Mortality Review Guidelines

Originally developed several years ago, the Vizient® Mortality Review guidelines have been revised as of 2021. Please see Appendix A for the work group members who previously contributed to the guideline as well as Appendix B for those who contributed to the 2021 revision. We thank these Vizient members for their contributions to these important guidelines.

Aim

To perform systematic mortality review to identify patient safety issues, including process and system issues that can be improved or prevented, that resulted in or contributed to a patient death.[1]

Why focus on mortality review?

- Inpatient deaths provide an opportunity to examine the systems and processes of care provided in the hospital.
- Hospital mortality is under increasing scrutiny because of public reporting, including reporting of 30-day mortality rates by the Centers for Medicare & Medicaid Services (CMS), individual state reporting of mortality for selected conditions and procedures, reporting by nonprofit business coalitions such as The Leapfrog Group and rankings by entities such as *U.S. News & World Report* and the Vizient Quality and Accountability rankings.
- A number of mortality rates that are relevant to the Agency for Healthcare Research and Quality (AHRQ) Inpatient Quality Indicators are used for Medicare's Hospital Value-Based Purchasing, which links quality to payment.

Purposes of mortality case review

- Understand disease process
- Educate health care providers
- Conduct peer review
- Manage medicolegal risk
- Identify errors/vulnerabilities to make system, team and process improvements[2]
- Evaluate and improve performance to reduce preventable harm
- Promote a culture of safety

Characteristics and outcomes of an ideal mortality review process

Effective mortality review processes should employ the following characteristics:

- Is efficient, transparent and just
- Identifies preventable harm
- Captures crucial qualitative and quantitative information
- Shares knowledge across disciplines and specialties
- Promotes learning
- Interfaces well with other processes (peer review, risk management, training, operations)

- Allows synthesis with other data sources (e.g., Vizient Clinical Data Base [CDB], National Surgical Quality Improvement Program, American College of Cardiology National Cardiovascular Data Registry) Outcomes

Effective mortality review processes have the following positive outcomes:

- Reduces preventable harm to patients
- Reduces medicolegal risk
- Promotes a culture of safety in the organization
- Improves palliative/end-of-life care
- Generates actionable quality improvement initiatives

Recommended practices:

The following recommended practices can help organizations to start or improve effective mortality review processes:

Recommended practices: Create the review process

Identify cases for review

- Ideally, *all* mortality cases should be reviewed. Work with decision support to create a report of all inpatient deaths. Case numbers may be small, so it may be beneficial to aggregate review results quarterly or biannually as appropriate to determine if there are trends in causative factors.
- If 100% review is not feasible, consider a stratified sample of cases. Some suggestions include:
  - Review 80% of mortality cases with three or more acquired diagnosis codes (with present on admission code N or U) and 40% of cases with two or fewer acquired diagnosis codes.[3]
  - Review all cases with an All Patient Refined Diagnosis Related Group (APR-DRG) risk of mortality of one or two, indicating patients who had a low probability of death based on their diagnosis code(s); this includes all deaths from the obstetrics and pediatrics service lines.
  - Create a focused cluster of cases to review. Select all deaths within the past 60 or 90 days and review those cases to identify any patterns or trends.
  - Group cases by DRG code to review for patterns or trends related to disease.
  - Include all cases in which there was an associated incident report or documented patient complaint. Work with case management, risk management and patient relations to identify these cases.

Identify reviewers

- Recruit adequate staff (including quality-trained clinicians to perform the reviews to ensure timeliness and decrease potential burnout).[4]
- Include a mixture of clinical backgrounds among reviewers when possible. Consider including a mixture of physicians, advanced practice clinicians, registered nurses and even documentation specialists.[2]
- Orient staff to the process to ensure consistency across reviewers.
- Ensure that staff members have sufficient time to perform the reviews.
- Track time spent on reviews to ensure that staffing levels are adequate.

Recommended practices: Review cases

Conduct preliminary case review to determine if in-depth review is required

- Quality-trained clinicians should perform initial case reviews to screen for cases that do not need further review and prepare selected cases for committee presentation by telling the story of the patient in a paragraph or two.
- Consider subdividing by case type or service line.
- Include demographic data in case review, obtaining as much data from the electronic medical record as possible. (See Appendix C for examples.)
- Use the following questions as a guide to determine whether further review is required:
  1. Was the case an expected death based on conditions present on admission? (See Appendix D for examples of admission conditions with expected death.) If yes:
     a. Was palliative care provided or offered?
     b. Was the death a "good death?" That is, was the patient given comfort care, and were procedures focused on ensuring comfort? If either answer is no, consider recommending further review.
  2. Did any of the following occur within the 48 hours prior to death? If yes, consider recommending further review.
     a. Systolic blood pressure > 180 or < 90
     b. Heart rate > 140 or < 40
     c. Respiratory rate > 28 or <8
     d. Change in mental status
     e. Urine output < 50 cc over four hours
     f. Oxygen saturation < 90% despite supplementation
     g. Restraint use
  3. Were there any adverse events or hospital-acquired conditions during the hospitalization? (See Appendix E for examples.) If yes, consider recommending further review.
  4. Was a patient safety event report or incident report submitted for this patient? If yes, consider recommending further review.
  5. Was an autopsy performed? If yes, consider recommending further review.
  6. Was the case sent to the medical examiner? If yes, consider recommending further review.
- If further review is indicated or opportunities for improvement are noted, begin in-depth review. If no further review is required, the case can be closed.

See Appendix F for hypothetical mortality cases.

High-level considerations include:

Documentation and coding and standards of care

- Documenting the patient's clinical presentation at admission and other conditions, comorbidities and changes during the inpatient stay in the medical record
- Implementing standards of care — considering evidence-based guidelines, protocols and internal standards of care

Patient mix and assignment of patients to appropriate level of care

- Ensuring that patients receive the right level of care in the right setting

Systems and processes of care and individual performance

- Employing a systematic approach to identification and management of variances
  - Using tools and templates — for example, early warning systems, daily goals and checklists — to facilitate early recognition of deterioration
  - Enforcing clear, consistent and concise communication, including the use of structured handoffs and the SBAR (situation, background, assessment, recommendation) communication technique
- Addressing any individual (performance) areas of concern with positive influencers

24/7 staffing and training and supervision

- Arranging staffing of bedside nurses and house staff to always ensure safe and appropriate workloads
- Attending to training and supervision and using behavioral, educational avenues to:
  - Support efforts to increase residents' medical decision-making capabilities.
  - Foster efforts to increase nurses' critical thinking skills, including the ability to identify early signs of patient deterioration.

Perform in-depth review when indicated: Review the case for opportunities to improve care

- Consider the following items as causes for concern:
  - Diagnosis (Was there a delay? Incorrect diagnosis? Failure to diagnose?)
  - Lack of documentation or communication issues[5]
    - Were goals of care discussed in a timely manner?
    - Was communication optimal?
    - Are end-of-life planning forms (such as a POLST, or Physician Orders for Life-Sustaining Treatment, form) clear as to patients desire to not return to the hospital if/when status declines?
  - Infection (Was it hospital acquired?)
  - Medication (Was there an error or adverse reaction?)
  - Palliative care (Not provided? Provided late?)
  - Procedures (Delay? Adverse event?)
  - Prophylaxis (Not ordered? Not provided?)
  - Resuscitation
  - Supervision/management
  - Triage/transitions
  - Human error
  - Other
- Primary reviewer should document a brief (two-three sentences) narrative of the case. He or she may assign one of three preliminary classifications:[4]
  1. Death unexpected within 48 hours of admission; likely opportunity for improvement
  2. Death expected within 48 hours of admission; likely opportunity for improvement
  3. Death expected within 48 hours of admission; likely no opportunity for improvement

Present case to an interdisciplinary mortality review committee

- The committee should be multidisciplinary, viewing the case from a holistic perspective.[6] At a minimum include hospital leaders, physicians, nursing staff, quality improvement staff and other patient care providers as indicated on the committee.[7, 8]
- The committee should be committed to the confidentiality of the proceedings to enable honest discussion.

- Cases about which reviewers expressed concerns or in which reviewers believe opportunity for improvement exists should be presented and pertinent details (including the narratives generated from the preliminary case reviews) shared. Provider names do not have to be included.
- Facts should be presented without opinion.
- Cases with exemplary care may also be shared to highlight occasions when teamwork or exemplary care may have saved lives.

Conduct systematic review of cases

- Purpose: Find ways to prevent recurrence of the event, if preventable, and help future patients.
- The committee should have open discussion.
- The discussion should be conducted in a nonjudgmental and nonpunitive manner with input sought from all attendees regardless of hierarchy.[9]
- "The ability to conduct objective, comprehensive and holistic death reviews that involve all disciplines cannot be productive unless a blame-free culture is present."[10]
- "The incorporation of non-punitive reporting mechanisms also helps to identify areas in which change is needed and further encourages open dialogue."[11]
- Focus should be on systems of care and medical management.
- Review should examine factors of commission and omission.
- Discussion should focus on contributing factors including:
  - Underlying disease
  - Treatments and procedures, including iatrogenic events (intrinsic to usual procedures performed in accordance with standards of care) and nosocomial infections
  - Human error, including errors in judgment and errors caused by lack of knowledge or technical skills
  - Equipment malfunction, including equipment failure and inadequate equipment
  - Unit management factors (work environment), including communication problems, failure to provide or enforce policy/protocol, absence of policy/protocol, understaffing, poor prioritization, inappropriate behavior or action, high-stress situations
  - Systems of care
  - Indications for procedures performed or goals of care, including invasive procedures performed when providers thought they might be futile instead of life-saving
  - Factors unidentified and independent of the disease process or ICU procedures
  - Other factors, including lack of communication/coordination between the ICU and other units, patient's condition (agitation, confusion), fatigue or burnout of caregivers
- Consider asking the following questions:
  - Did this meet our standard of care?
  - Is this best practice?
- Assign a final disposition to the case:
  - Opportunity for improvement
  - No opportunity for improvement
- Utilize additional Vizient services that can assist in your organization's mortality review process, such as:
  - The Vizient CDB, which provides high-quality, accurate and transparent data on patient outcomes — such as mortality, length of stay, complication and readmission rates and hospital-acquired conditions. This enables hospitals to benchmark against peers; identify, accelerate and sustain improvements; reduce variation; and expedite data collection to fulfill agency reporting requirements.

- Review reports and webinars from Vizient's Mortality Review Process Collaboratives, held in 2017 and 2015-2016.
- To learn more about Vizient solutions to improve care delivery with top clinical analytics and care team optimization solutions focused on quality, cost effectiveness and patient care, check out our virtual brochure here.

Create an action plan to prevent recurrence

- When a case is identified as having opportunity for improvement, create a process to translate lessons learned from case review into changes in care delivery.
- Share findings and lessons learned across departments.
- Include all participants in action planning based on causative factors.
- Make recommendations to prevent recurrence of similar events.
- Assign responsibility for implementation and education.

Evaluate effectiveness of actions

- Conduct effectiveness review in subsequent mortality review sessions.
- Regularly (e.g., quarterly or biannually) review aggregate results to determine if there has been any recurrence of events for which remedial action was taken as needed.
- Examine events to identify patterns.

Appendices

Appendix A: Work group members who contributed to this original guideline

Vizient thanks the following members for their contributions to this guideline:

- Jeffrey Boord, Quality Director, Vanderbilt Heart and Vascular Institute, Vanderbilt University Medical Center
- Patricia Bouchard, Patient Safety Coordinator, University of Vermont Health Network UVM Medical Center
- Carolyn Cutilli, Mortality Clinical Nurse Reviewer, University of Pennsylvania Health System (Hospital of the University of Pennsylvania)
- Kristin Hahn-Cover, Chief Quality Officer, University of Missouri Health Care (University Hospital)
- Jeanne Huddleston, Medical Director, Health Care Systems Engineering, Mayo Clinic
- Adele Johnson, Quality Manager, NYU Langone Medical Center
- Craig Kean, Director, Clinical Services and Programs, University of Pennsylvania Health System (Hospital of the University of Pennsylvania)
- Patricia Leavell, Senior Performance Improvement Coordinator, VCU Medical Center
- Christopher Rees, Director of System Quality and Accountability, Medical University of South Carolina
- Anneliese Schleyer, Associate Medical Director, Hospital Quality and Safety, Harborview Medical Center
- Rachel Sorokin, Chief Patient Safety and Quality Officer, Thomas Jefferson University Hospital
- Julian Steele, Informatics Nurse, University of Kentucky Hospital
- Pamela Stevens, Quality Improvement Consultant, University of Vermont Health Network UVM Medical Center

Appendix B: Work group members who contributed to the 2021 revised update

Vizient thanks the following members for their contributions to this guideline:

- Craig Kean, Director, Clinical Services and Programs, University of Pennsylvania Health System (Hospital of the University of Pennsylvania)
- Jed Loomis, Clinical Analyst, University of Vermont Medical Center
- Robyn Postighone, Director of Quality, Infection Prevention, Holy Name Medical Center

Appendix C: Recommended demographic information

Consider obtaining as much information as possible from the electronic medical record:

- Medical record number
- Patient name
- Age
- Gender
- Race
- Discharge status
- Date of admission
- Date of expiration
- Admission status
- Admission source
- Principal diagnosis code(s)
- Principal procedure code(s)
- Attending physician
- Service
- Reviewer

Appendix D: Sample conditions on admission with expected death

Consider review of expected deaths for processes that could have been improved. Do not use the following conditions as a reason to not look deeper for quality issues:

- Receiving hospice care on admission
- Status of “do not resuscitate” on admission
- Irreversible neurologic damage
- Stage 4 cancer
- End-stage AIDS
- End-stage COPD
- End-stage CHF
- End-stage dementia
- End-stage liver disease
- Prognosis noted as “poor” by physician
- Other indications of expected death

Appendix E: Adverse events or hospital-acquired conditions occurring during hospitalization

Note the date and time of these events in the review. Cases with any of the following should undergo further review:

- Death within 48 hours of admission or surgery
- Patient held in ED longer than six hours
- Patient returned to ICU within 48 hours of transfer out of ICU
- Patient transferred from unit to ICU within 24 hours of admission
- Hospitalization is a readmission within 30 days of previous discharge
- Patient returned to ED within three days of discharge
- Drug reaction
- Adverse drug event
- Medication error
- Medical device malfunction
- Fall with injury
- Hospital-acquired infection
- DVT or PE
- Diagnostic studies for emboli or DVT
- Post-procedure/post-operative complication
- Return to surgery
- Rapid response team activation
- Intubation/reintubation
- Cardiac arrest
- Do-not-resuscitate order activated during hospitalization

Appendix F: Hypothetical mortality cases

Example 1: Delayed diagnosis of sepsis and delayed recognition of a postoperative complication

- A 59-year-old female underwent laparoscopic TAH/BSO. On postoperative day two, she developed low-grade fever and urinary retention. Treatment for a UTI was initiated with intermittent catheterization.
- On postoperative day three, she continued to require catheterization. Her creatinine had more than doubled and she had new abdominal distension and pain uncontrolled with a routine postoperative pain management protocol. She was tachycardic (118) with a blood pressure of 102. Antibiotics were broadened and sensitivities ordered.
- On postoperative day four, her abdominal distension was worse with no bowel movement; creatinine continued to rise. Narcotics were determined to be the culprit for abdominal distension/ileus. Her blood pressure continued in the low 100s, but pulse had increased to the 130s.
- On postoperative day five, she became acutely hypotensive (BP 70/45). She was diaphoretic and nauseous. RRT was called, but she did not have a detectable blood pressure upon their arrival. A code was called, and resuscitation was attempted for more than an hour.
- On autopsy, she was found to have an abdomen filled with pus and a small nick in the small bowel that appeared to have initially walled off.

Example 2: Palliation failure

- An 82-year-old male with history of severe COPD and pancreatic cancer was hospitalized for bowel obstruction.
- Surgical intervention ensued for palliation/ symptom relief.
- Postoperatively, he became delirious, and his pain medication was held. He developed a postoperative infection with sepsis. Since he was not “comfort care only,” he was taken to the ICU.
- His pain medications continued to be held because of altered mental status. Per nursing notes, the patient routinely called out in pain and family members consistently asked that he be kept comfortable. His average pain score was 8 of 10 in the 24 hours preceding death.
- Two days later, the patient was made “comfort care only” and died within hours.

Example 3: Triage error

- A 64-year-old male with CLL went to his local, rural hospital ED approximately a week after a round of chemotherapy. He was febrile and neutropenic.
- Both the local physician and the patient’s family agreed that he should return to the hospital where he received his chemotherapy. The patient’s hematologist accepted transfer to a general care floor.
- At the time the patient left the local ED (approximately 1.5 hours following the call with the receiving physician at the tertiary care hospital), his blood pressure was 95 with a pulse of 120 and respiratory rate of 28. This was noted in the ambulance record but not communicated to the receiving hospital.
- Upon the patient’s arrival at the general care nursing floor, his blood pressure was 76 systolic with a pulse of 135 and a respiratory rate of 30. An RRT was called immediately, and the patient was transferred to the ICU.

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