data is a collection of informational items, representing the components of measurements taken during data collection. When processed further, this data becomes information that enhances the knowledge of end-users. Knowledge is then evaluated to improve researchers' comprehension, which leads to wisdom. Making evidence-based decisions for action requires wisdom (Balcha, 2022). Information from animal health surveillance is critical for safeguarding animal welfare and health, and is also closely linked to protecting human health. Additionally, the detection of hazards in human populations can contribute to the detection of hazards in animal populations (Hoinville *et al.,* 2013). Audits of data quality aid in ensuring the accuracy and dependability of the information gathered by animal health surveillance systems. Making well informed decisions regarding disease management and prevention tactics requires this. Making recommendations and keeping an eye on the monthly data quality audit and any associated gaps are also crucial (Adunga D., 2025).

The In-service Applied Veterinary Epidemiology Training (ISAVET) field program is designed to connect the theoretical data quality audit principles learned in the classroom with actual animal health surveillance data in the workplace. Monthly Surveillance data quality audit was conducted in type “B” veterinary clinic of sodo district of misiraq guraghe zone central Ethiopia region, from **January, 2023 – December 2025**. Sodo district is located at 35km from Butajira in northern direction.. The district veterinary human resource is 2 DVM, 9 BVSc, 25 Animal Health Assistants and 1 Vlt. The district has 35 kebeles and the area had 245123 cattle population, 65123 sheep population, 74045 goat populations, 321906 poultry population, 13230 horses, 1543 mule, 21345 donkey (SWARDO (2025).)

This data surveillance quality audit was conducted to assess the animal health surveillance data quality of the district and to provide significant recommendation which will help to apply basic principles of ensuring data quality

2. Objectives

2.1 General objective

- To describe animal health surveillance of the visited woreda in terms of data flow, data collection, management, usefulness, awareness and link with laboratory. From January, 2023 – December 2025

2.2 Specific Objectives

- To evaluate the completeness, accuracy, timeliness, and consistency of animal health surveillance data flow.
- To evaluate surveillance data collection, management system and analysis in the district.
- To identify gaps in DOVAR –II format filling and vaccination activities trends

3. Methods

3.1. Study Area

The district is located at Bui town south of Addis Ababa and generally characterized by highlands and lowlands. Sodo is located in the south part of Ethiopia which extends from 8.32 norths and from longitude 38.55 easts and is found 103 kilometers south of Addis Ababa, in the southern extreme of Ethiopia. Topographically, the area consist of variety of land features, generally, flat land with gentle slope compresses 40% of the town and ups and down cover about 30% of the area while valley and hilly topography makes up 23% and 7% of respectively.

The area has annual average rainfall of 1200 mm and 19°c,, altitude of 1600 to 3600 meters above sea level. The total population of the Woreda is estimated to be 213578 of this 91% of the population resides in the rural part of the district, the rural life of the area depend on agriculture

like crop like sorghum, maize, teff wheat and Enset (Kocho), are common (SWARDO, 2025).

The district clinic provides services to 35 kebeles (villages). A total of 36 frontline animal health workers are active in the district. Among them, 2(6%) are DVM, 8(22%) are BVSc degree 25 (69%) are animal health assistants with diploma-level qualifications and 1 (3) %) Vlt. The area had 245123 cattle population, 65123 sheep population, 74045 goat population, 321906 poultry population, 13230 horse, 1543 mule, 21345 donkey (SWARDO (2025).)

3.2. Study Design

Retrospective cross sectional study was conducted on animal disease data (DOVAR report from January, 2023 – December 2025

3.3. Data Source

We had been used secondary data (DOVAR report for animal disease surveillance data analysis.

3.4. Data collection Tools

By assessing the district report and Self-administered questionnaire for additional information.

3.5. Data Collection

Surveillance data was collected from primary source (farmers/farm owner) at local veterinary service /health post by animal health assistants and BSc using hard copy, phone call and orally A checklist was developed and used to interview the responsible District animal health processor owner. Disease outbreak and vaccination activity reports from 2023-2025 were reviewed for the quality of data

3.6 Data analysis

The recorded data were analyzed using Microsoft excel and presented using graphs. The responses for the queries obtained from the interviewee were evaluated according to the data quality principles.

3.7 Study Variables

Completeness, accuracy and timeliness are the attributes considered in this study. Completeness: the percentage of blank or unknown data, not zero/missing. All data should be in a disaggregated form to permit further analysis. Accuracy: the percentage of data variables on the collection form without an error: examples - missing data, incorrect coding, transposed error, incorrect units, incorrect/ inconsistent format. Timeliness: the percentage of reports from the sub locals, and facilities that were received on time

4. Results

4.1 Information obtained from the interview

4.1.1 Surveillance data source, collection, flow and analysis

Kebele animal health workers collect surveillance data from the farmers. They use a standard reporting format for vaccination and other animal health service activity report. However, the occurrence of disease outbreak in a peasant association is reported to the woreda by phone and/or orally. The woreda then use DOVAR format to submit to region and zone animal health directorate. The responsible professional in the woreda assess the completeness, accuracy and timeliness of the reports and take corrective measures. Surveillance data flow of the woreda can be described in the following diagram:

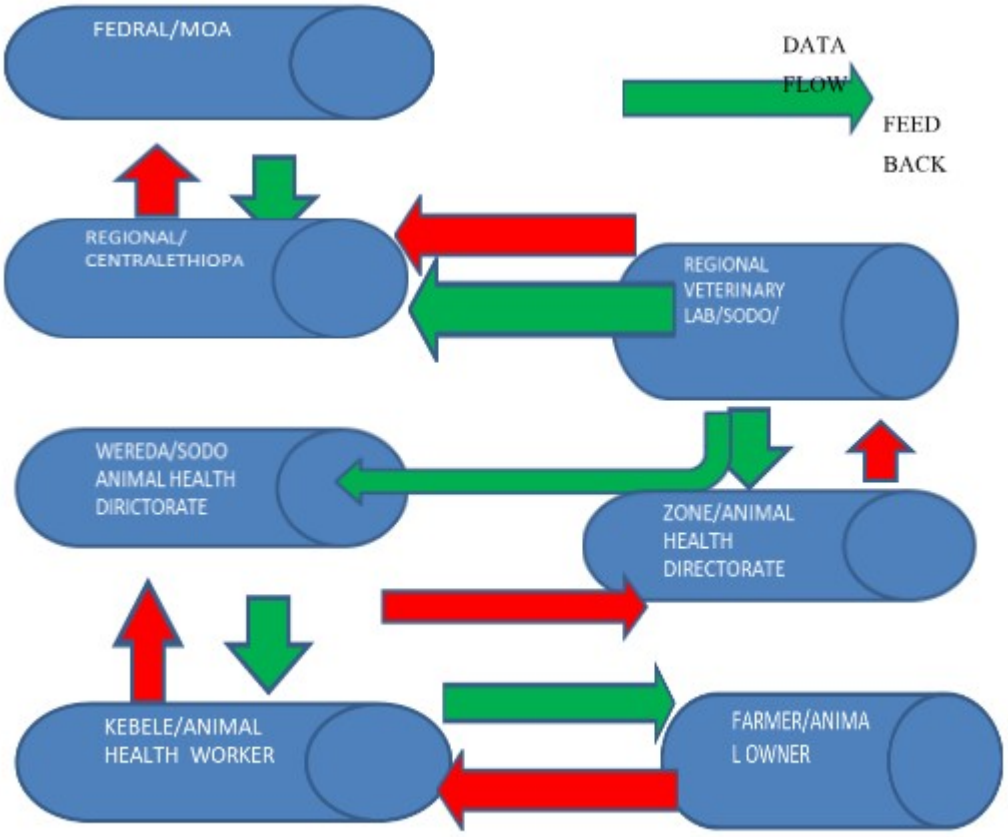

Figure 1:- Animal health surveillance data flow in sodo woreda district

4.2 Assessment of DOVARs

From the total of 36 DOVARs reports which are expected to be delivered from the district (sodo) in the past 36 month , only 30(83.3%) report are present in the office of district. 11 report since January –December 2023 , 7 report since January –December 2024 and 12 report since January – December 2025 .

Table: 1 Summary of DOVAR Report from 2023- 2025 in sodo woreda district.

Report type	Year	Expected report	Sent report	Zero report	Outbreak report
DOVAR	2023	12	11	9	2
DOVAR	2024	12	7	5	2
DOVAR	2025	12	12	9	3
Total		36	30	23	7

As indicated only 30 report out of 36 are delivered 23/30(76.7%) and all of are zero report and **7/30(23.3)** outbreak is occurred within 2023-2025

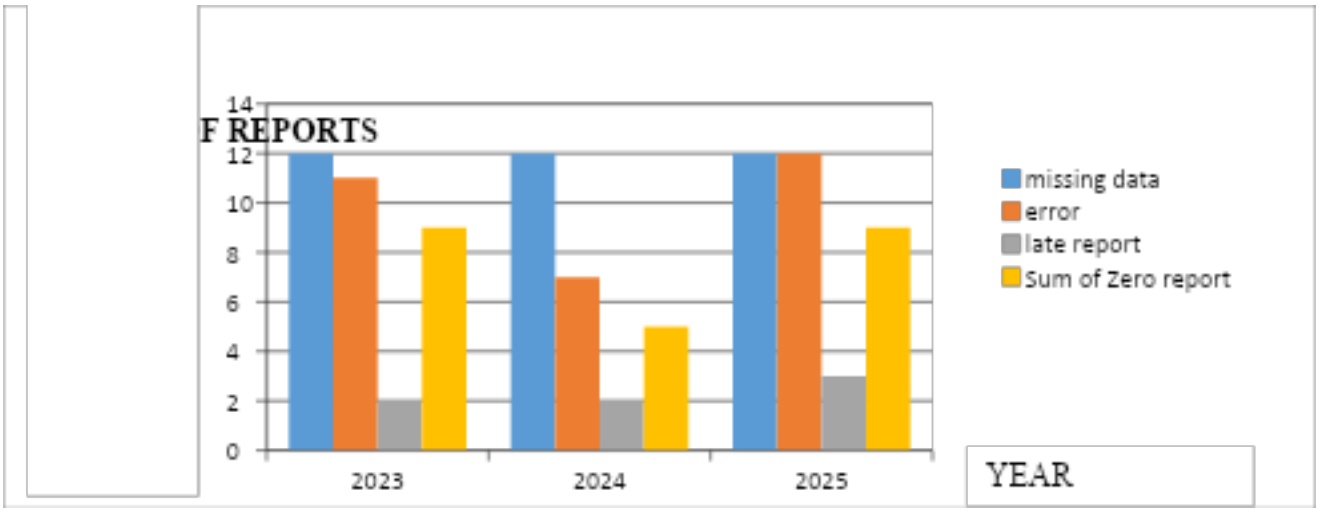

Figure 2:- performance of DOVAR report from 2023- 2025 in sodo district

Table: 2 DOVAR Report of assessment from 2023- 2025 in sodo woreda district.

Year	Expected	Reported	Completeness	Timeliness	Timely	Late
2023	12	11	91.6	75	9	2
2024	12	7	91.60	50	6	1
2025	12	12	91.60	83.3	10	2

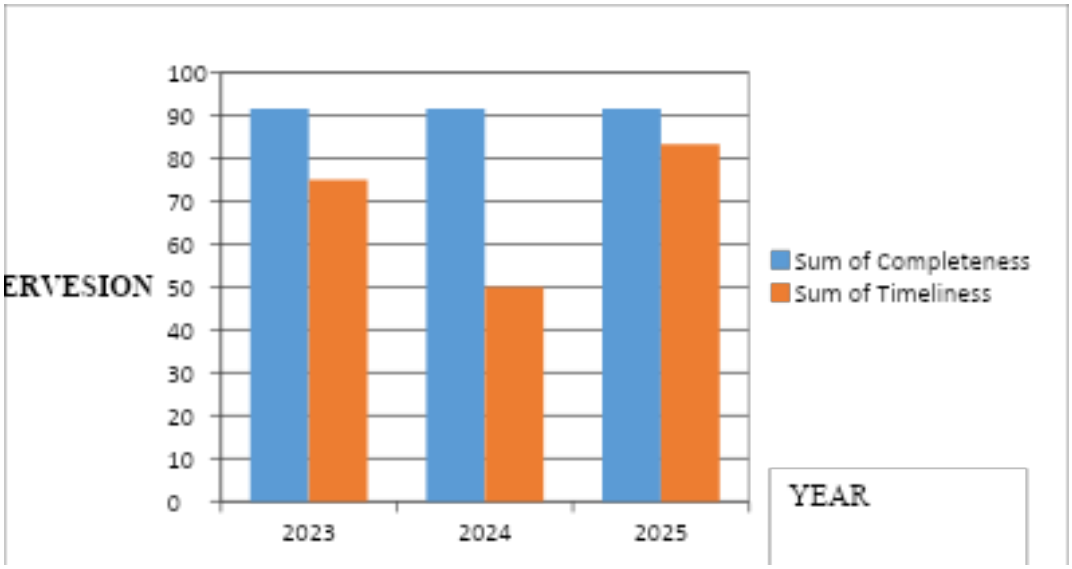

Figure 3:- completeness and timeliness of DOVAR report from 2023-2025 in sodo district

Table 3: Case Fatality Rate (2023-2025)

Year	Name of diseases		**Total Cases**	**Total Deaths**	CFR (%)
2023	LSD		57	4	7
2024	LSD		71	4	5.6
2025	PPR		159	9	5.7
2025	Rabies		2	1	50
	Total		**289**	**18**	**6.2**

There were only **23.3** %**7/30**(four LSD, two PPR and one Rabies) outbreak reports in the past three years. The rest of the reports (76.7%) are zero reports.

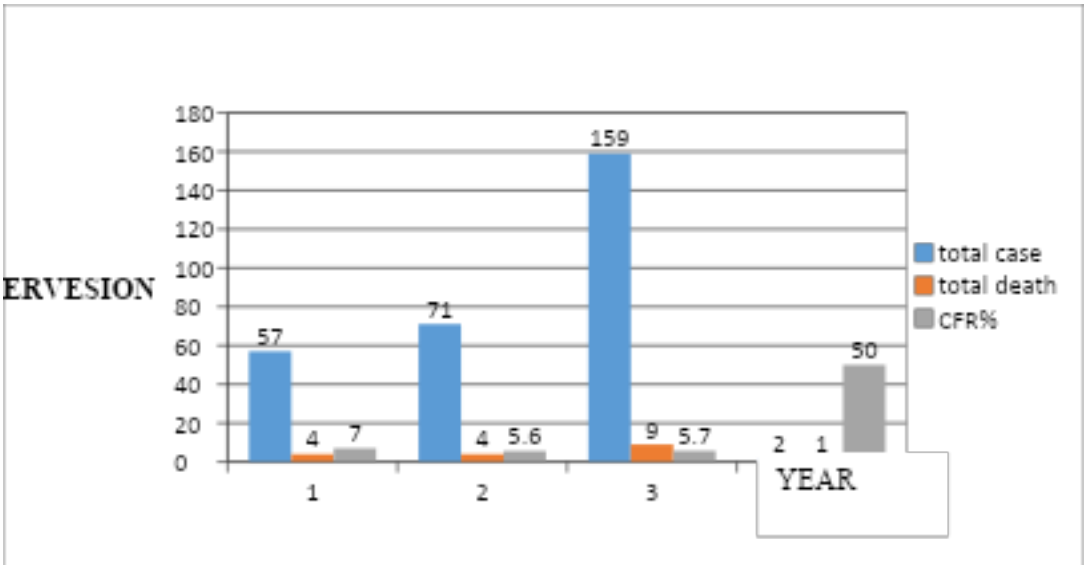

Figure 4: CFR and Disease of sodo district (2023-2025)

Table 4.Sum of Missing Data, Error and Late Report from 2023-2025 In Sodo District

YEAR	Sum of missing date	Sum of error	Sum of late report
2023	4	8	2
2024	2	4	1
2025	1	9	2
Grand Total	**7**	**21**	**5**

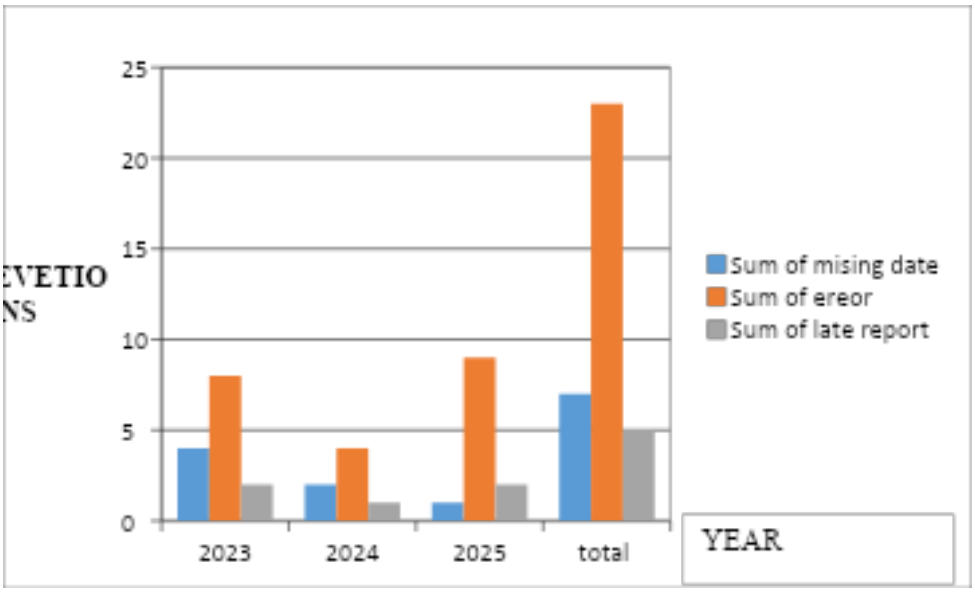

Figure 5 Data quality audit findings from DOVAR of sodo woreda

Out of thirty (30) reviewed reports 23.3% (7/30) have missing data while 76.7% (23/30) have a problem of accuracy. On the other hand 16.6% (5/30) of reports have a problem of timeliness.

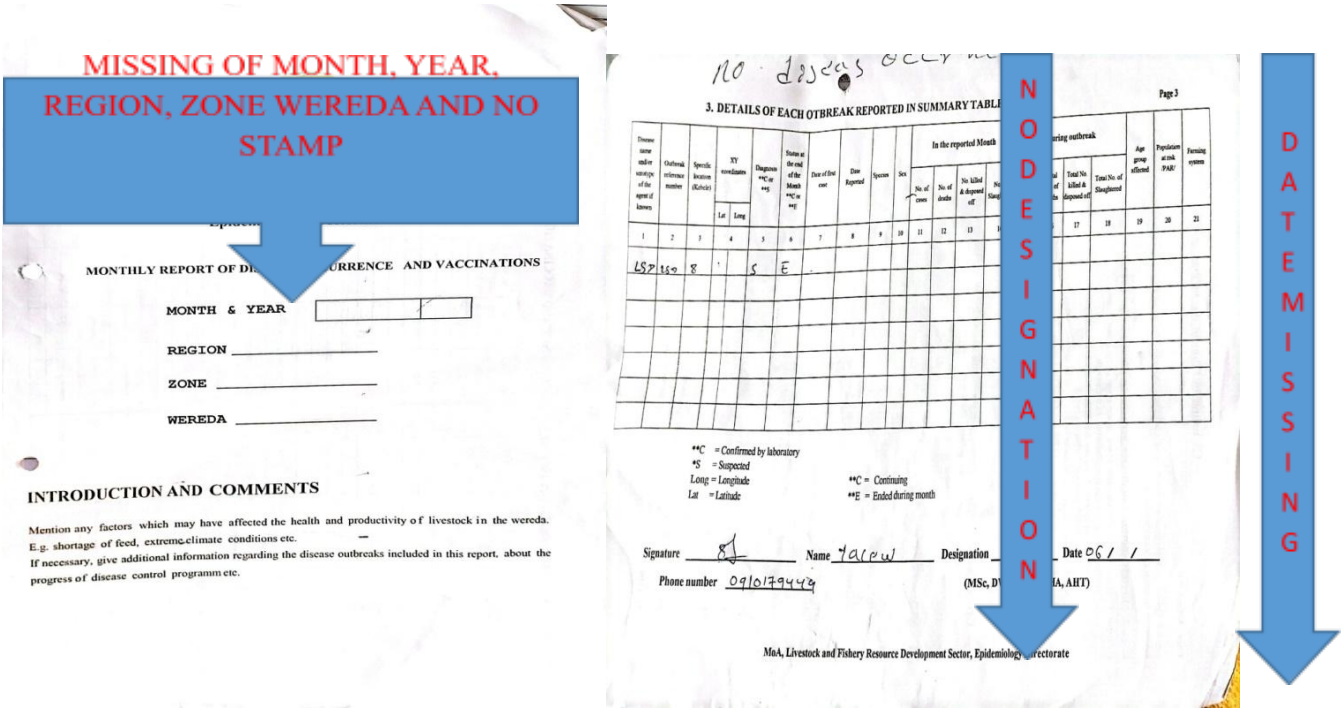

Figure 6:- Data Problem due to missing month year dates and designations

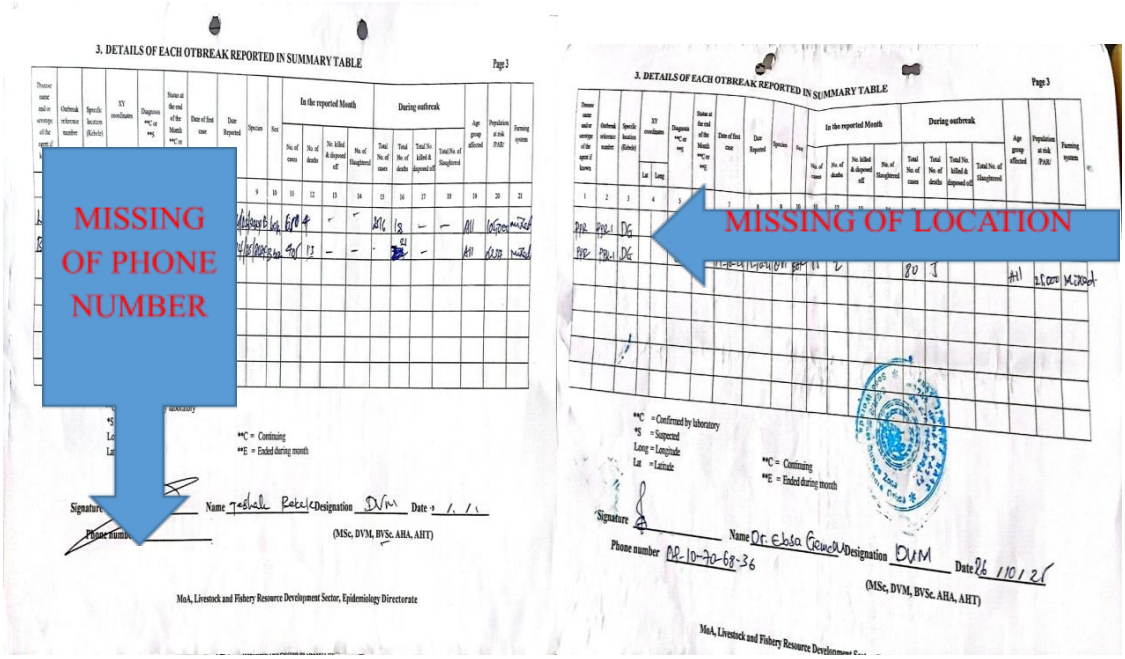

Figure 7:- Data Problem due to missing of phone number and location

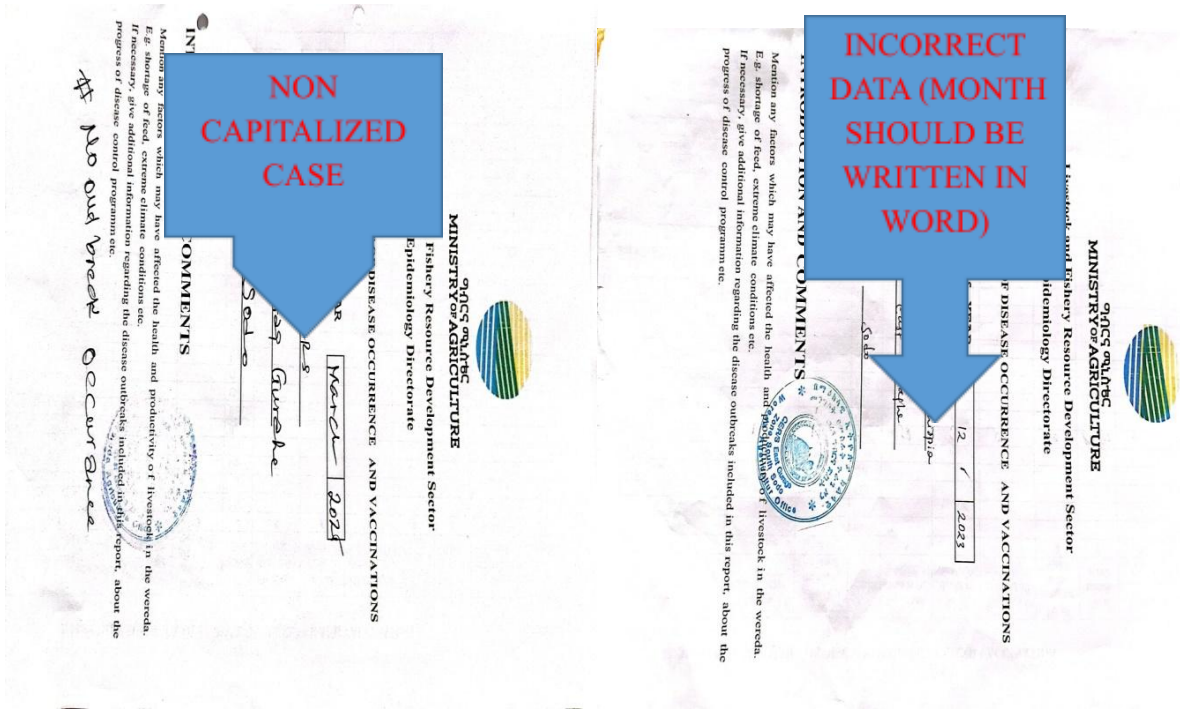

Figure 8:- Data Problem due to non-capitalized case and inaccuracy of month

4.3. Information obtained from the interview

Kebele animal health workers collect surveillance data from the farmers. They use a standard reporting format for vaccination and other animal health service activity report. However, the occurrence of disease outbreak is reported to the woreda by Hard copy, phone or orally. The district then use DOVAR format to submit to Misraq Guraghezone Agricultural Office.

4.3. 1 data collection and storage

The districts collect and retain these data in their office as permanent document. The vaccination and other veterinary service report is collected in standard reporting format but DOVAR report data is received through either hard copy format. The collected data is stored both in hard and soft copy.

4.3.2 Surveillance data use and analysis

The district has no clearly stated objectives for collecting surveillance data, so that they does not analysis and display data in animal, place and time.

4.3.3 Awareness of data use by stakeholders

Professionals in the district and Kebels data collectors have no awareness on what will be done with the collected data and about the planning objective on collected Data. They simply collect data, store for the fulfillment of monthly or annual report requirement.

5. Discussion

The quality of data is dependent on the underlying data collection, management and reporting systems; stronger systems should produce better quality data. During our field work, we had observed the following gaps on filling of DOVAR formats **inconsistence** month **missing of format filling of phone number, location date month.year/region,zone, wereda and no stamp** including unclosed columns and incorrect application of epidemiological principles More than 76.7% of the assessed reports were zero reports.

The completeness of the data decreases through the year from 2023 to 2024 and increase from 2024 to 20 More than 93% of the assessed reports were zero reports. 25 that More than 93% of the assessed reports were zero reports. means 11/12*100 (91.6%), 7/12*100 (58.%) 12/12*100 (100%)

There is missing data, inaccurate data and problem of timeliness in the assessed DOVARs of sodo woreda livestock development office. Majority of the data quality problems found were restricted to page 1 (general information) and page 3 (the details of the outbreak reporting person) of the format. The highest (68.8%) inaccurate data is non capitalized writing of the general information on page 1 of DOVAR format. According to the filling guidelines of the format, the general information should be capitalized. Reports should be received before 15th day of every month. From the total reports assessed during the study period 16.6% is reported after the deadline.

6. Conclusions.

A strong surveillance system needs to have an effective way of collecting data, analyzing, and interpreting quality surveillance data so that to act accordingly for the welfare and health of the animal and public health as well. To ensure early detection and response to diseases of concern as well as to maintain the health of the livestock there should a strong surveillance at the lowest level. According to data quality audit in Sodo district on DOVAR data surveillance, data completeness rate was 83.3%. In three years reported from2023 to 2025. In 2024 year, 42% surveillance data was not reported. This means the surveillance data was poor and this implies that there was lack of strong communications between district and health posts. There was lack of awareness on filling a report and writing a date on first page and third pages. There was also some inconsistence in spelling of month, year,

zone and region. Several errors also seen on the surveillance data which was missing of date, phone number location And finally Unclose of unfilled columns during filling of prophylaxis was also one of the problems.

According to the findings and conclusions the following steps were recommended..

- Provide training for the frontline animal health workers on surveillance so that to get complete, accurate and timely report.
- Develop a standard format for kebeles for the reporting of outbreak data that can be aligned with the DOVAR format.
- DOVAR reports should be reported continuously.
- The date never written before a month and year on the first page but it should have written on the given space.
- Every blank space on DOVAR report given to fill should be filled appropriately without swapping one another.
- Open space on columns should closed by zigzag.
- Awareness in data collection and data usefulness should be made to increase their knowledge of disease surveillance
- Awareness should be created collection and summarization of data in place, time and animal.

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