

## GAMUT 2025-2026 Metric Delphi

Round 1: 134; Round 2: 90; Round 3: 77; Results ( $\geq 70\%$ ) Consensus

### Use of Video Laryngoscopy for Endotracheal Intubation

**Metric title:** *Use of video laryngoscopy on first endotracheal intubation attempt*

**Reported as:** Percentage of patient contacts with an ETT attempted by the transport team in which video laryngoscopy was used on the first intubation attempt

**Numerator:** Number of patient contacts during the calendar month with an ETT attempted by the transport team in which video laryngoscopy was used on the first intubation attempt by the transport team

**Denominator:** Number of patient contacts during the calendar month with an ETT attempted by the transport team

**Suggested stratification:** Neonatal <29 days, pediatric 29 days to <18 years, adult  $\geq 18$  years, consistent with the existing airway metrics

**Clarifications:** An intubation attempt should use the existing GAMUT definition: insertion of a laryngoscope, a device used to facilitate intubation, or an ETT past the lips. Video laryngoscopy means a laryngoscope with video capability was used as the visualization device for the attempt, whether or not the operator directly viewed the screen throughout the attempt. This is a process measure of video-capable laryngoscope use on the first attempt. It does not measure first-attempt success and does not reliably determine whether the operator viewed the video screen rather than using the device for direct laryngoscopy. First-attempt ETT success should continue to be evaluated using the existing GAMUT first-attempt ETT success metric.

#### Potential questions:

**Does VL use count if the screen fails or is not turned on?** *Yes, intention to use.*

**Does VL count if used by a referring clinician while the transport team assists, or only when the transport team makes the attempt?** *Only attempts performed by the transport team should be included, consistent with the denominator. If a referring clinician performs the attempt and the transport team only assists, the*

*case should not be included unless the existing GAMUT airway metric guidance would classify the attempt as performed by the transport team.*

**What if the referring clinician makes the first attempt via DL and fails, then the transport team attempts via VL?** *If the transport team's first intubation attempt uses VL, the case meets numerator criteria. The referring clinician's prior DL attempt is not counted as the transport team's first attempt.*

**If the first attempt is direct laryngoscopy and the second attempt is VL, should the case be included as a win in the numerator?** *No. Under the current definition, VL must be used on the first intubation attempt.*

**Should the denominator include intubations where VL is not physically available because of equipment failure, aircraft/ambulance configuration, neonatal blade availability, or patient size?** *Yes, those should still be included. This metric is about practice-pattern benchmarking rather than proof of inappropriate care in every case.*

**Should neonatal intubations be stratified separately or excluded if VL availability and utility vary substantially in that group?** *They are stratified this way and should not be excluded, as VL exists for premature babies.*

**Should programs be penalized for choosing direct laryngoscopy in rare situations where VL is clinically impractical, such as massive blood/emesis obscuring the camera?** *No individual case should be interpreted as proof of inappropriate care. However, these cases remain in the denominator and do not meet numerator criteria 🙅 if VL was not used on the first attempt. This metric is intended for practice-pattern benchmarking rather than case-level judgment.*

## **Safe Management of Traumatic Brain Injury**

**Metric title:** *Safe physiologic management of intubated traumatic brain injury (TBI) patients during transport*

**Reported as:** Percentage of intubated TBI patient contacts transported without uncorrected, new, or recurrent hypoxia or hypotension while in the care of the transport team

**Numerator:** Number of intubated TBI patient contacts during the calendar month who do not experience uncorrected, new, or recurrent hypoxia or hypotension from

the time the transport team assumes hands-on care or begins transport-team monitoring/vital signs until handoff at the receiving facility

**Denominator:** Number of intubated patient contacts during the calendar month with known or suspected traumatic brain injury.

**Inclusion definition:** Intubated patients with known or suspected traumatic brain injury, including traumatic mechanism with clinical concern for intracranial injury, intracranial injury on imaging, depressed mental status attributed to trauma, skull fracture with concern for brain injury, or transport for trauma/neurosurgical evaluation after head trauma.

**Exclusions:** Patients in whom the goals of care are comfort-focused only. Patients with documented chronic or baseline oxygen saturations <90% are excluded from this metric.

**Hypoxia definition:** Hypoxia is defined as any documented  $\text{SpO}_2$  <90% after the transport team assumes care. Patients with documented chronic or baseline oxygen saturations <90% are excluded from the metric. If  $\text{SpO}_2$  is <90% when the transport team assumes care and is corrected to  $\geq 90\%$  without recurrence before handoff, the patient may be included in the numerator. If  $\text{SpO}_2$  is <90% when the transport team assumes care and remains <90% through handoff, or is corrected to  $\geq 90\%$  and subsequently falls below 90% again, the patient does not meet numerator criteria.

**Hypotension definition:** Hypotension is defined as systolic blood pressure <90 mm Hg in adults or systolic blood pressure <5th percentile for age in children <18 years. If hypotension is present when the transport team assumes care and is corrected above the threshold without recurrence before handoff, the patient may be included in the numerator. If hypotension is present when the transport team assumes care and persists through handoff, or is corrected and subsequently recurs, the patient does not meet numerator criteria.

#### Potential questions:

**Should hypoxia/hypotension present when the team arrives count, or only new/worsening events after transport team interventions?** *Hypoxia or hypotension present when the team assumes care that remains uncorrected through handoff counts toward the denominator, but not the numerator 🙅.*

*Similarly, hypoxia or hypotension that is corrected and then recurs at any time*

before handoff means the patient remains in the denominator but does not meet numerator criteria 🙅.

**If the patient is hypotensive when the transport team assumes care and remains hypotensive through handoff, does the patient meet numerator criteria?** No. Persistent hypotension through handoff means the patient does not meet numerator criteria 🙅. The metric does not determine whether care was inappropriate; it reports whether safe physiologic targets were achieved and maintained during transport team care.

**If the patient is hypoxic when the transport team assumes care, the team corrects the oxygen saturation to  $\geq 90\%$ , and the oxygen saturation later drops below 90% again, does the patient meet numerator criteria?** No 🙅. Recurrent hypoxia after correction means the patient does not meet numerator criteria. The same logic applies to recurrent hypotension after correction.

**Should brief artifact readings count? What minimum duration or confirmation is required?** Brief artifact readings should not count. Hypoxia or hypotension should be confirmed by repeat measurement, persistent abnormal value, or clinical documentation. As a practical abstraction rule, an abnormal value lasting approximately 5 minutes or requiring intervention should be counted. Invasive and non-invasive blood pressure monitoring are treated equally for the purposes of this metric.

**How should missing SpO<sub>2</sub> or blood pressure data be handled?** Cases with insufficient documentation to determine whether hypoxia or hypotension occurred remain in the denominator and should not be counted in the numerator. Programs should track these cases locally as documentation gaps.

**Should patients with poor oxygen saturation waveforms, cyanotic heart disease, chronic lung disease, or baseline low saturations be excluded?** Patients with documented chronic or baseline oxygen saturations  $< 90\%$  are excluded from the metric. Poor waveform or artifact alone should not qualify for exclusion unless the program cannot determine whether true hypoxia occurred; in that case, the missing-data rule applies.

**What about permissive hypotension in hemorrhagic shock with concomitant TBI?** Management of shock takes clinical priority. However, if hypotension persists through handoff, the patient does not meet numerator criteria 🙅. The metric does

*not determine whether care was inappropriate; it reports whether safe physiologic targets were achieved and maintained.*

**Should this be limited to the time from transport team assumption of care to handoff, or should bedside stabilization before departure be separated from actual vehicle transport?** *From the transport team's assumption of care to handoff. This may represent the transport team's first set of a patient's documented vital signs.*

## **Lights and Sirens Use During Transport**

**Metric title:** *Emergency warning lights and/or siren use during primary ground ambulance patient-care response or transport*

**Reported as:** Percentage of primary ground ambulance patient contacts during which emergency warning lights and/or siren were used during a completed patient-care response or transport episode.

**Numerator:** Number of primary ground ambulance patient contacts during the calendar month in which emergency warning lights and/or siren were used at any time during the completed patient-care response or transport episode.

**Denominator:** Number of primary ground ambulance patient contacts during the calendar month.

**Inclusions:** Dedicated ground ambulance transports, including interfacility ground transports, scene-response ground transports, and mobile ICU ground transports when the patient is transported by ground ambulance.

**Exclusions:** Canceled transports with no patient contact; non-patient operational driving; repositioning; maintenance; education; meals; public relations events; other non-patient-care vehicle movement; and ground legs associated with rotor-wing or fixed-wing transports when the primary patient transport mode is air.

**Definition of lights and sirens:** Emergency warning lights and/or siren means use of emergency lights, siren, or both while the ground ambulance is in motion during a completed primary ground ambulance patient-care response or transport episode.

**Potential questions:**

**Are we counting the use of lights, sirens, or both?** *Use of emergency warning lights, siren, or both counts.*

**Does one transport with multiple ground legs count the same as one transport with a single ground leg?** *Yes. If emergency warning lights and/or siren are used at any time during the completed primary ground ambulance patient-care response or transport episode, the patient contact is counted in the numerator.*

**Are ground legs performed by contracted or third-party ambulance agencies included?** *Yes, when the contracted or third-party ambulance transport is the primary ground ambulance patient transport and the clinical team is directing or participating in care. Ground legs associated with rotor-wing or fixed-wing transports are excluded when the primary patient transport mode is air.*

**Does the use of an emergency warning device while responding to the referring facility count if the patient is not yet on board?** *Yes, if the response is part of a completed patient-care transport episode and the team ultimately has patient contact. Canceled responses with no patient contact are excluded.*

**Are canceled transports included if the team used emergency warning lights and/or siren en route but never made patient contact?** *No. Canceled transports with no patient contact are excluded from both the numerator and denominator.*

**Do interfacility mobile ICU teams and 911/scene-response teams need separate strata?** *Not for the core metric definition. Transport type may be useful as an analytic stratifier if programs can reliably capture it.*

**Should emergent response to the scene or referring facility be separated from emergent transport to the destination?** *Not in the core metric. Emergency warning lights and/or siren use during either the response-to-patient phase or the patient-loaded transport phase counts if the episode results in a primary ground ambulance patient contact. Programs may choose to analyze response-to-patient and patient-loaded phases separately for local quality improvement.*

**Should use for traffic control, backing, airport ramp movement, parking, or hospital campus maneuvering count?** *No, not if emergency warning devices are used solely for vehicle safety, traffic control, backing, parking, ramp operations, or other non-emergency-transport purposes. The metric is intended to capture the use of emergency warning devices during patient-care ground transport.*

**How should this metric be interpreted?** *This metric should be framed as a safety and practice-variation metric, not as a prohibition against emergency warning lights*

*and/or siren use. Lower rates may suggest reduced exposure to emergency driving risk, but individual use may be appropriate based on patient condition, operational circumstances, geography, and local policy.*

### ***Sedation/analgesia for Intubated and Paralyzed Transport Patients***

***Metric title:*** Sedation coverage for intubated transport patients receiving neuromuscular blockade

**Reported as:** Percentage of intubated patient contacts with neuromuscular blockade exposure who have documented sedative or sedation-analgesic medication coverage during transport team care.

**Numerator:** Number of denominator cases with documentation of sedative or sedation-analgesic medication administered, initiated, continued, titrated, or documented as active before or within 15 minutes after neuromuscular blocker administration by the transport team, or before or within 15 minutes after transport team arrival at bedside for patients already intubated with active or recent pharmacologic paralysis.

**Denominator:** Number of patient contacts during the calendar month with an endotracheal tube, tracheal tube, or cricothyrotomy tube who are receiving invasive mechanical ventilation and have active or recent neuromuscular blockade exposure.

**Exclusions:** Patients in cardiac arrest during the entire transport team care interval are excluded. Patients receiving comfort-focused goals of care only are excluded. Excluded means they are not included in either the numerator or the denominator.

**Clarifications:** This metric should be interpreted as a focused patient-safety process measure. It does not evaluate overall sedation quality for every intubated patient. It evaluates whether intubated patients exposed to pharmacologic paralysis had documented sedative or sedation-analgesic medication coverage during transport team care.

#### **Possible questions:**

**What counts as neuromuscular blockade exposure?** *Neuromuscular blockade exposure includes administration of a neuromuscular blocking medication by the transport team, an active neuromuscular blockade infusion during transport team*

*care, repeat neuromuscular blocker boluses during transport team care, or documented active or recent pharmacologic paralysis when the transport team assumes care at the bedside.*

**What does “active or recent pharmacologic paralysis” mean when the patient is already intubated before the transport team arrives?** *Active or recent pharmacologic paralysis means there is documentation or bedside report that the patient has received a neuromuscular blocking medication recently enough that ongoing paralysis may reasonably still be present, or that the patient is receiving a neuromuscular blockade infusion. Programs should apply local medication duration guidance when determining whether a prior bolus is still clinically relevant.*

**Does this metric apply to all intubated patients?** *No. This metric applies only to intubated patients receiving invasive mechanical ventilation who have neuromuscular blockade exposure. It is intended to address the specific safety concern of sedation coverage during pharmacologic paralysis, not general sedation assessment for all intubated patients.*

**Does a sedation, pain, or agitation assessment alone meet numerator criteria?** *No. For a pharmacologically paralyzed patient, assessment alone does not meet numerator criteria. The numerator requires documentation of sedative or sedation-analgesic medication administration, initiation, continuation, or titration within the defined time window.*

**What medications count as sedative or sedation-analgesic medications?** *Benzodiazepines, ketamine, propofol, dexmedetomidine, and barbiturates count. Opioids may count when they are documented as part of a sedation-analgesia plan for the intubated patient, but analgesia alone should not be assumed to provide adequate sedation or amnesia during paralysis unless the documentation supports that clinical intent.*

**Does etomidate or ketamine used for intubation count as sedation coverage?** *No. A single induction dose of etomidate, ketamine, or another induction agent does not by itself meet numerator criteria unless there is documentation of ongoing post-intubation sedative or sedation-analgesic coverage within the required time window.*

**If the transport team administers rocuronium or another paralytic for intubation, when must sedation coverage be documented?** *Sedative or sedation-analgesic medication coverage should be documented before or within 15 minutes after neuromuscular blocker administration by the transport team. If the total*



*transport team care interval is shorter than 15 minutes, sedation coverage should be documented before handoff.*

**If the patient is already intubated and paralyzed when the transport team assumes care, when must sedation coverage be documented?** *Sedative or sedation-analgesic medication coverage should be documented within 15 minutes after the transport team assumes care. If the total transport team care interval is shorter than 15 minutes, sedation coverage should be documented before handoff.*

**Does an existing sedative infusion count if it was started by the referring facility?** *Yes. An existing sedative or sedation-analgesic infusion counts if the transport team documents that it was present, continued, or managed while the patient was in the care of the transport team.*

**Does a medication given by the referring facility before the transport team assumes care count?** *It may count only if the transport team documents that the medication provides active sedative or sedation-analgesic coverage during the transport team care interval. The metric is based on sedation coverage while the patient is in the care of the transport team.*

**What if the patient is deeply comatose, GCS 3, or has severe neurologic injury?** *These patients are not automatically excluded. If the patient has neuromuscular blockade exposure, documentation should support sedative or sedation-analgesic coverage.*

**What if the patient is severely hypotensive or in profound shock and the team believes sedation is unsafe?** *These patients remain in the denominator and do not meet numerator criteria. All programs are likely to have unusual instances when this could occur. This metric aims to evaluate general practices and not rare one-off cases.*

**What if neuromuscular blockade was given but the paralytic effect has clearly worn off before the transport team assumes care?** *If there is no active or recent pharmacologic paralysis during transport-team care, the patient should not be included in the denominator for this metric. Programs should apply local medication-duration guidance and documentation when determining whether prior neuromuscular blockade remains clinically relevant.*

**What if the transport team cannot determine whether the patient is still paralyzed?** *If documentation is insufficient to determine whether active or recent pharmacologic paralysis was present, the case should not be included in the denominator. If neuromuscular blockade exposure is established but sedation*

*coverage cannot be determined, the case remains in the denominator and does not meet numerator criteria.*

**Does train-of-four monitoring need to be documented?** *No. Train-of-four monitoring is not required for this metric. Documentation of active/recent neuromuscular blockade exposure and sedation coverage is sufficient.*

**Does this metric require a specific sedation score such as RASS?** *No. A sedation score may be useful, but this metric does not require a specific sedation score. The key requirement is documented sedative or sedation-analgesic medication coverage during neuromuscular blockade exposure.*

**Does the medication have to be administered by the transport team?** *No. Medication started before transport-team arrival may count if the transport team documents that it was continued or active during transport team care. Medication administered, initiated, continued, or titrated by the transport team also counts.*

**What if the patient receives a paralytic after sedation has already been started?** *The case meets numerator criteria if sedative or sedation-analgesic medication coverage is documented before neuromuscular blocker administration and remains active during the period of paralysis.*

**What if the patient receives a paralytic and sedation is documented 20 minutes later?** *Under the time window, the case would not meet numerator criteria unless the total transport-team care interval was shorter than the required time window.*

**Should neonatal and pediatric patients be handled differently?** *No separate exclusion is recommended. The metric applies across age groups, but sedative or sedation-analgesic medication choice and dosing should be age- and condition-appropriate. Programs may stratify by age group if useful for local analysis.*

**How should this metric be interpreted?** *This metric should be interpreted as a focused patient-safety process measure. It does not evaluate overall sedation quality for every intubated patient. It evaluates whether intubated patients exposed to pharmacologic paralysis had documented sedative or sedation-analgesic medication coverage during transport team care.*