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**Assessment of Animal Health Surveillance Data
Quality Audit: The Retrospective Study In
Meskan District, East Guraghe, Central,
Ethiopia region**

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Abstract

Data quality surveillance is measured by its fitness for use. A functional surveillance system must be sensitive enough to detect outbreaks early. Data quality audits ensure that the data collected through animal health surveillance systems is accurate and reliable. This is essential for making informed decisions about disease control and prevention strategies. It is also important to monitor, determine, and describe the monthly data quality audit and related gaps as well as to generate recommendations. The monthly data quality audit was conducted in the Meskan district, East Guraghe, Central Ethiopia Regional State, Ethiopia in the month of August 2026. A retrospective cross-sectional study involving both quantitative (data review) and qualitative (interviews) methods was used in this study. Disease Surveillance System, data usage and management, usefulness of report, awareness on data usage, and DOVAR reports were assessed. Accordingly, the district's disease surveillance system was bidirectional from lower level to higher level (from local to national) from higher level to the lower level (from higher level to lower level). The disease report was collected and transformed into meaningful data and then filled in to standardized DOVAR format and sent to the higher level authority. Major (83%) veterinary professionals were aware of the importance of animal diseases outbreak surveillance whereas 17% still needs training on the surveillance report knowledge and its importance. The District's Animal Health Officer was using the DOVAR data properly as a major animal disease prevention inputs. The surveillance data collectors were also aware of the collected data. From the total of 72 DOVAR formats which are expected to be sent every month in the past 6 years, 17 reports were found in the district office. The number of reports sent in 2020, 2021, 2022, 2023, 2024, and 2025, were 3, 6, 3, 0, 0, and 5 respectively.

These available reports were assessed against the key data quality indicators. There were only 23.6%4/17/ (four FMD,) outbreak reports in the past six years. The rest of the reports 13/17(76.4%) are zero reports. It is reported that information was transferred through the usual informal way to the district and the district veterinarians conducted field investigation. Out of 17 reviewed reports, there was 9 missing of data and 4 timeliness problem while (9/72) or 12.5% have a problem with accuracy

Keywords: Animal, Data, Audit, Disease, District, DOVAR, Outbreak, Quality, Report, Surveillance

1.Introduction

1.1. Background

Data quality surveillance is measured by its fitness for use. According to the World Health Organization for Animal Health (WHO), a functional surveillance system must be sensitive enough to detect outbreaks early. Studies in sub-Saharan Africa have shown that paper-based systems are prone to transcription errors, while the transition to digital tools like (ADNIS) often suffers from poor network coverage and inadequate staff training (Goutard et al., 2015). In Ethiopia, research indicates that under-reporting is a common phenomenon, often exceeding 40% in remote districts due to lack of feedback and logistical support (Bifani et al., 2021). Data is a collection of items of information. It can be defined as the elements of measurements recorded during data collection. It is the collected data that creates information when it is further processed which will then improve the knowledge of end users. Knowledge is then assessed to improve the understanding of the researchers which provides wisdom. Wisdom is required to make evidence-based decisions for action [1]. Good surveillance data quality is vital for accurate planning and to application of timely and appropriate interventions. Animal health surveillance provides essential information to allow action to be taken to protect animal health and welfare. This is also closely linked with the protection of human health. In addition, the detection of hazards in human populations may contribute to the detection of hazards in animal populations [2]. Data quality assessment (DQA) is the confirmation of the accuracy, completeness, consistency, and timeliness of data. Importance of DQA needs for the following purposes such as to

reduce errors and inconsistencies within the data collected, reported and used, improve the quality of data to meet reporting requirements, provide accurate, consistent, complete, and timely data to all stakeholders, decisions made based on validated data are more defensible, ability to compare data across institutions and organizations, as the data becomes more accurate, less time and effort is spent on the validation and verification process, ultimately saving time and money [3]. It is important to monitor data quality and thus ensure that the collected data are meaningful so they meet the objectives of local, national, and international surveillance systems. The quality of the initial data may determine the data quality at all stages of the reporting process [4]. If stakeholders understand the value of the data collected and the impact of surveillance on animal and human health, this should lead to improved design of surveillance activities, enhanced compliance with data collection, increased likelihood of investment, and (ultimately) an increased probability of achieving the overall goal of the surveillance [5]. A key feature of surveillance is the need for systematic (continuous or repeated) measurement, collection, collation, analysis, interpretation, and timely dissemination of data [6].

The DQA and routine DQA tools are grounded in the components of data quality, namely, that programs and projects need accurate, reliable, precise, complete, and timely data reports that managers can use to effectively direct available resources and to evaluate progress toward established goals. Based on these components of data quality, the DQA tool is comprised of two components: (1) assessment of data management and reporting systems; and (2) verification of reported data for key indicators at selected sites

[7]. It is widely considered the most cost-effective way to early detection of outbreaks and to gather information on the disease situation for decision-making on control strategies [8]. However, consistent, monthly reporting of two documents could provide evidence for the quality status of surveillance data of the livestock sector at the Woreda level in Ethiopia. These are conducted in the Oromia regional state of Jimma and Borana zone in Kersa and Guchi Woreda, respectively [1,9], which helped us to identify key factors influencing surveillance data quality at the district level. Therefore, the investigation was conducted to determine the animal health surveillance data quality of the Woreda and to generate efficient recommendations that will help us to apply basic principles to approve data quality.

In-Service Applied Veterinary Epidemiology Training (ISAVET) field program is designed to link the theoretical data quality audit principles learnt in the classroom with the actual work place animal health surveillance data. The data quality audit was constituted in October. In this case, data quality audit was conducted in animal health service of Meskan district, East Guraghe zone, Central Ethiopia in order to identify key factors influencing surveillance data quality in the district, and to take action after data quality audit that bring remarkable improvement in the timeliness, completeness and accuracy of data to be produced

2. Objectives

2.1. General objective

The overall goal of data quality audit was to assess animal health surveillance data quality and

related gaps in Meskan District, East Guraghe Zone, and Central, Ethiopia Region.

2.2. Specific objectives

The following specific objectives have been decided for the audit activity:-

- 1) To describe the surveillance system of the district and Information flow
- 2) To assess data collection and management methods in the district
- 3) To assess the awareness of the stakeholders about data use
- 4) To assess the link of laboratory with field investigation

3. Methods

3.1 Study Area

The district located south west of Addis Ababa, capital city of Ethiopia at 130kms. The area bordered on north, south sodo district and on east eastmeskan district, on north silit zone, and on west gurage zone. Butajira, is capital city of the district and also misraqegurage zone Geographically, located at latitude of 8°07' N and longitude of 38°22' E. The area has annual average rainfall of 1200mm, altitude of 2131masl and T⁰ vary with 15 to 20°C.

The area had rich in livestock with a total of 693294 population of this 172891 cattle population, 109228 sheep population, 70936 goat population, 320944 poultry population, 6795 horse, 315 mule, 12185 donkey(10)

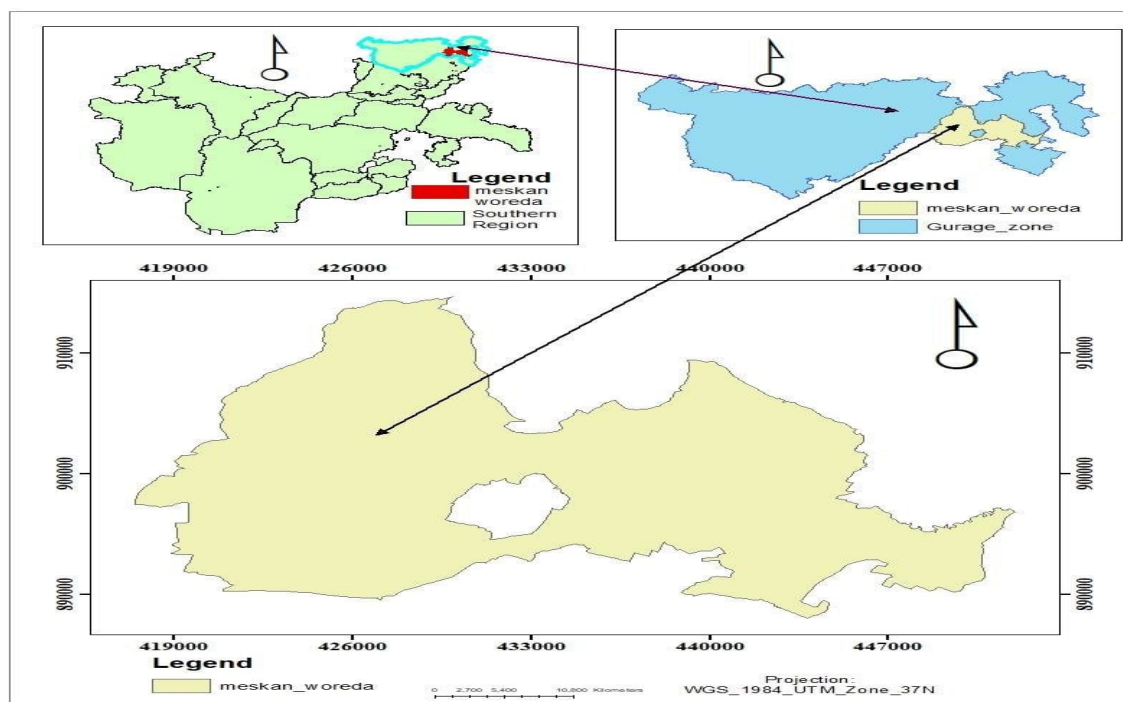


Figure 1 Meskan district map

The district has 26 kebeles and out of which eight (8) of them have governmental animal health posts. Totally, there are 8 health posts. 1 type B, 5, type C, 2 type D clinics and the rest kebele has

experts only. There are 21 animal health workers out of which 2, DVM 13, BSc 5, diplomas and 1, laboratory technician

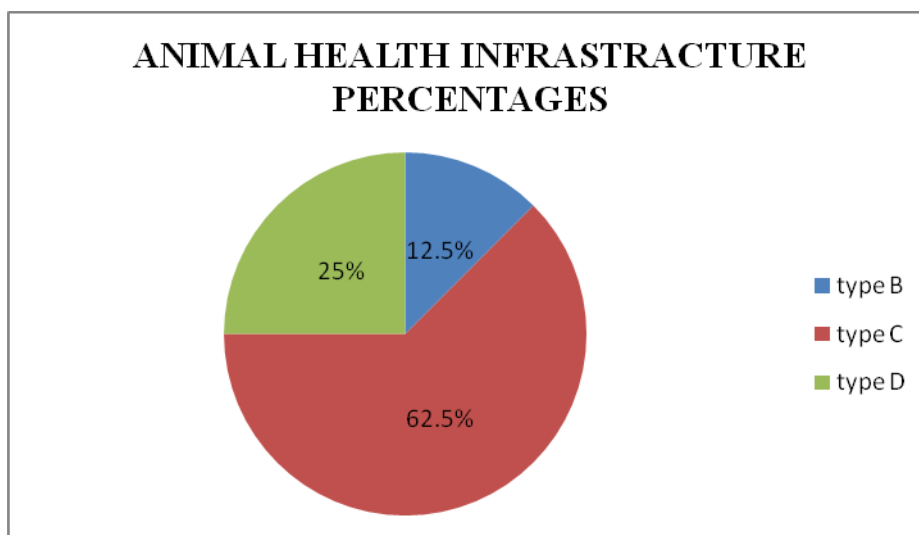


Figure 1: Animal Health Infrastructure percentage of Meskan District

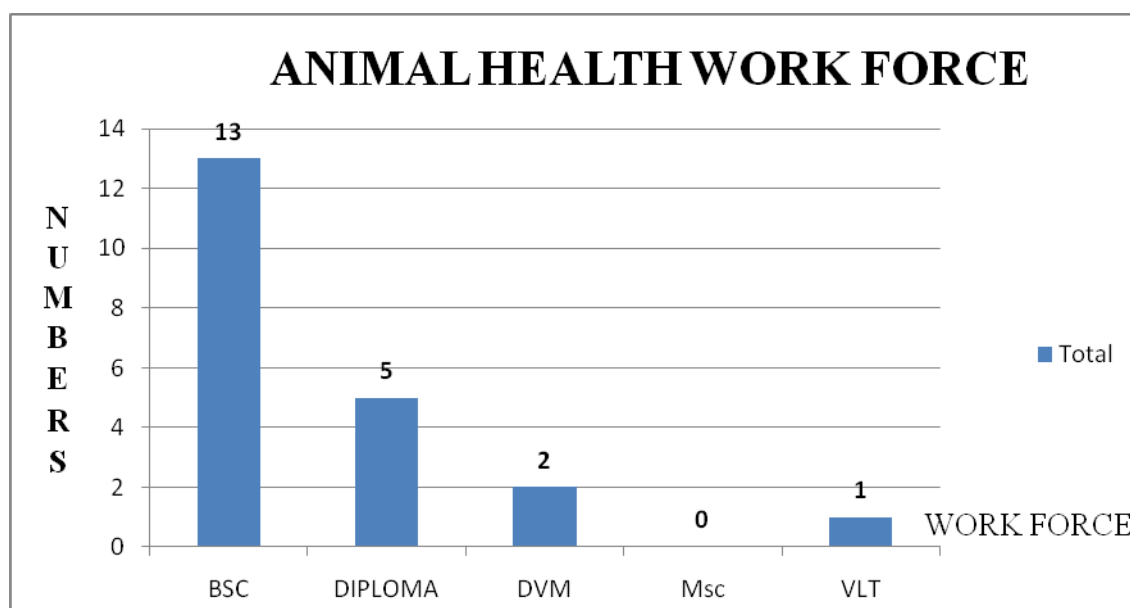


Figure 2: Animal health workforce in Meskan district

There are 21 animal health workers out of which 2, DVM, 0, MSc, 13, BSc, 1, VLT and 5, diplomas as summarized in the above graph (fig. 3).

3.2. Study Design and study period

A retrospective study was conducted for the period of six year from 2020 to 2025 to assess the animal health surveillance data quality of Meskan district.

3.3. Data collection

Surveillance Data was collected from the monthly Disease Outbreak and Vaccination Report

(DOVAR) that were reported to zones and regions. The documented DOVAR reports of six years from 2020-2025 reviewed for the quality assessment based on data quality auditing guidelines. Key information interviews were conducted as part of this study, and there responsible district animal health surveillance professionals were questioned using a pre-designed data gathering checklist

3.4. Data management and Analysis

Surveillance data obtained from DOVAR were coded and transferred into Microsoft Excel spread sheet and statistical analysis using descriptive statics was performed.

4. Results

4.1 description of surveillance system of the administration

4.1.1 Surveillance data collection, source of data, flow and analysis

Administration Surveillance data flow in this report of data quality audit was described in the following figure 4, below

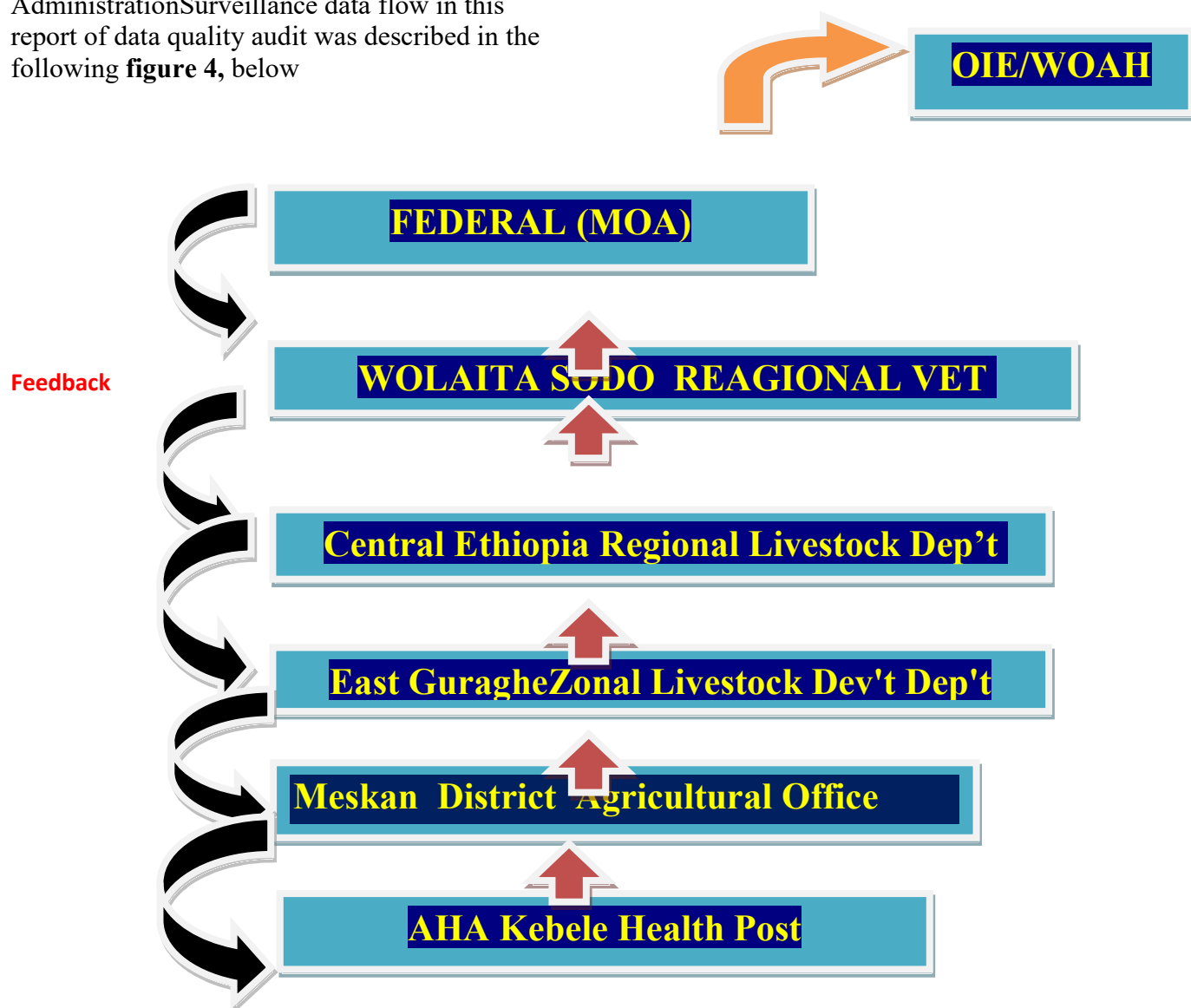


Figure 3: Animal Health Surveillance dataflow in Meskan

4.2. Surveillance Data collection system of the district

Animal Health surveillance reports and immediately reportable disease outbreaks are communicated through both written and verbal channels. Data are collected from farmers, farm owners, and other stakeholders by kebele animal health professionals. Monthly feedback is provided to the kebeles based on submitted reports and checklist reviews. Monthly reports are compiled and sent as hard copies to the district animal health office, while weekly and daily outbreak updates are reported immediately by phone to the district epidemiology team. The district focal person completes outbreak reports using the DOVAR submits them to the East Guraghe Zonal Animal Health Office, keeping a copy at the district office for record. In addition, a list of suspected and confirmed cases of immediately reportable diseases such as Anthrax, Lumpy Skin Disease (LSD), Foot and Mouth Disease (FMD), and Rabies is compiled regularly from kebele reports. These data are cross-checked with outbreak records to ensure accuracy, completeness, and timely reporting. However, the district currently does not analyze data by animal species, time, and place, which limits its ability to detect trends and guide timely disease prevention and control actions.

4.3 Awareness of Data Use by Stakeholders

In **Meskan district**, even though the surveillance data is used to know about the disease outbreak occurrence and trends and spatial distribution of disease, the district have no clearly stated/defined objectives for collecting surveillance data. In addition, almost all of the district stakeholders have no awareness on what will be done with the collected data, and this creates gap on collecting and submitting data in complete, accurate and timely.

4.4 Use of Laboratory in Field Investigation/Surveillance

Wolayita sodo Veterinary Regional Laboratories were the responsible institutions that provide diagnostic support for Meskan district but most of field investigation following disease outbreak is performed using clinical and epidemiological investigation without laboratory. But in some difficult outbreak condition, Wolayita Sodo regional veterinary laboratory center provide diagnostic support for outbreak investigation. A minimum of one week is required to receive feedback about laboratory test results.

4.5 Surveillance Data Benefit (Usefulness)

In Meskan district the reports used to share data from one level to the next were three kinds. There are weekly report, monthly animal health service report, and DOVAR. From Meskan district, these reports were submitted to Zone and others concerned government bodies once per months, but reports were submitted to Meskan district Agriculture Office from Kebele animal health post every week per months. Only surveillance data reports reported with disease outbreak occurrence can lead and enforce the district to conduct field investigation. The district provide feedback on surveillance data quality and performance to vet clinics, animal health posts, farmers and other stockholders every month after evaluating and analyzing reports on the main animal health service activities and surveillance through monthly, quarterly, semi-annual and annual meeting and panel discussion, or directly via phone call. In general, the benefit of surveillance data was to share data and information from one level to the next with all stockholders.

4.6 Assessment of DOVAR

From the total of 72 DOVAR formats which are expected to be sent every month in the past 6 years, 17 reports were found in the district office. The number of reports sent in 2020, 2021, 2022, 2023, 2024, and 2025, were 3, 6, 3, 0, 0 and 5 respectively. The available reports

have been shown in the following (Table 1). These available reports were assessed against the key data quality indicators. There were outbreak reports in the past 6 years. As indicated only 17 report out of 72 are delivered 13/17(76.4%) of are zero report and 4/17(23.6%) outbreak is occurred within 2020-2025

But, in district there were small number of report store in the office and all staff member have no

understand importance DOVARs and how to fill up the format due to this the report lacks quality and provide poor information. From the expected monthly DOVAR report 23.7% (17/72) were reported, while 76.3% (55/72) were not reported.

Out of 17 reviewed reports, there was 9 missing of data and 4timeliness problem while (9/72) or 12.5% have a problem with accuracy (See Appendix).

Table: 1 Summary of DOVAR Report from 2020- 2025 in Meskan district.

Reports	Years	Expected reports	Sent reports
DOVAR	2020	12	3
DOVAR	2021	12	6
DOVAR	2022	12	3
DOVAR	2023	12	0
DOVAR	2024	12	0
DOVAR	2025	12	5
Total		72	17

As indicated only 17report out of 72 are delivered 13/17 (76.4%) of are zero report and 4/17(23.6

%) outbreak is occurredwhile76.3% (55/72) were not reported within 2020-2025

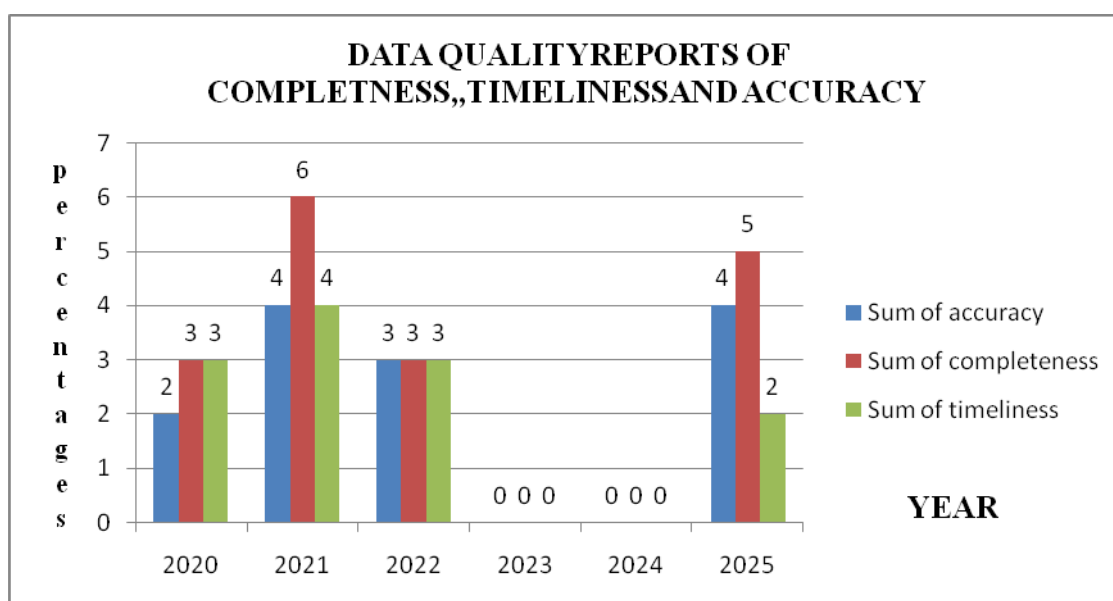


Figure 4: Summary of Data Quality Report in Meskan district for past three years (2023-2025GC)

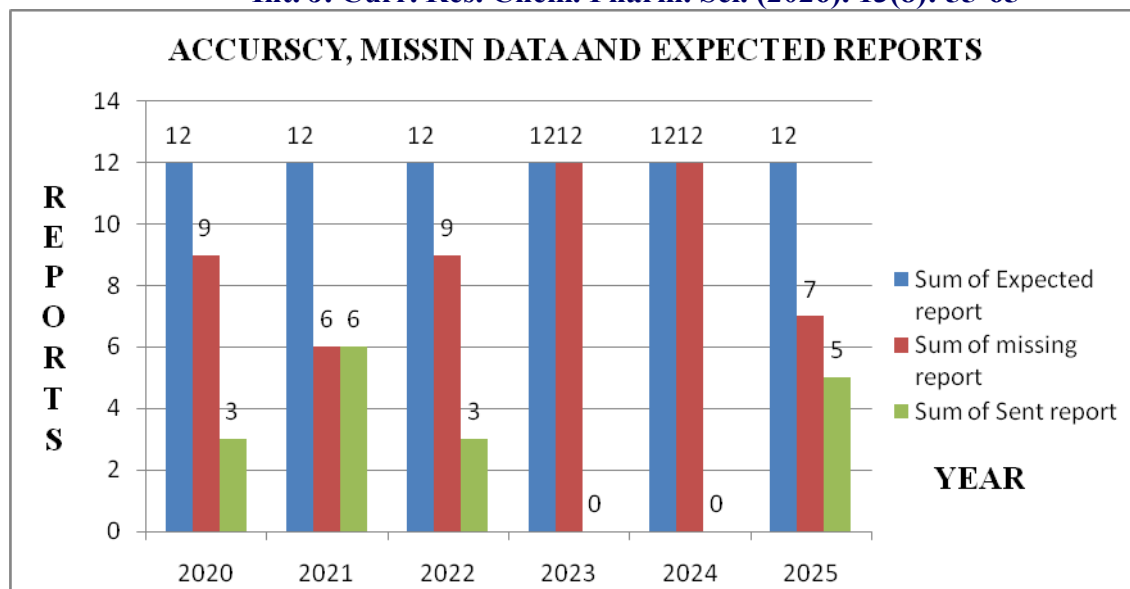


Figure 5: The accuracy and missing data, Expected Reports of DOVAR in Meskan district

Table 2: Case Fatality Rate (2020-2025)

Year	Name of diseases	Total Cases	Total Deaths	CFR (%)
2020		0	0	0
2021	FMD	2	0	0
2022		0	0	0
2023		0	0	0
2024		0	0	0
2025	FMD	2	1	50
	Total	4	1	25

There were only 23.6%4/17(four FMD,) outbreak reports in the past six years. The rest of the reports13/17 (76.4%) are zero reports while 76.3% (55/72) were not reported within 2020-2025

6. Conclusion and recommendations

The present retrospective findings of the animal health surveillance data quality audit of Meskan district showed documents of DOVAR from 2020 to 2025. This study revealed that there were limitations on the animal health surveillance data quality of Meskan district. The outbreaks were recorded disease outbreak recorded in Meskan

DOVARs assessed in the past 6 years. The pre-define data quality attributes were investigated for missing data, data inaccuracy and problem of timeliness in the assessed DOVARs document of Meskan district livestock development office agree with [1] who reported similar variables in their study on animal health surveillance DQA in Karsa Woreda, Jimma zone. The majority of the data quality problems found were encountered on page 1 (general information) and page 2 (the details of the outbreak reporting person) of the DOVARs format. About 12.5% of inaccurate data was identified in the district's DOVAR document, but when compared to Kersa district Jimma zone, Oromia whose data identified inaccurate data was 42.8%, the meskan district data accuracy was by far better (70.8%).

According to the current study, the Meskan district animal health monitoring data quality audit's timeliness is 76.4% (very good). This finding showed that reporting timelines is better than that was reported by Karsa district, Jimma zone whose reporting timeliness was 31.6% in their investigation on the quality of the animal health surveillance data collected (Unpublished but done by ISAVET 8th cohort). The district's AHA or kebeles' administrators were responsible for gathering the monthly animal health surveillance data, which are then forwarded by the animal health assistant to the district agricultural offices by the coordinator of livestock development offices via phone call. The DOVARs documents were kept in a secure location, but there is no data analysis on the district's animal-place-time relationships. The zone's Animal Health sector office was then informed. As a result the zone's Animal Health sector office shared a standard DOVARs format to the Districts' Animal Health Office and received filled form from them and shared with the Woliya Sodo Veterinary Regional Laboratory. Similar to this, the Woliya Sodo Regional Veterinary Laboratory is linked to an internet system and sent data to the central Ethiopia Livestock Development Agency digitally. Finally, the Federal Ministry of Agriculture received a submitted data from the central Ethiopia Livestock Development Agency. The issues with reporting on animal health surveillance were caused by a lack of attention, carelessness in filling out the form, and waiting for requests for reports from the aforementioned responsible authority.

6. Conclusion And Recommendations

Generally the animal disease outbreak surveillance system in Meskan district was very good. The flow of information is from local to national level reverse. But the district still needs to improve animal health surveillance data quality, identify filled information accurately, and ensure proper data collection and analysis. The lack of proper training and proper data collection

methods, as well as adequate awareness of data usefulness needs to be improved.

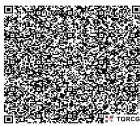
Based upon above conclusions, the following recommendation is forwarded:

- ✓ Preserving the completed DOVARs for analysis in a permanent location
- ✓ Regularly supervising staff at local area
- ✓ Encouraging local AHA to provide accurate data for advancements in surveillance systems sustainability
- ✓ Have specific goals in mind when gathering data for animal health surveillance
- ✓ Create an organized strategy for gathering surveillance data
- ✓ The region and zone never written abbreviated and a month, region, zone, and woreda on the first page should have written in capitalized on the given space.
- ✓ Every blank space on DOVAR report given to fill should be filled appropriately without swapping one another and stamp must be present
- ✓ Continuous training and awareness need to improve quality of DOVARs
- ✓ The link communication between regional laboratory and filed/ district epidemiologist must improve.

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