



Maryland

OFFICE OF THE INSPECTOR GENERAL FOR HEALTH

Wes Moore, Governor · Aruna Miller, Lt. Governor · Shelly Marie Martin, Inspector General

To: Matthew McConaughey, Health Officer
Wicomico's County Health Department

From: Shelly Marie Martin - *Shelly Marie Martin, OIGH*
Inspector General

Subject: Special Review Report – FY25 WiCHD Vaccine Loss

Date: May 20, 2026

Background and Objective

The Office of the Inspector General for Health (OIGH) received a complaint regarding significant vaccine losses at the Wicomico County Health Department (WiCHD) during fiscal year 2025. The complaint alleges that WiCHD lost over \$12,000 in vaccines on two occasions due to equipment failure and staff negligence.

The concerns primarily relate to vaccine storage alarms being triggered during these incidents and employees reportedly refusing to respond or report to the facility to mitigate the loss.

In addition, concerns were expressed regarding a lack of administrative oversight, alleging that the Health Officer and department directors failed to take disciplinary action or implement corrective measures, allowing the incidents to recur.

In response to these concerns, the OIGH initiated a special review to assess the circumstances surrounding vaccine losses at WiCHD in 2025 and evaluate the department's response to storage emergencies. Specifically, the review will determine:

1. The frequency and total financial value of vaccine losses at WiCHD during 2025.
2. Whether WiCHD employees follow established protocols for responding to temperature excursions and equipment alarms.
3. Whether WiCHD leadership took appropriate corrective actions following each incident to prevent recurrence.
4. The adequacy of the department's vaccine storage and emergency response policies.

Results of Review

The OIGH's review determined that WiCHD experienced vaccine losses totaling \$19,224 as a result of temperature excursions during the audit period. While WiCHD complied with manufacturer guidance for vaccine disposition, the underlying conditions contributing to these losses were preventable.

Collectively, the review indicates that deficiencies existed across multiple control areas, including policy development, system configuration, staff response protocols, and management oversight. Specifically, WiCHD did not maintain comprehensive and current policies governing vaccine handling and emergency response, and critical alarm systems were not consistently configured or monitored to ensure reliable notification and escalation. In addition, employee accountability and on-call response processes were not effectively enforced, resulting in delayed or absent responses to temperature excursions.

The OIGH further noted that management actions to address identified deficiencies were reactive, lacking the timeliness and comprehensiveness required to prevent recurrence after the initial incident. Although improvements were made subsequent to later temperature excursions, these actions occurred after repeated control failures and associated losses.

Overall, the control environment did not provide reasonable assurance that vaccine inventory would be consistently safeguarded against temperature excursions. Strengthening internal controls, formalizing accountability structures, and ensuring reliable system functionality are necessary to mitigate the risk of recurrence and to support effective stewardship of public health resources.

cc: Dr. Meg Sullivan, MDH Deputy Secretary for Public Health Services.

Office of the Inspector General for Health

Special Review

May 20, 2026

Wicomico County Health Department – Vaccine Loss

For the period of July 1, 2024 through June 30, 2025



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Background

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The concerns primarily relate to vaccine storage alarms being triggered during these incidents and employees reportedly refusing to respond or report to the facility to mitigate the loss.

In addition, concerns were expressed regarding a lack of administrative oversight, alleging that the Health Officer and department directors failed to take disciplinary action or implement corrective measures, allowing the incidents to recur.

In response to these concerns, the OIGH initiated a special review to assess the circumstances surrounding vaccine losses at WiCHD in 2025 and evaluate the department's response to storage emergencies.

Objectives

The objective of this review is to assess the circumstances surrounding vaccine losses and evaluate the department's response to storage emergencies. Specifically, the review will determine:

1. The frequency and total financial value of vaccine losses at WiCHD during 2025.
2. Whether WiCHD employees follow established protocols for responding to temperature excursions and equipment alarms.
3. Whether WiCHD leadership took appropriate corrective actions following each incident to prevent recurrence.
4. The adequacy of the department's vaccine storage and emergency response policies.

Scope and Methodology

To accomplish our review, we conducted a preliminary investigation and performed review of vaccine inventory records, waste reports, digital data logger (DDL) records, alarm history for all vaccine storage units, interviews with relevant personnel, employee "on-call" schedules, WiCHD's Continuity of Operations Plan, emergency response protocols for the period in question, records to determine if any administrative actions were taken following the losses and evaluate the department's "Standard Operating Procedures" (SOPs) for vaccine storage and emergency handling.

Transactions were selected for testing based on auditor judgment, with consideration given to factors such as risk, timing, transaction amount, and significance to the area under review. Unless specifically noted otherwise, statistical or non-statistical sampling methods were not employed. As a result, the findings from our tests should not be extrapolated to the entire population from which the transactions were drawn.

This special review was conducted in accordance with generally accepted government auditing standards. These standards require that reviews be planned and performed to obtain sufficient and appropriate evidence to provide a reasonable basis for the findings and conclusions. We believe the evidence obtained during our review provides a reasonable basis for our findings and conclusions based on the objectives outlined in this engagement.

In accordance with GAGAS, a Peer Review is required to be conducted at least once every three years by an independent external firm. Peer Reviews serve as periodic evaluations of the quality and effectiveness of an organization's audit work and internal quality control systems. The Office of the Inspector General for Health (OIGH) External Audit Division has not undergone a Peer Review to date. However, the division has expressed its intention to comply with GAGAS Peer Review standards and has tentatively arranged for a peer review to take place in May 2027. Until the peer review is concluded, the OIGH External Audit Division remains non-compliant with the GAGAS Peer Review requirements.

Criteria (Government Laws, Regulations, and Policies)

The OIGH conducted its review and developed findings and recommendations based on the following established criteria:

- The Maryland Department of Health's Local Health Department Funding System Manual, which outlines the fiscal framework, program responsibilities, and reporting obligations for local health departments.
- Maryland Department of Health (MDH) policies and regulations, including guidance related to grant compliance, procurement, fiscal accountability, and reporting.
- The Generally Accepted Government Auditing Standards (GAGAS), issued by the U.S. Government Accountability Office, which establish principles of independence, professional judgment, and evidence-based audit conclusions.
- The Maryland Code of Regulations (COMAR), Title 10 – Department of Health, which governs administrative, financial, and operational practices within Maryland's public health system.
- The Maryland IT Security Manual V1.2.
- Wicomico's County Health Department Vaccine Handling and Storage Inventory Policy.
- Wicomico's County Health Department Continuity of Operations Plan (COOP) 2025.

Findings and Recommendations

Finding 1 – Financial Loss Resulting from Vaccine Temperature Excursions and Subsequent Waste Disposal

WiCHD disposed of 243 doses of vaccines totaling \$19,224 following two temperature excursion incidents.

Analysis

The OIGH review of WiCHD's Vaccine Loss Incidents for the review period disclosed that 243 doses of vaccines totaling \$19,224, were disposed of as waste. The review of excursion reports for April and September 2025 confirmed that storage instabilities led to the loss. Supporting documentation indicated that WiCHD corresponded with vaccine manufacturers to determine product stability following these incidents. Based on manufacturer instructions, the health department disposed of one vaccine type after the April 2025 incident and all affected vaccines following the September 2025 incident. While the agency followed disposal protocols after the excursions occurred, the resulting waste represents a material loss of State-funded resources and public health inventory.

Recommendation 1

The OIGH recommends that WiCHD:

- a. Strengthen temperature monitoring protocols to prevent future vaccine excursions.**
- b. Conduct comprehensive staff training on vaccine handling and storage procedures.**
- c. Perform root cause analyses for all vaccine wastage exceeding established thresholds.**
- d. Enhance emergency response plans for refrigerator or power malfunctions.**

Finding 2 – Insufficient Policy & Protocols for Vaccine Handling & Storage

WiCHD did not have adequate policies & protocols in place for vaccine handling & storage.

Analysis

The OIGH review of WiCHD's Vaccine Loss Incidents for the 2025 disclosed that the Wicomico County health department's policies and protocols for responding to temperature excursions and equipment alarms were insufficient. Specifically, the review noted the following deficiencies:

- **Incomplete Escalation Procedures:** there is no established hierarchy or comprehensive call list for emergency responders. Appendix A of the current policy only contains two contact numbers for the Procurement Officer and Health Officer, which is inadequate for ensuring a timely response.
- **Lack of Accountability:** the existing policy does not outline specific consequences for employee negligence or the failure to respond to equipment alarms.
- **Infrequent Policy Reviews:** the Vaccine Handling and Storage Inventory Policy was last reviewed on April 8, 2024. There was no evidence that the Health Officer assessed protocols after the 2025 excursions to improve effectiveness.

- **Undefined Response Timeframes:** the policy fails to establish a specific timeframe for on-call personnel or supervisors to respond to the facility when alarms are triggered.
- **Lack of Documented Training:** there is no documentation confirming that employees completed required vaccine emergency training. The current policy was reviewed by only one registered nurse, suggesting a systemic lack of training.
- **Omissions in continuity plan:** a review of the Continuity of Operation Plan (COOP) revealed it contains no procedures for responding to vaccine excursions.

Recommendation 2

The OIGH recommends that WiCHD improve its Vaccine Handling and Storage Inventory Policy by:

- Establish a formal escalation protocol and maintain a comprehensive emergency contact list for employees. The protocol should include both manual notification procedures and an automated alert system capable of escalating notifications to higher levels within the escalation hierarchy when initial contacts are unavailable or fail to respond during emergency situations.**
- Implementing consequences for employee's negligence or failure to respond to alarms.**
- Ensuring the Health Officer performs a review of the policy each new fiscal year and documents the review for future reference.**
- Implementing a timeframe for on-call person or Immunization Program Supervisor/Program Manager to respond in the event of alarm notifications.**
- Establishing in detail in the policy a specific timeframe that the Health Officer should be notified about incidents/excursions.**
- Implementing required training for employees on vaccine handling and storage and actions to take in the event of an excursion.**
- Ensuring training is completed annually, documented and saved for future reference.**
- Implementing policies & protocols for vaccine handling and storage into COOP.**

Finding 3 – Technical Failures and Procedural Deficiencies Leading to Significant Vaccine Loss Incidents

WiCHD's inadequate alarm systems and response protocols resulted in preventable vaccine loss incidents.

Analysis

The OIGH review of WiCHD's Vaccine Loss Incidents for the 2025 disclosed that multiple technical failures and procedural gaps hindered the effectiveness of the digital data logging system. The review identified the following concerns:

- The digital data logging and alarm notification system lacked essential functions to call or text employees during emergencies.
- The system failed to provide receipt confirmations or escalate notifications to alternative receivers when initial alerts were unconfirmed.
- The incident on Saturday, April 19, 2025, resulted from a system failure where no alarm triggered, and staff remained unaware of temperature excursions until returning the following Monday. Notification settings were restricted to work emails for only two nurses, resulting in

missed alerts over the weekend. The investigation revealed that text message notifications were previously disabled following staff turnover without being re-established.

- The incident on September 5, 2025, involved passive negligence where staff ceased monitoring after three alerts, assuming temperatures had stabilized. The reviews found that alarm parameters were incorrectly configured to only trigger for low temperatures, neglecting high-temperature thresholds.
- Both incidents resulted in a two-day response lapse, indicating a consistent failure to maintain 24/7 vaccine monitoring protocols.

Recommendation 3

The OIGH recommends that WiCHD:

- Coordinate with the digital data logging system vendor to activate and verify the system function that requires employees to acknowledge receipt of an alarm notification, thereby properly assigning responsibility for response.**
- Ensure all digital data logging system and third-party alarm system vendor parameters are correctly configured to trigger notifications for both high and low-temperature excursions for all monitored vaccine storage units.**
- Implement the escalation process with the alarm system vendor, clearly defining the time interval allowed before the alarm notification is automatically escalated to the next person on the call list for unconfirmed alarm notifications.**
- Ensure all staff designated as emergency essential personnel are correctly configured within all alarm systems vendors systems to receive notifications via all required methods (email, text, phone call).**
- Formalize a call tree to ensure continuity of coverage for vaccine excursions, particularly when incidents occur outside of normal business hours, such as during weekends.**
- Conduct staff training on required response actions for all system alerts.**
- Document system configuration changes to prevent unauthorized disabling of notifications.**

Finding 4 – Inadequate Management Oversight and Personnel Accountability for Vaccine Temperature Excursions

WiCHD employees & management failed to take the proper actions to mitigate vaccine losses.

Analysis

The OIGH's review of employee and management accountability during the vaccine temperature excursions disclosed systemic failures in on-call response, task verification, and supervisory oversight that contributed to ineffective mitigation of vaccine loss risks.

- **On-Call Task Verification and Operational Effectiveness:**

The OIGH's review of employee accountability and oversight during the two excursions disclosed WiCHD's on-call structure was not functioning as intended. Although multiple staff were designated as primary and backup contacts, none acknowledged alarm notifications during either excursion.

Notification controls were ineffective, as only a limited number of staff received alerts, and those alerts were transmitted through channels (e.g., work email) that were not reasonably accessible during non-business hours. In addition, WiCHD acknowledged that, in at least one instance, alarm notifications were disregarded based on unsupported assumptions that temperature conditions had normalized.

Further analysis identified control breakdowns impacting operational efficiency, including failure to maintain current contact information within vendor systems, disabled or improperly configured notification settings, and lack of timely follow-up with alarm system vendors to validate system functionality. These conditions indicate that WiCHD did not exercise due diligence to ensure that critical alerting mechanisms were operational, thereby impairing the effectiveness of the on-call response framework.

- **Management Oversight**

The OIGH's review of WiCHD management oversight disclosed management did not establish or enforce adequate accountability mechanisms to address identified performance gaps leading to repeat losses. While management demonstrated the ability to respond effectively under certain conditions (e.g., a separate power outage event), this response was not supported by consistent, formalized accountability practices. Interviews disclosed that expectations regarding staff response to alarm notifications were communicated informally, with limited documentation of enforceable protocols or disciplinary procedures.

Additionally, WiCHD did not implement structured post-incident evaluations or formal training following the excursions. Management relied on informal discussions and process reviews rather than documented corrective action plans or mandatory retraining. As a result, identified deficiencies in system configuration, notification reliability, and staff response protocols were not comprehensively addressed in a timely manner.

- **Accountability & Remediation**

The OIGH determined that corrective actions implemented by WiCHD were incremental and not sufficiently responsive to the control deficiencies identified after the initial excursion. While limited enhancements were made following the April 2025 event, these actions did not fully address notification failures or ensure system reliability. More comprehensive corrective measures were implemented only after the subsequent September 2025 excursion, including escalation protocols and expanded notification configurations.

However, the timing and scope of these actions indicate that WiCHD's remediation efforts were reactive rather than proactive. The delay in implementing effective controls increased the risk of repeated incidents and demonstrated a lack of timely management intervention to enforce accountability and ensure corrective actions were fully executed and validated.

After the September 2025 excursion WiCHD did implement changes to both systems. Vaccine temperature monitoring protocols were enhanced with specific updates to both the digital data logging and alarm notification systems. Following a review and discussion with the digital data logging system representative, an escalation process was implemented to ensure critical temperature notifications receive a timely response. WiCHD notes *“If primary user-level and administrative contacts fail to acknowledge initial notifications, an automated call is now routed to the Health Department's On-Call Nurse. This measure addresses the risk of primary contacts being unavailable outside of standard business hours, as they are not 24/7 on-call staff.”* The on-call nurse is responsible for answering this after-hours call and following established instructions for checking the units or relocating vaccine inventory. In parallel, the alarm notification system was updated, and alerts for all refrigerated vaccine units are now configured to trigger when temperatures fall below the minimum threshold of 37 degrees Fahrenheit or exceed the maximum threshold of 47 degrees Fahrenheit.

Recommendation 4

The OIGH recommends that WiCHD:

- a. Require formal acknowledgment protocols for all alarm notifications, with documented response times and escalation procedures.**
- b. Establish and document a formal procedure for the quarterly review and testing of all alarm system functionality with vendors. These procedures must ensure that: system notifications are active and operating efficiently and all employee contact details provided to alarm system vendors, including primary and backup contacts, are updated immediately upon staffing changes and are verified on a quarterly basis.**
- c. Configure and periodically test all alarm and notification systems to confirm alerts are active, accurate, and reaching designated staff.**
- d. Ensure the training is followed by a formal, written policy (separate from state guidance) that clearly outlines the disciplinary process for staff insubordination or refusal to respond to alarm notifications, with specific language incorporated into relevant policy.**
- e. Implement mandatory post-incident reviews with documented corrective action plans and assigned responsibilities.**
- f. Require formal training for all designated staff on alarm response procedures, with periodic refresher training.**
- g. Enforce management oversight through routine monitoring of response logs and verification of timely staff actions.**
- h. Require timely follow-up with system vendors to resolve notification failures and document resolution outcomes.**
- i. Develop and implement escalation protocols to ensure unresolved alerts are elevated to responsible personnel without delay.**
- j. Management must establish a formal protocol for continuous monitoring and proactive testing of the alarm systems to prevent recurrence of system setup deficiencies. This protocol should include: Mandatory, scheduled, and documented annual testing of all alarm system notification layers (phone, text, email) by WiCHD staff is required to verify 100% functionality**

and timely receipt of alerts by on-call personnel, alongside a requirement for managers to formally follow up and document the root cause with alarm system vendors any time a system fails, and procedures for ensuring all new system setups or modifications are fully tested and confirmed operational before reliance.

Conclusion

In summary, the OIGH's review of the WiCHD vaccine management practices identified systemic vulnerabilities that led to the loss of 243 vaccine doses totaling \$19,224. These losses were the direct result of a combination of technical configuration failures, insufficient policy frameworks, and inconsistent management oversight.

The review determined that while WiCHD demonstrated the technical capability to manage crisis events as evidenced by their successful mitigation of weather-related power outages in February 2026, the internal controls governing routine emergency responses were not consistently applied. Critical gaps included:

- **Inadequate Alert Protocols:** Monitoring systems were restricted to inactive communication channels during non-business hours, and existing escalation trees failed to ensure a 24/7 response capability.
- **Administrative Deficiencies:** Policy documentation lacked the necessary specificity regarding staff accountability, mandatory response timeframes, and formal training requirements.
- **Reactive Remediation:** Corrective actions were primarily implemented in a reactive manner following significant losses rather than through proactive system testing and risk assessment.

While the OIGH acknowledges the initial remediation steps taken by WiCHD following the September 2025 excursions specifically the enhancement of escalation protocols and standardized temperature thresholds; further action is required to ensure long-term sustainability.

Moving forward, the safeguarding of public health resources is contingent upon the formalization of accountability measures, the integration of vaccine handling into Continuity of Operations Plan (COOP), and the establishment of a rigorous, documented schedule for system testing and staff training. By transitioning from a reactive posture to a proactive, compliance-based framework, WiCHD can significantly reduce the risk of future fiscal and inventory losses.

Appendix – Agency’s Responses



Wicomico County Health Department

108 East Main Street • Salisbury, Maryland 21801

Matthew McConaughy, MPH, Health Officer



May 8th, 2026

Wicomico County Special Audit Corrective Action Plan

- 1) Formalize and document On-call response procedures by May 30th, 2026.
- 2) Update Vaccine Handling and Storage policy by May 30th, 2026.
 - a. This policy will include escalation tree, disciplinary action, training requirements and be flagged for annual review by Director of Nursing, Deputy Medical Health Officer and Health Officer
 - b. Additionally covered is temperature monitoring and routine system testing
- 3) Annual training for vaccine handling, monitoring and on call procedures.
- 4) BY May 30th, 2026, COOP will have an updated section covering vaccine monitoring
- 5) By June 30th, 2026, assessment and load testing of back-up generator will be conducted to identify any issues and gaps of emergency back-up power system.

Review Team

Chau Nguyen, CPA, CIGA
Chief Auditor

Isis Powell, CIGA
Audit Supervisor

Special Review
Job Number 354