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ROOT CAUSE ANALYSIS REPORT
RCA# 2017-03
JANUARY 12, 2018

Executive Summary

On October 2, 2017, the Office of the Chief Medical Examiner (OCME) Quality Assurance Director was informed of an event which occurred in the OCME Operations Center. The event involves a cremation request that was approved in error. After careful review, the QA Director determined that this was a "significant event" within the meaning of Title 17, Chapter 2, Section 17-207 of the Administrative Code of the City of New York. On November 16, 2017, OCME assembled a Root Cause Analysis (RCA) Committee to identify the causal factors and corrective actions to be taken for this event, which was identified as RCA# 2017-03.

The RCA Committee met and reviewed the workflow for cremation approvals and identified areas for improvement. Several causal factors were identified for this event, including the following: the physician incorrectly registering the decedent's death as a natural death and not contacting OCME, an overly complicated process to document the cremation approval in the Case Management System (CMS), and an outdated standard operating procedure for cremation approvals. As discussed below, the RCA Committee recommends that the agency eliminate verbal review of cremation requests, simplify the process for documenting cremation request reviews in CMS, and standardize the cremation approval process by updating the procedure and training.

Background

The Office of Chief Medical Examiner (OCME) has the responsibility to investigate certain deaths, including those occurring from criminal violence, by accident, by suicide, suddenly when in apparent health, or in any unusual or suspicious manner. The OCME investigates any case that may present a threat to public health. Under Section 17-204 of the Administrative Code of the City of New York, the OCME also reviews all applications for permits to cremate the body of a person who died in New York City.

When a death occurs, a physician or medical examiner will enter information of the death event into the New York State Department of Health Electronic Death Registration System (EDRS). EDRS is a web-based system used to electronically register death certificates across New York State. For deaths in New York City, the physician must contact the OCME if the death is not entirely due to natural causes. If the decedent is to be cremated, the funeral director will request cremation clearance through EDRS. Once the cremation clearance is requested, EDRS will send the death certificate to OCME as a cremation request. The death certificate is then reviewed by a tour commander or an agency medicolegal investigator. The tour commander is a supervising medicolegal investigator who coordinates field activities to ensure citywide coverage of all city

street and hospital cases. The tour commander may approve/deny the cremation request or ask that the physician call the agency and provide more information.

See Appendix A for an overview of the workflow and Appendix B for a detailed process map.

Event Description

On September 26, 2017, OCME received a cremation request in which the cause of death section noted "traumatic brain injury". The cremation request was brought to the tour commander who did not approve the cremation request but rather asked that the physician call the agency with additional information. A communications specialist entered the tour commander's assessment and request for additional information in CMS.

On September 28, 2017, the cause of death on the death certificate was revised by a different physician at the same health care facility and resubmitted in EDRS. This revised death certificate was brought to a different tour commander for review, who was a different tour commander from the one who reviewed the original death certificate. A communications specialist unintentionally approved the cremation request on behalf of the tour commander in CMS.

On October 2, 2017, the Department of Health and Mental Hygiene (DOHMH) Quality Assurance Unit contacted OCME and informed the agency that a cremation request was approved for a death certificate which included "traumatic brain injury". The tour commander on duty contacted the funeral home and confirmed that the body had already been cremated on September 30, 2017. OCME took jurisdiction over the case, which was re-opened for investigation.

See Appendix C for a detailed chronology of events.

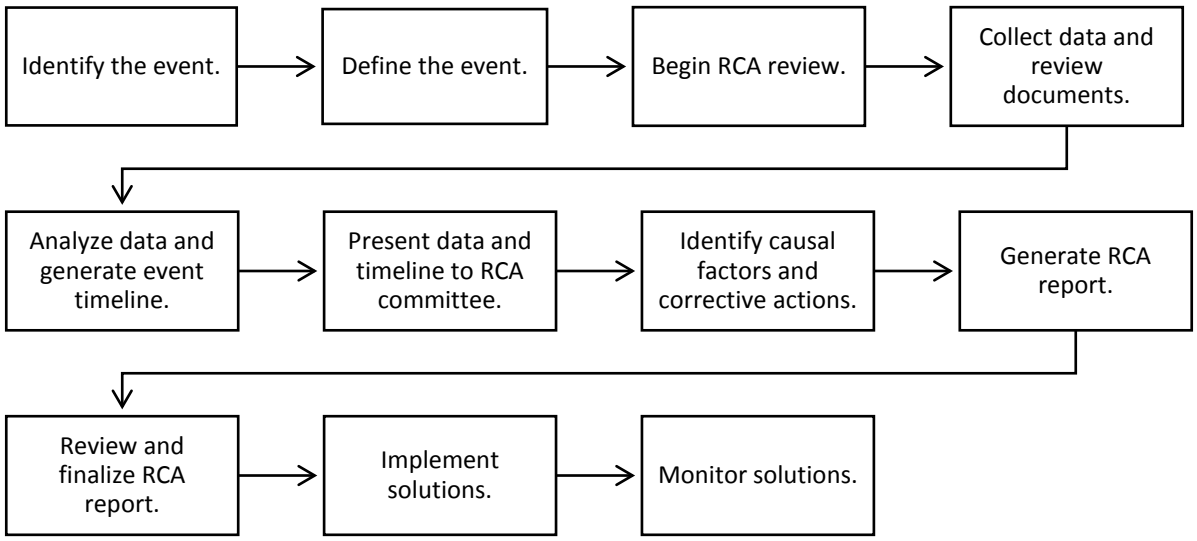
Composition of RCA Committee

The RCA Committee is a multidisciplinary team of professionals assembled in accordance with criteria defined by Title 17, Chapter 2, Section 17-207 of the City's Administrative Code. The RCA committee includes OCME employees and an external expert who serves in a medical or scientific research field. The members of this RCA committee include the following:

- The root cause analysis officer.
- Two employees who are knowledgeable in the area relating to the event.
- A member of the OCME executive management.
- Two employees from OCME departments that are not implicated by the event.
- An outside expert with root cause analysis experience in the medical field.

OCME Root Cause Analysis Process

Root Cause Analysis (RCA) is a structured methodology used to study and learn from events. The goal of the RCA is to understand what happened, identify why it happened and recommend solutions to prevent recurrence. The process used is as follows:



Review of Remedial Actions
Following a review of the cremation approval workflow and the event timeline, the RCA committee reviewed the immediate remedial actions taken by management after being informed of the error. The actions are listed below:

- The agency took jurisdiction of the case and it was re-opened for investigation.
- Verbal review and approval of cremation requests are no longer permitted in the Operations Center.
- All cremation requests are now printed and reviewed by the tour commander on duty. The tour commander will write "approved" or "pending" on the death certificate to indicate if the cremation request is approved or if more information is needed.
- Death certificates are now kept for review by the Deputy Director of Medicolegal Investigations.

The RCA committee found the actions taken by the agency to be appropriate.

Causes and Contributing Factors
RCA committee members further examined the workflow and evidence and employed cause and effect analysis to identify causes and contributing factors for the error. Using this methodology, the RCA committee did identify the following causal factors:

1. The hospital physician who registered the decedent's death in EDRS, registered the death as a natural death instead of contacting the OCME.

Evidence:
The RCA committee reviewed the cremation request workflow and New York City Department of Health and Mental Hygiene guidelines, and learned that a physician registering a death in EDRS must contact the OCME if the death is due to non-natural causes. A non-natural death is a death not entirely due to natural causes and includes deaths from criminal violence, by accident, by suicide or suddenly when in apparent health.

The committee reviewed the death certificate and noted that the cause of death on the death certificate stated "traumatic brain injury". "Traumatic brain injury", a non-natural cause of death, should have been reported to the OCME. Instead, the death was registered as "natural" in EDRS by a hospital physician on September 26, 2017. Two days later, the death certificate was revised by different physician and resubmitted to EDRS. The committee noted that if the death had been reported to OCME instead of being registered as a natural death in EDRS, the death certificate would not have entered the agency's cremation request approval workflow. The erroneous registration of the death as a natural death in EDRS was identified as a causal factor for this error.

2. *The cremation approval process did not include checks to identify potential errors.*

Evidence:
The committee reviewed the cremation approval workflow in more detail and learned that the workflow did not include any steps that confirm or verify the tour commander's approval before it is entered in CMS. When the agency receives a cremation request, a communication specialist prints a copy of the death certificate and may either hand it to a tour commander for review or read the death certificate information to the tour commander. If the death certificate is given to the tour commander, the tour commander will write their approval on the death certificate and hand it back to the communications specialist. If the communications specialist reads the information to the tour commander, the tour commander will verbally indicate if the cremation request is approved or not.

Staff could not recall the event with absolute certainty, but they believed that this cremation request review was likely done verbally. This means that the communications specialist called out the decedent's age and cause of death from the death certificate to the tour commander and waited for a response. This occurs in the agency Operations Center, a room in which there is often activity and discussion taking place between the workstations. When asked if the tour commander's response was repeated or confirmed, staff indicated that the process did not require confirmation. As soon as the tour commander's response was received, the communications specialist entered it into CMS. The committee noted that confirmation of the tour commander's approval could have prevented the error. An OCME audit of approved cases, similar to the DOHMH audit that identified the error, could have potentially caught the error before the decedent was cremated.

The committee acknowledged that the remedial actions taken by managers no longer permits verbal review of cremation requests and that all approved cremation requests are

now reviewed.

3. *The cremation request review and the process to document the cremation request approval in CMS are multistep processes that can be simplified.*

Evidence:
During examination of the cremation approval process, the committee found that the process involves both a communications specialist and a tour commander. The communications specialist is responsible for printing copies of death certificates and documenting the tour commander's approval in CMS. The tour commander is responsible for reviewing the death certificate information and determining if the cremation request can be approved, if more information is needed, or if the death falls under OCME's statutory jurisdiction and the decedent should be examined by a medical examiner. The committee asked why the process included a handoff of information between the tour commander and the communications specialist. Staff members stated that cremation request review is essentially a tour commander task and the communications specialist only provides clerical support. Because of staff shortages and the limited availability of the tour commander and backup medicolegal investigators to review cremation requests, communications specialists were asked to assist with the clerical aspects of the workflow.

The committee also reviewed the clerical component of the workflow and learned that the process to document the cremation approval in CMS requires multiple steps to complete. This is partly due to process requirements and partly due to the communications specialist approving cremation requests on behalf of the tour commanders. A communications specialist must complete the following tasks in order to document a cremation request approval in CMS:

- Open the case in CMS
- Print a death certificate
- Present the death certificate to the tour commander or read the death certificate information to the tour commander
- Re-open the case in CMS
- Assign the cremation request review to the tour commander in CMS
- Accept the assignment on behalf of the tour commander
- Enter the approval on behalf of the tour commander
- Update and save the record

Committee members agreed that the process should be revisited and modified to take full advantage of the CMS platform. The current process is overly complicated and must be simplified. For example, when approving cremation requests, CMS requires the communications specialist to manually select the same tour commander's name from a directory twice. The tour commander's name must be selected during cremation request assignment and again after the cremation request is approved. Cremation approvals in CMS also require the communications specialist to identify the Department and CMS Activity and to navigate to several tabs and windows within the case to complete the documentation. The committee reviewed the CMS workflow and approximately twenty clicks were needed to complete the process.

Additionally, the committee learned that the agency receives 40-50 cremation requests each day. This means that the above process is repeated for each cremation request since each request must be individually reviewed. The requirements to complete multiple fields, selecting and entering the same information twice, and navigating to several tabs/windows were found to complicate the documentation process and increase the opportunities for error.

4. *There is significant variation regarding how staff perform cremation request reviews.*

Evidence:
Discussion of the workflow suggested that there was significant variation regarding how communications specialists and tour commanders performed a cremation request review. For example:

- Communications specialists use either the "Cremation Request" silo or the "Unassigned Investigations" silo in CMS to find cremation requests. A "silo" is a worklist of a particular type of case in CMS. A comparison of the silos found that the cremation requests on both lists were not identical.
- More than one communication specialist may review cremation requests with the tour commander at the same time.
- CMS silos do not track cremation requests that have been reviewed by a tour commander but have not been approved because the physician needs to contact the agency. Because these "pending" cremation requests are not marked in CMS, a tour commander may end up reviewing the same case more than once, or different medicolegal investigators may end up reviewing the same case while it is pending.
- The language used by tour commanders to indicate whether a cremation request is approved or not varies. A tour commander may use "Good/No Good", another may use "OK", while another tour commander may simply place an "X" on the death certificate.

The committee also found that the agency did not have a current standard operating procedure on how cremation request reviews should be performed. The outdated procedure contributed to the lack of standardization in the process.

See Appendix D for the cause and effect analysis.

Corrective Action Plan
The RCA committee recommends the following actions to address the identified causal factors:

1. The agency should advocate for enhanced error detection and error prevention features in EDRS. Future updates to EDRS or its successor application(s) should include features that flag words associated with non-natural causes and prompt the physician to contact OCME if the death is due to non-natural causes.

2. The agency should modify the internal review of approved cremation requests. Currently the Deputy Director of Medicolegal Investigations reviews all approved cremation requests but this is a labor-intensive and time-intensive effort. The committee recommends that the agency clarify the goal of the internal review and audit a sampling of cremation requests. Managers should review previous cremation request errors and identify the reason why most errors occur. For example, do most errors occur because of a typing error made when the approval is entered in CMS? Do most errors occur because the cause of death was incorrectly evaluated by the tour commander? The internal review should be modified to identify those errors. Managers may adjust the number of cases reviewed and the frequency of the internal review based on the audit results. Managers may also want to consider making the internal review an electronic-based processed instead of a paper-based process.

3. The agency must simplify the cremation request review process. Simplifying the workflow to document the cremation approval in CMS and eliminating the information handoff will not only shorten the total amount of time dedicated to the process, but also reduce the opportunities for error in the process. The committee recommends the following:

    - Simplify the documentation workflow by having CMS recognize the user login credentials. This would eliminate the need for someone to manually select the tour commander's name from the directory during cremation request assignment. The selected name should auto-populate in the "Reviewed By" field instead of requiring staff to manually select the name again.

      The agency should consider redesigning cremation request approval in CMS to just a single form from which the tour commander can open the death certificate and click Approve, Pending or Deny. This would permit tour commanders to log into CMS, pick new cremation requests from the appropriate silo and process them directly, with little or no input from Communications staff.

    - Enhance CMS silos so that staff can track cremation requests that have been reviewed by a tour commander but have not been approved because a physician must provide more information. This should minimize duplicate reviews and assist staff in identifying cases that require follow up.

    - If possible, communications specialists should be removed from the cremation approval process. If the tour commanders enter the information directly into CMS, this would eliminate a handoff in the workflow and errors due to miscommunication.

4. The agency should minimize variation in the process by updating the standard operating procedure for cremation request review and approvals. The committee acknowledges that the remedial actions implemented by management standardize some aspects of the process, such as the language to be used when approving a cremation request. However,

an updated procedure, that describes how a cremation request should be handled, along with updated training, would improve the consistency of the process.

If the communications specialist cannot be removed from the process, the agency should then consider assigning a dedicated communications specialist to process cremation requests. Dedicating an individual to the task may also help to minimize variation.

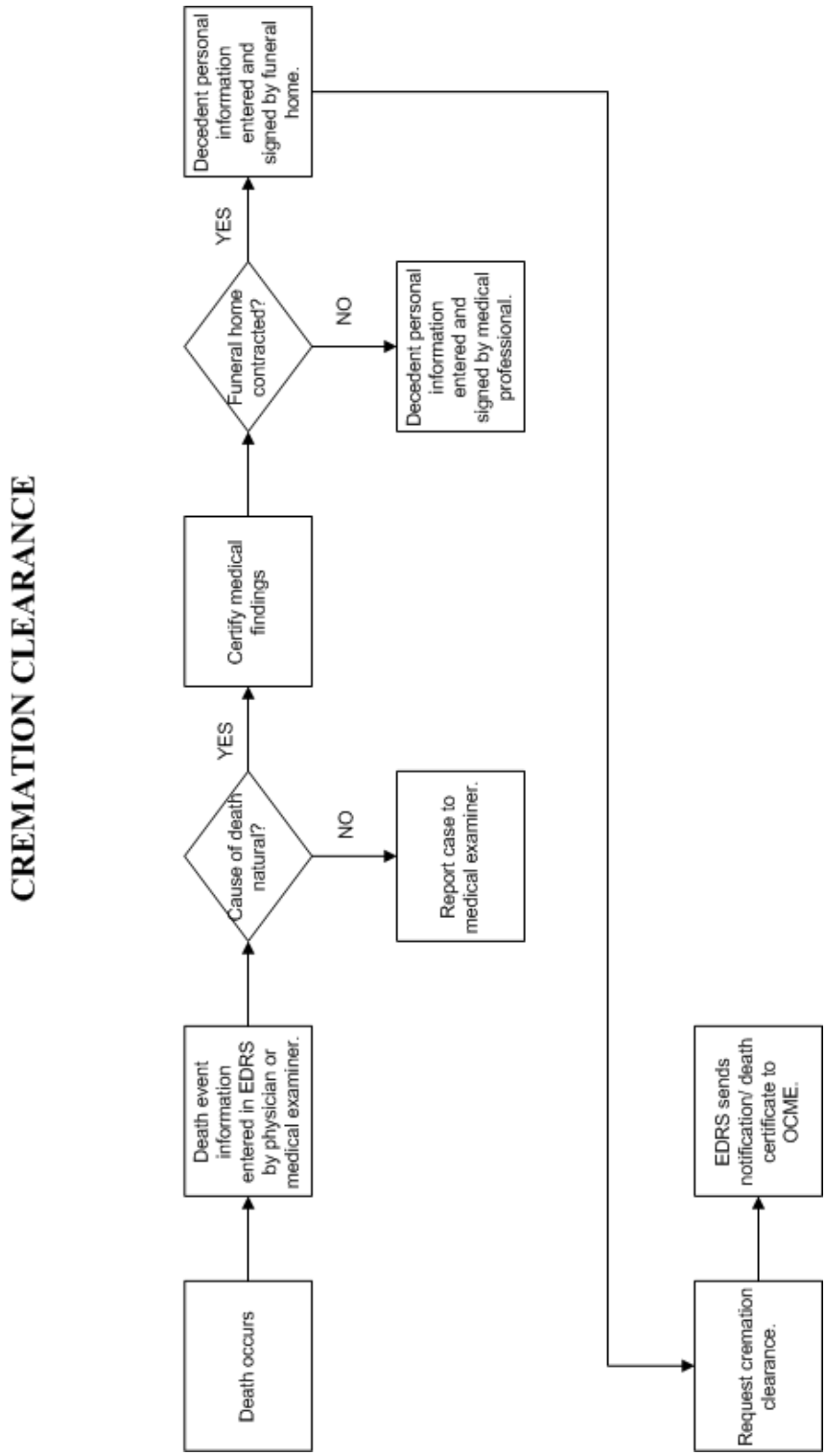
See Appendix E for a cause map with identified corrective actions.

Summary of Corrective Actions

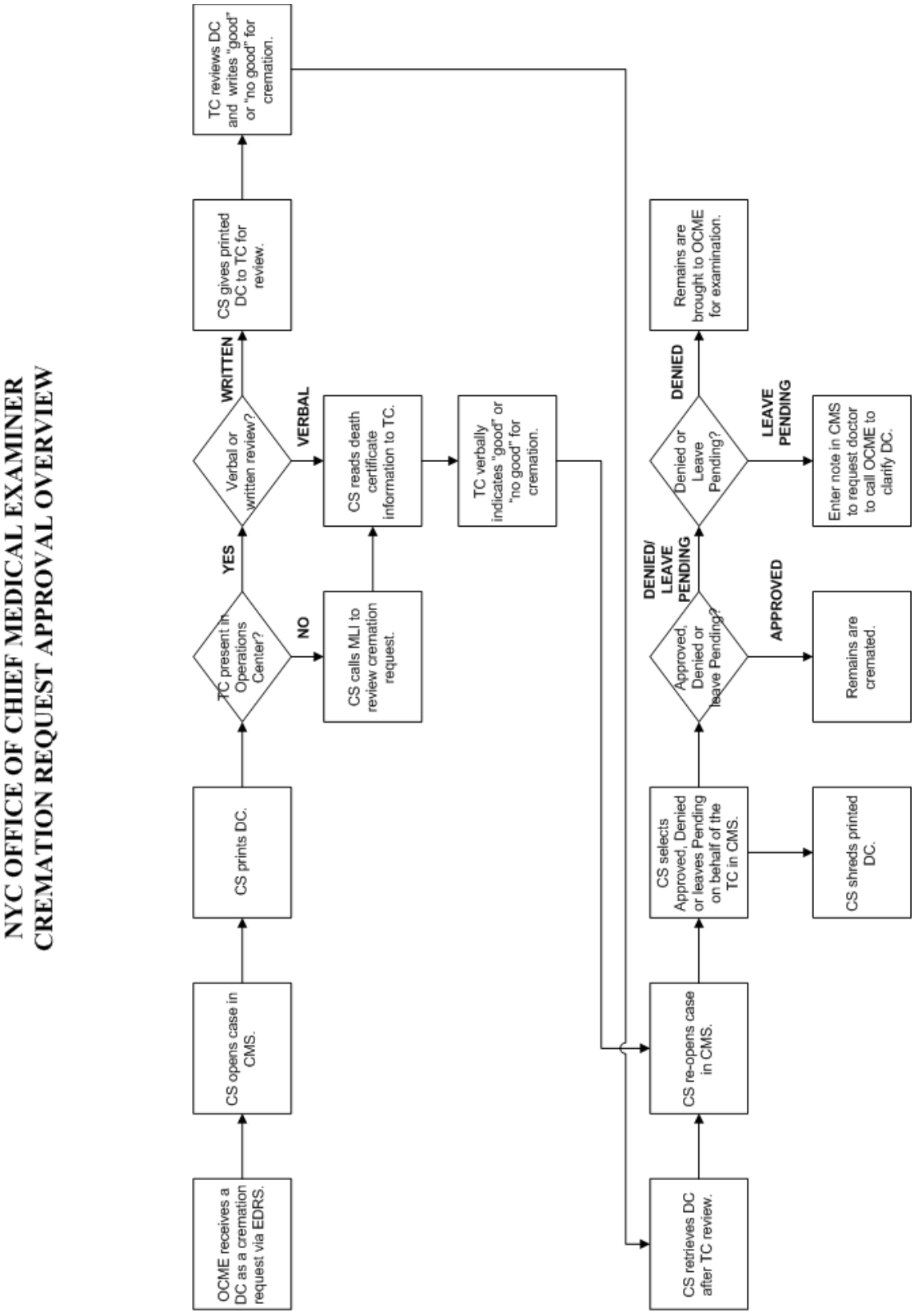
Causal Factor	Recommended Corrective Actions	Recommended Completion Date
The physician who registered the decedent's death in EDRS, registered the death as a natural death instead of contacting the OCME.	1. Advocate for enhanced error detection and error prevention features in EDRS.	4/30/18
The cremation approval process did not include checks to identify potential errors.	1. Modify the internal review of approved cremation requests.	4/30/18
The cremation request review process and the process to document the cremation request review in CMS requires multiple steps to complete.	1. Simplify the cremation approval process in CMS. 2. Enhance CMS silos so that staff can track cremation requests that have been reviewed by a tour commander. 3. Remove communications specialists from the cremation approval process.	4/30/18
There is significant variation regarding how staff perform cremation request reviews.	1. Update the standard operating procedure that describes how cremation requests should be performed. 2. If the communications specialist cannot be removed from the process, assign a dedicated communications specialist to process cremation requests.	4/30/18

The Quality Manager and Laboratory Director will monitor the implementation and effectiveness of improvements.

Appendix A


CREMATION CLEARANCE
Death occurs
Death event information entered in EDRS by physician or medical examiner.
Cause of death natural?
YES
NO
Report case to medical examiner.
Certify medical findings
Funeral home contracted?
YES
NO
Decedent personal information entered and signed by medical professional.
Decedent personal information entered and signed by funeral home.
Request cremation clearance.
EDRS sends notification/ death certificate to OCME.

Appendix B

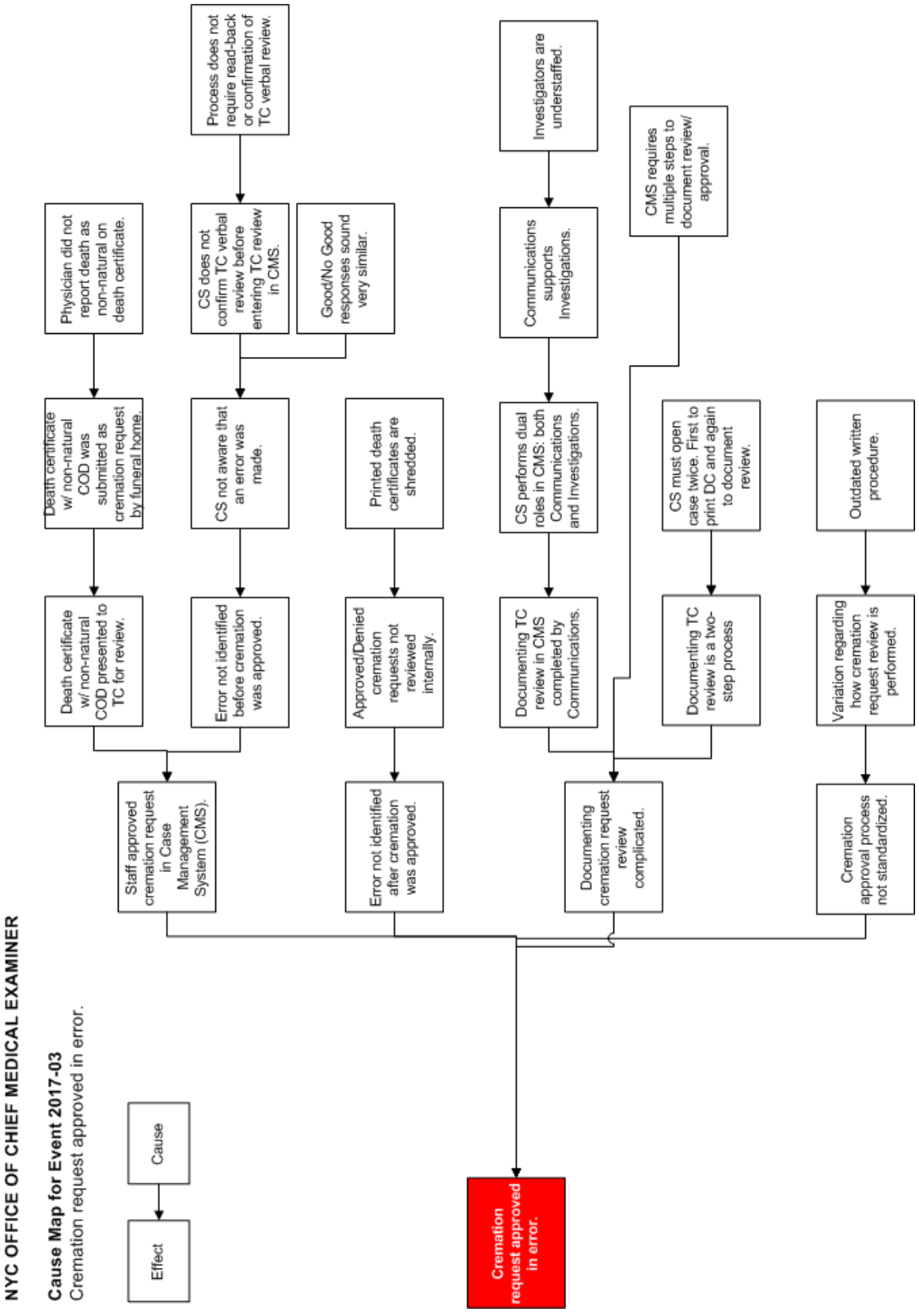

NYC OFFICE OF CHIEF MEDICAL EXAMINER
CREMATION REQUEST APPROVAL OVERVIEW
OCME receives a DC as a cremation request via EDRS.
CS opens case in CMS.
CS prints DC.
TC present in Operations Center?
YES
NO
CS calls MLI to review cremation request.
Verbal or written review?
VERBAL
WRITTEN
CS reads death certificate information to TC.
CS gives printed DC to TC for review.
TC verbally indicates "good" or "no good" for cremation.
TC reviews DC and writes "good" or "no good" for cremation.
CS retrieves DC after TC review.
CS re-opens case in CMS.
CS selects Approved, Denied or leaves Pending on behalf of the TC in CMS.
CS shreds printed DC.
Approved, Denied or leave Pending?
DENIED/ LEAVE PENDING
APPROVED
Remains are cremated.
Denied or Leave Pending?
LEAVE PENDING
DENIED
Enter note in CMS to request doctor to call OCME to clarify DC.
Remains are brought to OCME for examination.

Appendix C

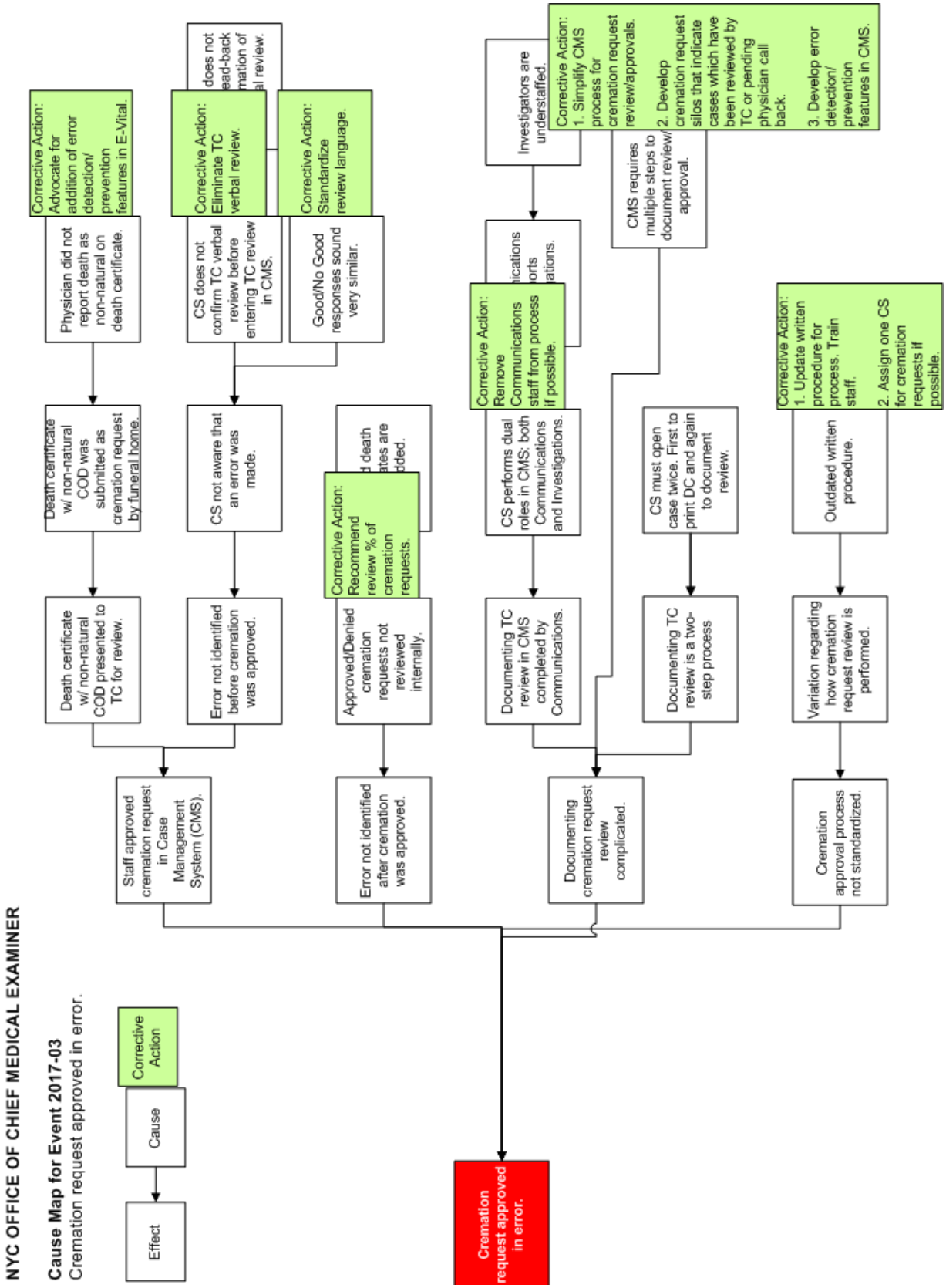
CHRONOLOGY OF EVENTS

DATE	TIME	SOURCE OF INFORMATION	EVENT
9/26/17	13:55	CMS Event Log	OCME received a death certificate as a cremation request from DOHMH via EDRS. The death certificate noted "traumatic brain injury".
	16:22	CMS Event Log	The Communications Specialist assigned the cremation request to a Tour Commander. The Tour Commander reviewed the cremation request and did not approve it. The Tour Commander requested the physician call OCME. The Communications Specialist noted the Tour Commander's comments in CMS.
9/28/17	9:10	CMS Event Log	OCME received a revised death certificate for the case. The death certificate was signed by a different physician but still noted "traumatic brain injury".
	15:46	CMS Event Log	The Communications Specialist assigned the cremation request to the Tour Commander on duty.
	15:48	CMS Event Log	The cremation request was approved by the Communications Specialist on behalf of the Tour Commander on duty in CMS.
10/2/17		Email	The NYC DOHMH QA unit contacted the Tour Commander and alerted him that a cremation request was approved for a death certificate containing "traumatic brain injury" and the remains may have already been cremated. The Tour Commander calls R.G. Ortiz Funeral Home and confirms that the remains were cremated on 9/30/17. OCME took jurisdiction and the case was re-opened for investigation.
10/13/17	15:59	CMS Event Log	OCME submits a new death certificate to DOHMH. Cause of death now states "Pending Further Studies".

Appendix D


NYC OFFICE OF CHIEF MEDICAL EXAMINER
Cause Map for Event 2017-03
Cremation request approved in error.
Effect
Cause
Cremation request approved in error.
Staff approved cremation request in Case Management System (CMS).
Error not identified after cremation was approved.
Documenting cremation request review complicated.
Cremation approval process not standardized.
Death certificate w/ non-natural COD presented to TC for review.
Error not identified before cremation was approved.
Approved/Denied cremation requests not reviewed internally.
Documenting TC review in CMS completed by Communications.
Documenting TC review is a two-step process
Variation regarding how cremation request review is performed.
Death certificate w/ non-natural COD was submitted as cremation request by funeral home.
CS not aware that an error was made.
Printed death certificates are shredded.
CS performs dual roles in CMS: both Communications and Investigations.
CS must open case twice. First to print DC and again to document review.
Outdated written procedure.
Physician did not report death as non-natural on death certificate.
CS does not confirm TC verbal review before entering TC review in CMS.
Good/No Good responses sound very similar.
Communications supports Investigations.
CMS requires multiple steps to document review/ approval.
Process does not require read-back or confirmation of TC verbal review.
Investigators are understaffed.

Appendix E


NYC OFFICE OF CHIEF MEDICAL EXAMINER
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Documenting TC review is a two-step process
Variation regarding how cremation request review is performed.
Death certificate w/ non-natural COD was submitted as cremation request by funeral home.
CS not aware that an error was made.
Corrective Action: Recommend review % of cremation requests.
CS performs dual roles in CMS: both Communications and Investigations.
CS must open case twice. First to print DC and again to document review.
Outdated written procedure.
Physician did not report death as non-natural on death certificate.
CS does not confirm TC verbal review before entering TC review in CMS.
Good/No Good responses sound very similar.
Corrective Action: Remove Communications staff from process if possible.
CMS requires multiple steps to document review/approval.
Corrective Action: 1. Update written procedure for process. Train staff. 2. Assign one CS for cremation requests if possible.
Corrective Action: Advocate for addition of error detection/ prevention features in E-Vital.
Corrective Action: Eliminate TC verbal review.
Corrective Action: Standardize review language.
Investigators are understaffed.
Corrective Action: 1. Simplify CMS process for cremation request review/approvals. 2. Develop cremation request silos that indicate cases which have been reviewed by TC or pending physician call back. 3. Develop error detection/ prevention features in CMS.