

# Videolaryngoscopy as the First-Line Approach

Intraoperative teaching · CA-1

THE QUESTION

Where the evidence disagrees

Scope and Framing This review examines whether videolaryngoscopy (VL) should replace direct laryngoscopy (DL) as the default first-line approach for tracheal intubation, with emphasis on the operating room setting and implications for trainee education. The evidence landscape has shifted dramatically since 2022, driven by several large RCTs, updated Cochrane meta- analyses, and new society guidelines — most notably...

THE EVIDENCE

What each source contributes, and how strong it is

Study design first — a cohort and a randomised trial do not carry the same weight.

| Design           | Year | Journal                            | What it found                                                                       |
|------------------|------|------------------------------------|-------------------------------------------------------------------------------------|
| Guideline        | 2025 | European journal of anaesthesiolog | The multidisciplinary recommendations for universal videolaryngoscopy rest on 12    |
| Meta-analysis    | 2022 | The Cochrane database of systemati | Macintosh-style videolaryngoscopy probably reduces failed intubation rates compared |
| Randomised trial | 2024 | JAMA                               | Starting with a hyperangulated videolaryngoscope cut the need for more than one     |
| Review           | 2025 | Anaesthesia                        | Guidelines now recommend routine videolaryngoscopy where possible                   |
| Meta-analysis    | 2022 | British journal of anaesthesia     | Videolaryngoscopes of every design reduce failed intubation, improve first-attempt  |
| Randomised trial | 2023 | Anaesthesia                        | In patients with no predicted difficult airway, first-pass success was 94% with a   |

6 resolved citations behind this deck; every point above traces to one of them.

WHERE THE GUIDANCE SITS

What the guidelines and pooled evidence say

3 findings, each on the slide that follows.

EUROPEAN JOURNAL OF ANAESTHESIOLOGY 2025

The multidisciplinary recommendations for universal videolaryngoscopy rest on 12

The multidisciplinary recommendations for universal videolaryngoscopy rest on 12 statements that were mostly formulated from expert opinion, because...

THE COCHRANE DATABASE OF SYSTEMATIC REVIEWS 2022

Macintosh-style videolaryngoscopy probably reduces failed intubation rates compared

Macintosh-style videolaryngoscopy probably reduces failed intubation rates compared to direct laryngoscopy (RR 0.41, 95% CI 0.26 to 0.65).

BRITISH JOURNAL OF ANAESTHESIA 2022

Videolaryngoscopes of every design reduce failed intubation, improve first-attempt

Videolaryngoscopes of every design reduce failed intubation, improve first-attempt success and glottic view

WHERE THE GUIDANCE SITS

The multidisciplinary recommendations for universal videolaryngoscopy rest on 12

Guideline · European journal of anaesthesiolog

The multidisciplinary recommendations for universal videolaryngoscopy rest on 12 statements that were mostly formulated from expert opinion, because the quality of available evidence was low.

Guidelines on Strategies for the Universal Implementation of Videolaryngoscopy, European journal of anaesthesiology 2025 · PMID 40534455

WHERE THE GUIDANCE SITS

Macintosh-style videolaryngoscopy probably reduces failed intubation rates compared

Meta-analysis · The Cochrane database of systemati

Macintosh-style videolaryngoscopy probably reduces failed intubation rates compared to direct laryngoscopy (RR 0.41,

95% CI 0.26 to 0.65).  
*Videolaryngoscopy Versus Direct Laryngoscopy for Adults Undergoing Tracheal Intubation, The Cochrane database of systematic reviews 2022 · PMID 35373840*

WHERE THE GUIDANCE SITS

Videolaryngoscopes of every design reduce failed intubation, improve first-attempt

Meta-analysis · *British journal of anaesthesia*

Videolaryngoscopes of every design reduce failed intubation, improve first-attempt success and glottic view, and hyperangulated designs are the ones that reduce oesophageal intubation and help most in patients with difficult airway features.

*Videolaryngoscopy Versus Direct Laryngoscopy for Adults Undergoing Tracheal Intubation: A Cochrane Systematic Review and Meta-Analysis Update, British journal of anaesthesia 2022 · PMID 35820934*

WHAT THE TRIALS FOUND

Where randomised evidence moved the question

2 findings, each on the slide that follows.

JAMA 2024

Starting with a hyperangulated videolaryngoscope cut the need for more than one

Starting with a hyperangulated videolaryngoscope cut the need for more than one intubation attempt from 7.6% to 1.7% and intubation failure from 4.0% to 0.27%...

ANAESTHESIA 2023

In patients with no predicted difficult airway, first-pass success was 94% with a

In patients with no predicted difficult airway, first-pass success was 94% with a Macintosh-bladed videolaryngoscope versus 82% with direct...

WHAT THE TRIALS FOUND

Starting with a hyperangulated videolaryngoscope cut the need for more than one

Randomised trial · JAMA

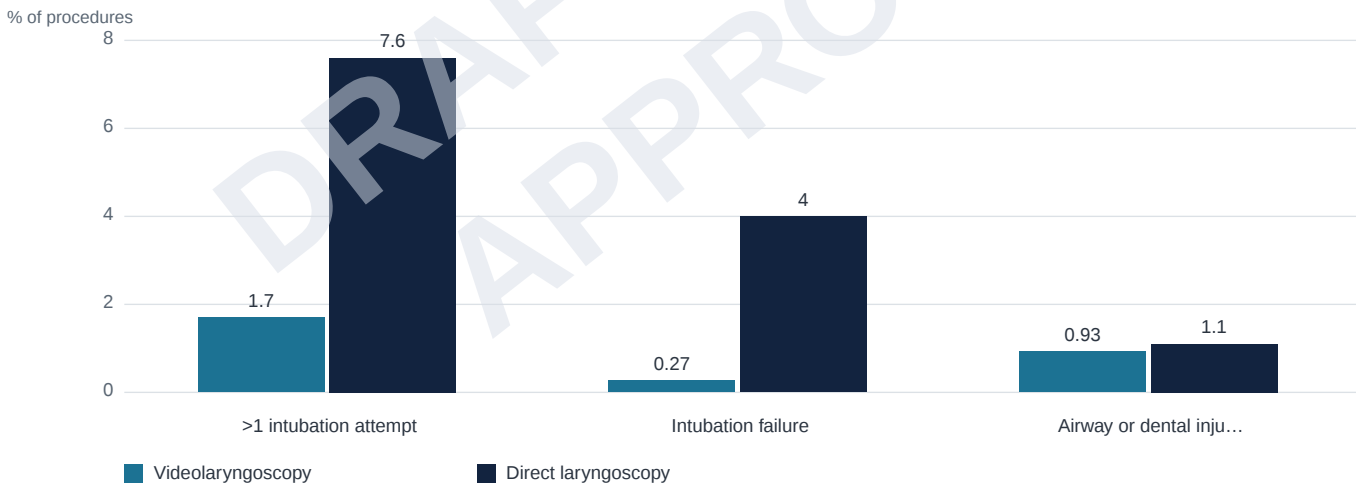
Starting with a hyperangulated videolaryngoscope cut the need for more than one intubation attempt from 7.6% to 1.7% and intubation failure from 4.0% to 0.27%, with no difference in airway or dental injury.

*Video Laryngoscopy vs Direct Laryngoscopy for Endotracheal Intubation in the Operating Room, JAMA 2024 · PMID 38497992*

THE NUMBERS

Hyperangulated videolaryngoscopy cut failure roughly fifteen-fold

8,429 operating-room intubations, cluster randomised.



Fewer attempts and far fewer failures, with no increase in airway or dental injury.

*Video Laryngoscopy vs Direct Laryngoscopy for Endotracheal Intubation in the Operating Room, JAMA 2024 · PMID 38497992*

WHAT THE TRIALS FOUND

In patients with no predicted difficult airway, first-pass success was 94% with a

Randomised trial · *Anaesthesia*

In patients with no predicted difficult airway, first-pass success was 94% with a Macintosh-bladed videolaryngoscope

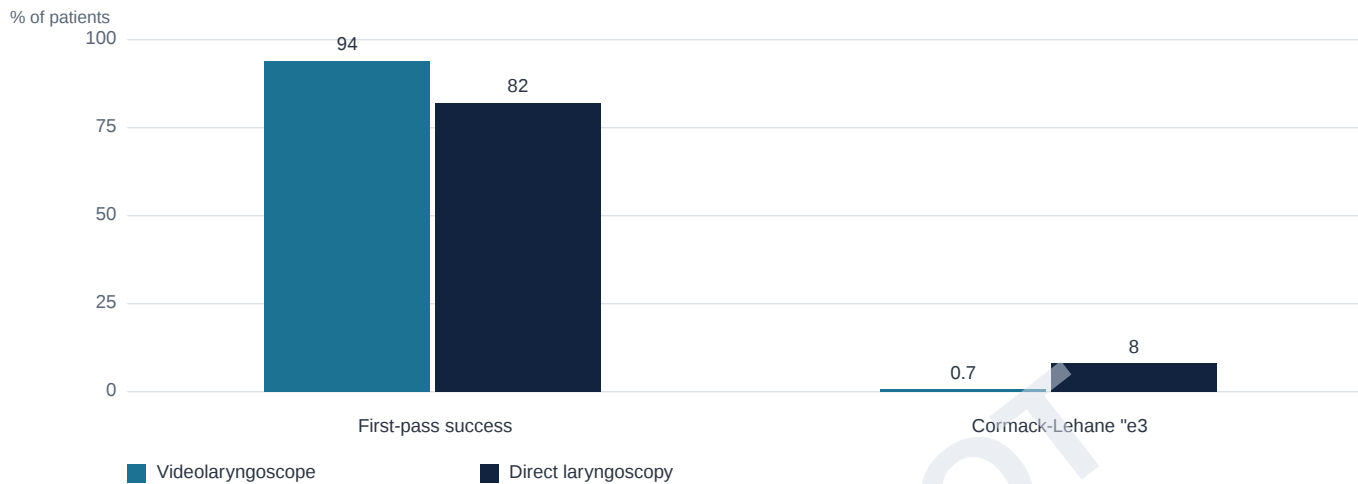
versus 82% with direct laryngoscopy, and a Cormack-Lehane grade of 3 or worse fell from 8% to 0.7%.

*A Multicentre Randomised Controlled Trial of the McGrath™ Mac Videolaryngoscope Versus Conventional Laryngoscopy, Anaesthesia 2023 · PMID 36928625*

#### THE NUMBERS

### First-pass success in patients with no predicted difficulty

2,092 elective intubations, McGrath Macintosh blade.



**The benefit is not confined to the difficult airway — it shows up in routine cases.**

*A Multicentre Randomised Controlled Trial of the McGrath™ Mac Videolaryngoscope Versus Conventional Laryngoscopy, Anaesthesia 2023 · PMID 36928625*

#### IN PRACTICE

### Guidelines now recommend routine videolaryngoscopy where possible

*Review · Anaesthesia*

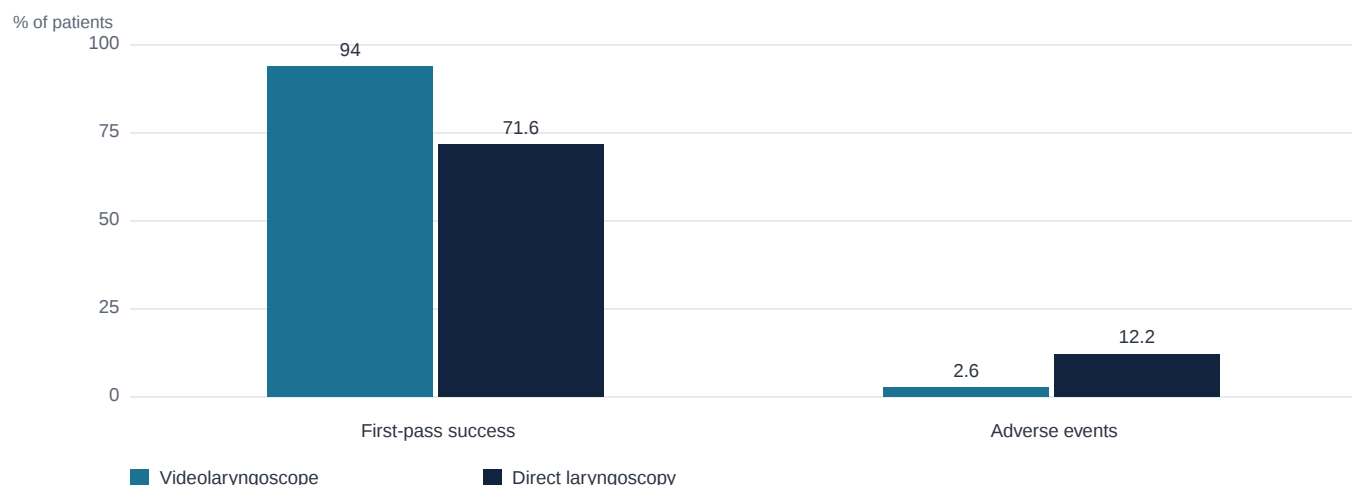
Guidelines now recommend routine videolaryngoscopy where possible, and the objections that need answering are practical ones — decay of direct laryngoscopy skills, cost, and decontamination of reusable blades.

*Implementation of Default Videolaryngoscopy Instead of Direct Laryngoscopy for Tracheal Intubation: A Narrative Review of Evidence and Experiences, Anaesthesia 2025 · PMID 40842319*

#### THE NUMBERS

### For rapid sequence intubation the gap is wider still

1,000 patients randomised in theatre.



**94% versus 72% first-pass, with adverse events falling from 12.2% to 2.6%.**

## INDICATIONS

### When this is the right block

COCHRANE REVIEW, VIDEOLARYNGOSCOPY VERSUS DIRECT LARYNGOSCOPY, 2022

#### Routine adult tracheal intubation

Across 222 studies and 26,149 participants, videolaryngoscopes of all designs likely reduced failed intubation and produced higher rates of first-attempt success with improved glottic views; Macintosh-style devices reduced failed intubation with a risk ratio of 0.41 and hypoxaemia with a risk ratio of 0.72 on moderate-certainty evidence.

COCHRANE REVIEW, VIDEOLARYNGOSCOPY VERSUS DIRECT LARYNGOSCOPY, 2022

#### Known or predicted difficult airway

Hyperangulated videolaryngoscopes reduced failed intubation with a risk ratio of 0.51 overall, and in subgroup analysis the effect was stronger in known or predicted difficult airways (RR 0.29, 95% CI 0.17 to 0.48). They also reduced oesophageal intubation (RR 0.39).

DEVICE TRIAL, VIDEO VERSUS DIRECT LARYNGOSCOPY, N ENGL J MED 2023

#### Critically ill adults in the emergency department or ICU

In the DEVICE trial, 1417 critically ill adults were randomised and first-attempt success was 85.1% with a video laryngoscope versus 70.8% with a direct laryngoscope, an absolute risk difference of 14.3 percentage points. The trial was stopped for efficacy at its single preplanned interim analysis.

DEVICE TRIAL, VIDEO VERSUS DIRECT LARYNGOSCOPY, N ENGL J MED 2023

#### Intubations performed by trainees

In DEVICE, 91.5% of intubations were performed by an emergency medicine resident or a critical care fellow, and the first-attempt advantage held in that population.

## CONTRAINDICATIONS

### When it is not

DEVICE TRIAL, VIDEO VERSUS DIRECT LARYNGOSCOPY, N ENGL J MED 2023

#### Expecting it to fix the patient's physiology

In DEVICE, severe complications during intubation — severe hypoxaemia, severe hypotension, new or increased vasopressor use, cardiac arrest or death — occurred in 21.4% of the video group and 20.9% of the direct group, an absolute difference of 0.5 percentage points. A better view does not resuscitate anyone.

COCHRANE REVIEW, VIDEOLARYNGOSCOPY VERSUS DIRECT LARYNGOSCOPY, 2022

#### Assuming a hyperangulated blade solves oxygenation

Macintosh-style and channelled videolaryngoscopes likely reduced hypoxaemic events (RR 0.72 and 0.25), but hyperangulated devices showed no clear difference in hypoxaemia (RR 0.49, 95% CI 0.22 to 1.11) on low-certainty evidence. The view improves faster than the tube delivery does.

**Substituting it for an awake technique when severe difficulty is predicted**

Awake tracheal intubation is what guidelines recommend when significant difficulty is predicted, and in a 692-case cohort awake first-attempt success was 60% with videolaryngoscopy against 84% with flexible bronchoscopy. A screen does not convert an anticipated difficult airway into an asleep one.

## PEARLS

**What experience adds**

COCHRANE REVIEW, VIDEOLARYNGOSCOPY VERSUS DIRECT LARYNGOSCOPY, 2022

**Nobody knows whether it is faster**

The Cochrane review could not pool time to tracheal intubation for any device class because of considerable heterogeneity ( $I^2$  of 96%, 99% and 98% for Macintosh-style, hyperangulated and channelled devices). Speed is the claim the evidence does not support.

DEVICE TRIAL, VIDEO VERSUS DIRECT LARYNGOSCOPY, N ENGL J MED 2023

**The critical-illness evidence is one trial, stopped early**

DEVICE was a 17-site randomised trial that met its primary endpoint and was stopped for efficacy at the single preplanned interim analysis, with safety outcomes including oesophageal intubation, dental injury and aspiration similar between groups.

**Eyes in the mouth first, then on the screen**

Get the blade past the teeth and to the vallecula while looking at the patient, then move your eyes up. Watching the monitor from the moment the blade leaves your hand is how lips get caught and how you lose the sense of how much room you actually have.

## IN THE ROOM

**What this changes about the next case**

*Colour is the strength of the evidence behind each step, not the urgency.*

- 1 The multidisciplinary recommendations for universal videolaryngoscopy rest on 12 statements that were mostly formulated from expert opinion, because the quality of available evidence was low.
- 2 Macintosh-style videolaryngoscopy probably reduces failed intubation rates compared to direct laryngoscopy (RR 0.41, 95% CI 0.26 to 0.65).
- 3 Videolaryngoscopes of every design reduce failed intubation, improve first-attempt success and glottic view, and hyperangulated designs are the ones that reduce oesophageal intubation and help most in patients with difficult airway features.
- 4 Starting with a hyperangulated videolaryngoscope cut the need for more than one intubation attempt from 7.6% to 1.7% and intubation failure from 4.0% to 0.27%, with no difference in airway or dental injury.
- 5 In patients with no predicted difficult airway, first-pass success was 94% with a Macintosh-bladed videolaryngoscope versus 82% with direct laryngoscopy, and a Cormack-Lehane grade of 3 or worse fell from 8% to 0.7%.

## KEY TAKEAWAYS

**What to carry into the next case****The multidisciplinary recommendations for universal videolaryngoscopy rest on 12**

European journal of anaesthesiology 2025

**Macintosh-style videolaryngoscopy probably reduces failed intubation rates compared**

The Cochrane database of systematic reviews 2022

**Starting with a hyperangulated videolaryngoscope cut the need for more than one**

JAMA 2024

**Guidelines now recommend routine videolaryngoscopy where possible**

Anaesthesia 2025

*The multidisciplinary recommendations for universal videolaryngoscopy rest on 12*

## QUESTIONS I'LL ASK YOU IN THE ROOM

1. Walk me through your setup for this before we start.
2. What are you watching on the monitor that would tell you this is going wrong?
3. What is your first move if it does?
4. What would you want ready in the room before induction?

#### ORAL BOARDS STEM

*You are supervising a CA-1 for a routine laparoscopic appendicectomy in a patient with no predictors of a difficult airway. The resident reaches for a Macintosh blade and you ask why not the videolaryngoscope.*

#### BOARD QUESTIONS

1. In the operating-room randomised comparison of starting with a hyperangulated videolaryngoscope versus direct laryngoscopy, give the rate of needing more than one intubation attempt and the rate of intubation failure in each group, and state what was found for airway and dental injury.
2. In a multicentre randomised trial restricted to patients with no predicted difficult airway, compare first-pass intubation success and the incidence of a Cormack-Lehane grade of 3 or worse between a Macintosh-bladed videolaryngoscope and conventional direct laryngoscopy.
3. Summarise what videolaryngoscopes of every design achieve compared with direct laryngoscopy, and state specifically what the hyperangulated designs add.
4. Multidisciplinary recommendations advise universal videolaryngoscopy. How many statements do they contain, what were those statements mostly formulated from, why was that, and how strongly can you therefore cite them?

#### ANSWER KEY

1. **Starting with a hyperangulated videolaryngoscope cut the need for more than one attempt from 7.6% to 1.7% and intubation failure from 4.0% to 0.27%, with no difference in airway or dental injury.**

Fewer attempts and fewer failures, and no difference in airway or dental injury — that is the case for reaching for the hyperangulated scope first.

*Video Laryngoscopy vs Direct Laryngoscopy for Endotracheal Intubation in the Operating Room, JAMA 2024 · PMID 38497992*

2. **First-pass success was 94% with the Macintosh-bladed videolaryngoscope versus 82% with direct laryngoscopy, and a Cormack-Lehane grade of 3 or worse fell from 8% to 0.7%.**

Even in airways with no predicted difficulty, the Macintosh-bladed videolaryngoscope gave a better view and a higher first-pass success rate.

*A Multicentre Randomised Controlled Trial of the McGrath™ Mac Videolaryngoscope Versus Conventional Laryngoscopy, Anaesthesia 2023 · PMID 36928625*

3. **Videolaryngoscopes of every design reduce failed intubation and improve first-attempt success and glottic view; the hyperangulated designs are the ones that reduce oesophageal intubation and that help most in patients with difficult airway features.**

Every design improves the view and first-attempt success, but reducing oesophageal intubation and helping most with difficult airway features is specific to the hyperangulated blades.

*Videolaryngoscopy Versus Direct Laryngoscopy for Adults Undergoing Tracheal Intubation: A Cochrane Systematic Review and Meta-Analysis Update, British journal of anaesthesia 2022 · PMID 35820934*

4. **The recommendations rest on 12 statements that were mostly formulated from expert opinion, because the quality of the available evidence was low; they should therefore be cited as consensus expert opinion rather than as high-quality evidence.**

Twelve statements built mostly from expert opinion because the evidence quality was low — quote them as consensus, not as proof.

*Guidelines on Strategies for the Universal Implementation of Videolaryngoscopy, European journal of anaesthesiology 2025 · PMID 40534455*

**The multidisciplinary recommendations for universal videolaryngoscopy rest on 12**

#### SOURCES

- [1] Guidelines on Strategies for the Universal Implementation of Videolaryngoscopy, European journal of anaesthesiology 2025 · PMID 40534455
- [2] Videolaryngoscopy Versus Direct Laryngoscopy for Adults Undergoing Tracheal Intubation, The Cochrane database of systematic reviews 2022 · PMID 35373840
- [3] Video Laryngoscopy vs Direct Laryngoscopy for Endotracheal Intubation in the Operating Room, JAMA 2024 · PMID 38497992
- [4] Implementation of Default Videolaryngoscopy Instead of Direct Laryngoscopy for Tracheal Intubation: A Narrative Review of Evidence and Experiences, Anaesthesia 2025 · PMID 40842319
- [5] Videolaryngoscopy Versus Direct Laryngoscopy for Adults Undergoing Tracheal Intubation: A Cochrane Systematic Review and Meta-Analysis Update, British journal of anaesthesia 2022 · PMID 35820934
- [6] A Multicentre Randomised Controlled Trial of the McGrath™ Mac Videolaryngoscope Versus Conventional Laryngoscopy, Anaesthesia 2023 · PMID 36928625
- [7] DEVICE trial, video versus direct laryngoscopy, N Engl J Med 2023 · PMID 37326325
- [8] Declining incidence of awake tracheal intubation, Can J Anaesth 2023 · PMID 36289151