

Beyond Certification

**Designing BLS Training Around Clinical Personnel,
Operational Reality, and Emergency Readiness**

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*A Paragon Medical Practice Paper on adapting BLS education across
dental, hospital, mental-health, community, and multi-location clinical
settings*

PARAGON MEDICAL COMPREHENSIVE TRAINING SOLUTIONS

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EXECUTIVE SUMMARY

Basic Life Support certification is standardized, and it should be. The compression depth that sustains perfusion does not change because a clinic is small, because the team works nights, or because the patient is reclined in a dental chair rather than lying on a ward floor. Standards exist so that a certificate issued in one setting means the same thing in another.

The learning environment is a different matter entirely. It is not standardized, it cannot be standardized in any meaningful sense, and treating it as though it were is where most organizational emergency preparedness quietly fails.

Two organizations can purchase the identical certification course, from providers holding the identical credentials, teaching the identical curriculum to the identical assessment standard — and end up with materially different capability. The difference is not the standard. The difference is design: who was in the room, when they were scheduled, what the scenarios looked like, whether roles were assigned, whether the equipment resembled what they will actually reach for, and whether anyone planned for the seventh month after the course.

This paper sets out how Paragon Medical thinks about that design problem, and what an organization can reasonably ask of any training provider.

Its central argument is that certification requirements should remain fixed while instructional design adapts to the personnel and the operational environment — and that this position is not a marketing preference but the direction the field itself has taken. The 2025 Canadian Guidelines for CPR and ECC collapsed the Chain of Survival into a single chain that now begins, before any arrest occurs, with prevention and preparedness.¹ Preparedness is an organizational property. It is not conferred by a card.

The paper also states plainly what training cannot do. It cannot guarantee survival. It cannot guarantee performance under real conditions. A Basic Life Support course is not a complete medical emergency preparedness programme, and the dental literature warns explicitly against treating it as one. Naming those boundaries is not a weakness in the argument. It is the argument.

FOR DECISION-MAKERS

For decision-makers, the practical output is Section 8 — the Clinical BLS Training Design Test, a twelve-domain framework for evaluating any provider, including this one.

A NOTE ON METHOD

Every substantive claim in this paper carries a marker showing where it comes from:

EVIDENCE MARKERS USED THROUGHOUT

[GUIDELINE] — the 2025 Canadian Guidelines for CPR and ECC, Heart & Stroke training policy, ILCOR consensus statements, CSA standards, or a regulator

[EVIDENCE] — peer-reviewed research, with its limitations stated

[PARAGON PRACTICE] — an instructional design decision Paragon Medical has made

[PROFESSIONAL OPINION] — instructional judgment, offered as judgment rather than as evidence

The convention exists because the distinction matters. A reader is entitled to know when they are being told what the guidelines require, what the research suggests, and what one instructor thinks — and to weigh each differently.

Paragon Medical delivers to Heart & Stroke standards and current Canadian guidelines. The instructional reasoning in this paper draws more widely: resuscitation and simulation literature, occupational health sources, and education science published outside Canada. Guidelines set what must be taught and what must be achieved. They do not, and do not attempt to, specify how a room should be run.

Where the evidence is thin, contested, or drawn from populations that generalize imperfectly, this paper says so.

SECTION ONE

CERTIFICATION IS A STANDARD. LEARNING IS A DESIGNED ENVIRONMENT.

There is a category error at the centre of how many organizations buy emergency training, and it is easy to make because the two things sit so close together.

Certification is a standard. It specifies a curriculum, a set of competencies, an assessment, a validity period, and the conditions under which a card may be issued. These elements are fixed deliberately, and a provider who varies them is not adapting — they are failing to deliver the course. **[GUIDELINE]**

The learning environment is not a standard. It is a set of decisions someone makes, whether or not they make them consciously: how the room is arranged, which scenarios are used, how the group is composed, what sequence the material follows, how fast it moves, when it is scheduled, whether roles are assigned or left implicit, and what equipment sits in front of the learner. **[PROFESSIONAL OPINION]**

Nothing in the guidelines specifies the room. This is not an oversight. Guidelines are written to be implementable across an enormous range of settings, and they properly stop at the point where local judgment must take over. What follows from that is straightforward but frequently missed: **the parts of a course that are not specified are the parts that vary most, and they are the parts that determine whether a certified person can actually act.**

The 2025 Guidelines made this harder to ignore. The Chain of Survival, previously split between in-hospital and out-of-hospital arrest, was unified into a single chain covering adult and paediatric, in-hospital and out-of-hospital events. In building

it, the guidelines acknowledged that before any cardiac arrest occurs, prevention and preparedness can both reduce the need for resuscitation and improve it when it happens.¹ **[GUIDELINE]**

Preparedness now sits inside the chain. It is not a certificate, not a policy binder, and not a training record. It is a property of an organization — its people, its layout, its equipment, its roles, and its habits — and it is built or neglected in the design decisions listed above.

What is fixed is what must be learned and proven. What is designed is everything that determines whether learning happens at all.

What stays standardized

Curriculum content. Competency criteria. Assessment standards and pass conditions. Certification validity. Card issuance matched to the materials taught. Instructor certification currency. None of these are negotiable, and an organization should be suspicious of a provider willing to flex them.

What is designed

Group composition and size. Room layout and physical space. Scenario content. Sequencing and pacing. Scheduling. Role assignment. Equipment context. Language and accessibility. Reinforcement planning after the course ends.

An organization that specifies only the first list and leaves the second to the provider's convenience has bought a certificate. Whether it has bought readiness is a separate question, and one it has not asked.

SECTION TWO

MEETING THE STANDARD, AND WORKING ABOVE IT

The floor is not a marketing claim. It is a specification, and it has a cost.

Feedback devices are required, not encouraged. Since 18 February 2021, Heart & Stroke has required the use of an instrumented directive feedback device in courses that test CPR skills — Basic Life Support, Advanced Cardiovascular Life Support, ACLS for Experienced Providers, PALS, PEARS, and First Aid courses in which BLS is also taught. The device must provide feedback on compression rate, depth and recoil at minimum, with additional requirements at advanced course levels. In standalone First Aid, Heartsaver and Hands-Only programmes, feedback devices are recommended rather than required.³

[GUIDELINE]

This is a training-policy requirement placed on providers. A BLS course run without a compliant feedback device is not a compliant course.

The 2025 Guidelines arrive at the same place by a different road. The Education Science chapter recommends the use of feedback devices during CPR training for health care professionals, and separately recommends them for lay rescuers.¹

[GUIDELINE]

The distinction between those two paragraphs is worth holding onto, and it is the subject of the sidebar below. The requirement comes from training policy. The scientific endorsement comes from the guidelines. Providers who conflate the two are usually not reading either carefully.

Materials currency is the question most buyers do not know to ask. The 2025 Canadian Guidelines were released on 22 October 2025.² Heart & Stroke published interim training materials so that 2025 science could be taught immediately, in advance of full course-material replacement.⁴ In Canada at the time of writing, delivering 2020 course materials together with the published interim addenda is current and sanctioned practice. **[GUIDELINE]**

That produces a more useful question than the obvious one. Not *does your provider have 2025 materials* — in Canada that question has a misleading answer. The question is: **is your provider teaching 2025 science at all, through what mechanism, and can they explain which materials they are using and why?** A provider still delivering 2020 content with no addenda cannot answer it. A provider claiming to be entirely on 2025 materials in Canada is either mistaken or overstating. A provider who explains the interim mechanism accurately is demonstrating exactly the fluency the question is designed to test for.

[PROFESSIONAL OPINION]

Where Paragon works above the floor

Paragon Medical operates equipment that exceeds the minimum specification set by the feedback-device requirement.

[PARAGON PRACTICE]

More consequentially, equipment-to-student ratios are strictly adhered to and exceeded by design. This is not a comfort measure. Basic Life Support is a team intervention, and the unit of practice is the team, not the individual. A course in which participants queue to take an isolated turn on a single manikin can produce people who pass a skills test. It does not produce a group that has ever functioned together. **[PARAGON PRACTICE]**

The design consequence is that participants spend the session working alongside the colleagues they would actually be working alongside, rather than waiting for a turn. Where ratios are met at the minimum, a course becomes a sequence of individual assessments with a team-shaped label on it. **[PROFESSIONAL OPINION]**

That distinction runs through the rest of this paper, and it reappears in Section 5.

A course that meets the requirement and a course that meets it well are not the same purchase.

SIDEBAR — HOW TO READ A RESUSCITATION GUIDELINE

Resuscitation guidelines use graded language deliberately, and the grades are not interchangeable. Reading them correctly is a skill worth having before you evaluate any provider's claims.

"Recommended" is the strongest tier. When the 2025 Guidelines say feedback devices are recommended during CPR training, that is not a soft suggestion.¹

"Reasonable" or "can be beneficial" indicates support with less certainty behind it.

"May be reasonable" or "may be considered" signals a smaller or more heterogeneous evidence base. Rapid-cycle deliberate practice sits here.¹

"Not recommended" or "should not be used" is a directive against. Virtual reality for teaching CPR skills sits here.¹

There is a second distinction, separate from all of these. **A guideline recommendation and a training-network policy requirement are different instruments.** The guidelines recommend feedback devices on scientific grounds. Heart & Stroke *requires* them by policy. A provider who says "the guidelines demand

feedback devices" has blurred the two. The accurate statement — the policy mandates it and the science independently supports it — is both stronger and correct.

Applied to materials currency, the same care applies. The American Heart Association set a date after which only 2025 materials may be used. Heart & Stroke Canada has published interim materials and has not issued equivalent direction to Canadian instructors. Quoting the American deadline as a Canadian requirement is the kind of error this sidebar exists to prevent.

SECTION THREE

DESIGNING AROUND THE PERSONNEL

The same certification course, delivered to two different groups, may require substantially different instructional design. The variables are not exotic.

Prior experience and clinical exposure. Clinical experience before or after a course has a positive association with retention of knowledge and skills.⁵ **[EVIDENCE]** This has a direct consequence that is rarely acted on: an intensive care nurse and a dental hygienist may hold the same card and leave the same room, but the frequency with which each encounters deterioration in practice differs enormously, and so will their retention curves. A single reinforcement schedule applied across both is a schedule designed for neither.

Authority during an emergency. Every participant occupies a position in a hierarchy that does not dissolve when someone collapses. A junior assistant who has correctly identified a deteriorating patient still has to say so, out loud, to a clinician who is concentrating on a procedure. Training that never rehearses that moment has trained a skill and left the barrier to using it untouched. **[PROFESSIONAL OPINION]**

Language. The 2025 Guidelines recommend addressing barriers for linguistically isolated communities by increasing the availability of training materials in diverse languages.¹ **[GUIDELINE]** In Ontario clinical settings this is an everyday operational reality rather than a policy abstraction. A participant working in a second language may understand the material completely and still be slower to speak first in a scenario, and that hesitation is easily and wrongly read as uncertainty about the content.

Physical capacity. Chest compressions are physically demanding, and participants vary. Where a team is small, this becomes a design question about rotation and role allocation rather than an individual limitation.

Psychological safety. The current literature is more precise on this than the popular understanding of the term. A 2025 integrative review concluded that psychological safety in simulation-based education is not about eliminating discomfort; it is a condition that allows learners to risk failure and be exposed to genuine difficulty, and it is necessary *for* a challenging learning environment rather than an alternative to one.⁶ **[EVIDENCE]**

This distinction matters commercially as well as pedagogically. A comfortable course and a safe course are not the same thing. Sessions should be demanding. What must be reliable is that failing in front of colleagues carries no cost, because a participant protecting their standing in front of their team is not learning. **[PROFESSIONAL OPINION]**

Cognitive aids. The 2025 Guidelines state that use of cognitive aids during resuscitation may be reasonable for health care professionals, and separately that it is not recommended for lay rescuers.¹ **[GUIDELINE]** In a clinical setting with mixed clinical and administrative personnel — a dental practice being the obvious case — this is not a technicality. Clinical and non-clinical staff in the same room are not the same category of learner, and designing as though they were disadvantages both.

THE RECURRING INSTRUCTIONAL PROBLEM

The recurring instructional problem is one of attribution. Personnel who appear disengaged are, across clinical training environments, more often personnel who are fatigued, working in a second language, uncertain of their standing to speak, or unfamiliar with a scenario that bears no resemblance to their working environment. Reading that as a motivation problem leads to interventions that make it worse.

[PROFESSIONAL OPINION]

SECTION FOUR

DESIGNING AROUND THE CLINICAL ENVIRONMENT

The dental operatory as a worked example

A dental practice is a demanding environment for resuscitation, and almost none of what makes it demanding appears in a generic classroom.

The patient is reclined in a chair, not supine on a floor. Moving them takes time and people. Access around the chair is restricted on at least one side, often two. The instrument tray, suction lines and light arm occupy the space a responder would want. Oxygen may be present, and the emergency drug kit may be in a different room from the person who knows what is in it. The AED may be mounted somewhere sensible, or somewhere that was convenient during the fit-out. The front desk is staffed by people who are not clinicians, who will almost certainly be the ones calling EMS, and who control the only door paramedics can come through.

None of that is exotic. All of it shapes what actually happens, and none of it is present in a hotel conference room with manikins on the carpet.

Training in the real space has documented value, and a documented limit. A simulation-based medical emergency curriculum delivered at a dental college conducted its sessions in clinic operatories and patient waiting areas rather than a classroom, built scenarios from emergencies previously encountered in that clinic alongside published case reports, and deliberately included front desk personnel, dental assistants and hygienists in the scenarios to increase fidelity. Participant performance in simulated emergencies improved significantly.⁷ [EVIDENCE]

The limits are worth stating: this was a pilot study conducted with dental residents in an academic institution, and the outcome measured was performance in simulation, not patient outcome.

The broader in-situ simulation literature supports a similar reading. Its strongest documented contributions are the identification of latent safety threats, improvements in team behaviour and non-technical skills, and participant engagement. Direct evidence of improved patient outcomes is scarce, and some comparisons between dedicated simulation centres and local clinical settings have found no difference in learning outcomes.⁸ [EVIDENCE]

So the honest case for training in the actual environment is not that it saves more lives. It is that it finds problems nothing else finds, and it finds them before they matter.

SIDEBAR — WHAT TRAINING IN THE ACTUAL SPACE TENDS TO FIND

These are the recurring discoveries when a scenario is run where the work happens rather than in a classroom. They are ordinary, and that is the point — none of them appear on a compliance checklist.

- The AED is present, mounted, inspected, and four rooms away from where people actually collapse.
- Nobody has opened the emergency kit since it was purchased, and the person who assembled it no longer works there.
- Two responders cannot work on opposite sides of the chair at the same time without one of them moving equipment first.
- The oxygen cylinder is where it should be. The key, or the regulator, is not.
- The person who will call EMS has never said the practice's address out loud under pressure, and does not know which entrance is closest.
- No one is assigned to meet paramedics at the door, so the first responder to arrive spends ninety seconds finding the room.
- Other patients are in the waiting area, and no one has a role that includes them.

Each of these is fixable in an afternoon. None of them are visible from a training record.

The recognition problem

Airway obstruction is among the more plausible emergencies in a dental setting, and the 2025 Guidelines changed how it is managed. A new adult foreign-body airway obstruction algorithm directs repeated cycles of five back blows followed by five abdominal thrusts until the object is expelled or the person becomes unresponsive, and directs activation of the emergency response system for severe obstruction, because a person who loses consciousness can progress rapidly to cardiac arrest.¹

[GUIDELINE]

The mechanics, however, may not be where the failure occurs.

A 2026 correspondence in *Resuscitation* traced cases of unrecognized airway obstruction from an 1880 newspaper report through the mid-century "café coronary" literature to the present, and noted a nationwide prospective observational registry in which bystander intervention occurred in only 55% of witnessed cases. The authors' assessment is that this pattern reflects a failure of recognition rather than a lack of technical knowledge — and they state that this includes people with basic life support training. They observe that the universal choking sign is not present in all cases, that severe obstruction shares its features with many other causes of collapse, and that the most distinctive clue is often an abrupt loss of effective cough or voice in someone who was just eating: silence rather than a gesture. Their conclusion is that education should place greater emphasis on recognition, not only on the mechanics of back blows and thrusts.⁹

[EVIDENCE — CORRESPONDENCE, WEIGHTED ACCORDINGLY]

WITNESSED BUT UNTREATED

Witnessed but untreated. Three words that describe the gap this paper is about, in the emergency most likely to occur in a dental practice.

It also carries an instructional design consequence. If recognition is where the failure sits, then scenarios must begin before the collapse, with recognition as the skill under assessment — not after it, with the manikin already on the floor and the diagnosis already made for the learner. **[PARAGON PRACTICE]**

A team can hold current cards and still fail — not because nobody can perform the manoeuvre, but because nobody names what is happening in the first four seconds.

Other clinical environments

Hospitals and health care facilities. The most common design error here is the assumption that all clinical personnel are equally comfortable performing BLS. They are not, and specialty, seniority and frequency of exposure vary enormously within a single building. The 2025 Guidelines note that designated code teams with clearly defined roles, diverse expertise and adequate training incorporating simulation can be beneficial to outcomes following in-hospital arrest, and that safety huddles improving situational awareness around high-risk patients can be effective in reducing arrest rates.¹ **[GUIDELINE]** Neither of those is a certification requirement. Both are design decisions.

Mental-health settings. Equipment access is frequently and appropriately restricted, environmental and security considerations shape what a responder can do, and the therapeutic relationship is a factor that has no analogue in other clinical settings. The 2025 Guidelines updated the health care professional BLS algorithm to reflect the role of opioid antagonists during suspected overdose in respiratory and cardiac arrest, and address public access to naloxone at the systems level.¹ **[GUIDELINE]** Training designed for these settings has to be built around what personnel can actually reach and what they are actually permitted to do.

Community and outpatient settings. Medical offices, rehabilitation environments, occupational health clinics and diagnostic settings share a common structural feature: limited personnel, limited equipment, and EMS response times that are frequently longer than anyone plans for. The gap between collapse and professional arrival is longer here, which raises rather than lowers the value of team-role design.

Every one of these settings differs in staffing, equipment, sedation capability and realistic emergency exposure. Nothing in this section should be read as implying that any two facilities within a category are the same.

SECTION FIVE

NIGHT-SHIFT PERSONNEL AND THE TRAINING CLOCK

Mandatory training is usually built around a single daytime model. Where an organization employs personnel who work permanent nights, that default carries a cost that is rarely priced.

The obvious framing — that night personnel should be trained at night because they are adapted to nights — does not survive the evidence, and it should be abandoned.

Fewer than 3% of permanent night workers achieve complete adjustment of their endogenous melatonin rhythm to night work, and under a quarter show adjustment sufficient to derive benefit from it. Permanent night-shift systems do not, in most individuals, produce circadian adaptation.¹⁰ **[EVIDENCE]** Circadian misalignment increases cognitive vulnerability in sustained attention, information processing and visual-motor performance, particularly beyond roughly ten hours of scheduled wakefulness.¹⁰ Alertness and performance are most impaired during night hours.¹¹ **[EVIDENCE]**

So night personnel are, on the evidence, impaired at night. That has to be said plainly, because the alternative is a marketing claim dressed as science.

What follows is more interesting than the simple version.

Requiring permanent night personnel to attend daytime training does not restore them to a daytime baseline. It imposes an acute sleep-schedule reversal on top of chronic misalignment. Sleep is most restricted between consecutive night shifts, between consecutive day shifts, and between an evening shift and a following day shift — early day starts can restrict sleep comparably to nights.¹¹ **[EVIDENCE]** A person asked to reverse their schedule for a mandatory session is not arriving rested. They are arriving with a fresh sleep debt layered onto an existing one.

Neither option is neutral. Daytime delivery adds a reversal. Shift-aligned delivery avoids the reversal but sits closer to the circadian nadir. There is no cost-free scheduling choice available to any organization, and no provider can create one.

[PROFESSIONAL OPINION]

The failure is therefore not choosing wrongly. The failure is not choosing at all — defaulting to whichever slot suits the provider's calendar, and then interpreting the resulting fatigue as a lack of interest. That misattribution has consequences beyond the session: it shapes how an organization thinks about the personnel involved, and it is unfair.

[PROFESSIONAL OPINION]

PARAGON'S PRACTICE

Paragon's practice: where operationally appropriate, we train night-shift personnel at night. This is a deliberate decision made with the organization, with the trade-offs named on both sides, rather than a claim that night is a better time to learn. **[PARAGON PRACTICE]**

What the schedule communicates

There is a second effect, and in practice it may be the larger one.

Bringing an instructor on site overnight costs an organization more than scheduling the same session into a weekday afternoon. Personnel understand this without being told. What they take from it is that the organization absorbed the cost rather than transferring the inconvenience to them — and that reading arrives before the session begins. **[PROFESSIONAL OPINION]**

This is not a peripheral consideration. The 2026 ILCOR education consensus statement includes **acceptability of training** among its sixteen outcome categories for research involving health care professionals, defined as the extent to which those delivering or receiving training consider it appropriate based on their cognitive and emotional responses to it, and encompassing both relevance and whether the training is favourable and engaging.¹³ **[GUIDELINE — ILCOR CONSENSUS]** Acceptability sits in the same framework as knowledge, retention and skill performance. It is a measured outcome, not a matter of atmosphere.

A group that arrives believing the training was arranged around them participates differently from a group that arrives having rearranged their sleep to attend. That difference tends to be visible within the first twenty minutes, and it persists through the practical work. **[PROFESSIONAL OPINION]**

Two boundaries on this. Personnel perception is not skill retention, and improved engagement should not be described as improved outcomes. And no study was located that directly compares resuscitation training outcomes by time of delivery in shift-working populations — the scheduling reasoning in this section is an application of adjacent evidence, not a finding. Where a provider tells you otherwise, ask for the citation. **[PROFESSIONAL OPINION]**

Does your organization build training around its personnel, or require its personnel to reorganize themselves around the training?

Practical scheduling considerations

Ask which shift patterns exist before proposing dates rather than after. Where permanent nights exist, treat shift-aligned delivery as an option to be evaluated rather than an exception to be granted. Avoid scheduling immediately following a shift end, which combines extended wakefulness with the training requirement. Where a session must fall outside a group's normal schedule, shorten it, break it, and reduce the cognitive load rather than compressing the same content into a fatigued audience. Consider splitting large mixed groups by shift rather than by convenience.

SECTION SIX

FROM INDIVIDUAL SKILLS TO TEAM RESPONSE

The 2025 Guidelines are explicit on this point: life support training for health care professionals is **recommended** to include specific emphasis on teamwork competencies.¹ **[GUIDELINE]** That is the strongest recommendation tier, and it is a statement about course design rather than course content.

Alongside it, the guidelines note that in-hospital code teams should include members with advanced life support training, that designated teams with clearly defined roles and simulation-incorporating training can be beneficial to outcomes, and that emergency medical services teams should be sized sufficiently to achieve discretely assigned roles.¹ **[GUIDELINE]**

The operating-room simulation literature adds a consistent finding: most errors and near-misses in team settings are attributable to communication, leadership, situational awareness and crisis management rather than to deficits in knowledge or clinical expertise.¹² **[EVIDENCE]**

An individual can pass a skills test alone. Nobody resuscitates alone.

A dental role map

The following is illustrative rather than prescriptive. Every practice will allocate differently based on staffing, layout and who is actually present at 2:40 on a Thursday afternoon.

FUNCTION	CONSIDERATIONS
Recognition and alarm	Whoever is closest. Requires standing to speak regardless of seniority.
Chest compressions	Rotation planned in advance; physical demand is real.
Airway and ventilation	Guidelines reaffirm 30:2 before an advanced airway, with enough volume for visible chest rise. ¹
AED retrieval and operation	Timed from the treatment room, not estimated.
Oxygen	Where present. Location, key and regulator all verified.
Emergency kit	Retrieval and contents known by more than one person.
EMS call	Named individual. Address and nearest entrance spoken aloud in rehearsal.
Door and route	Someone meets and directs. This role is almost always unassigned.
Documentation and timing	Start time is the single most useful number at handover.
Other patients and waiting area	A real problem in a small practice with a full schedule.
Handover	Structured, brief, and rehearsed.

The recurring finding is not that practices assign these roles badly. It is that most have never assigned them at all, and the allocation happens by improvisation at the worst possible moment. **[PROFESSIONAL OPINION]**

Generic delivery compared with context-adapted delivery

GENERIC COURSE DELIVERY	CONTEXT-ADAPTED CLINICAL DELIVERY
Schedule set by provider availability	Schedule considered alongside personnel shift patterns
Generic examples and scenarios	Scenarios built from the setting's plausible emergencies
Training equipment only	Explicit connection to the site's actual equipment and its placement
Individual skills testing as the unit	Individual skill plus team-role practice, with ratios observed
Scenario begins at the collapse	Scenario begins before it, with recognition assessed
One group, undifferentiated	Clinical and non-clinical personnel designed for distinctly
Certificate as endpoint	Certification plus a reinforcement plan with dates
Materials currency unexamined	Materials and instructor currency stated and explainable
Identical delivery at every site	Common standard, local operational adaptation

RETENTION IS CAPABILITY. CAPABILITY IS CAPACITY.

An organization does not buy skills on the day of training. It buys the capacity to respond in month seven.

That framing has recently acquired formal support. In 2026 the International Liaison Committee on Resuscitation published a consensus statement establishing standardized outcome reporting for resuscitation education research. It identified sixteen outcome categories containing sixty specific outcomes for research involving health care professionals, and sixteen categories containing fifty-one outcomes for research involving laypeople.¹³ [GUIDELINE — ILCOR CONSENSUS]

The significance for a decision-maker is what the categories are. Knowledge acquisition, skill acquisition, short-term retention, intermediate-term retention, long-term retention, skill performance in real cardiac arrest, process outcomes in real cardiac arrest, patient outcomes and systems-level outcomes are **separately defined categories**. The field has formally recognized that these are different things which must be measured differently.

They are exactly the distinctions this paper has been drawing between trained, certified, competent at assessment, retained, and ready.

The statement also supplies consensus intervals: short-term retention up to three months, intermediate-term three to six months, long-term beyond six months.¹³ Those windows exist because retention is understood to be a distinct and decaying property — not because any single study has settled a number.

What the decay literature supports, and what it does not

A systematic review of adult advanced life support retention found knowledge and skills decaying between six months and one year after training, with skills decaying faster than knowledge — and the authors noted the absence of large, well-designed studies in this area.⁵ [EVIDENCE] A review of layperson CPR found skills deteriorating within three months and then plateauing between three and six.¹⁴ [EVIDENCE] A review of procedural skill retention after simulation found the most significant decline occurring between six and twelve months, and that more complex procedural skills decay faster than simpler ones.¹⁵ [EVIDENCE] A 2025 systematic review and meta-analysis of school-based CPR training found a marked reduction in chest compression quality within six to eight months, though that population generalizes imperfectly to clinical adults.¹⁶ [EVIDENCE]

The defensible summary: **meaningful decay is observable well inside a three-year certification cycle, and skills decay faster than knowledge**. The precise interval varies by population, skill complexity and clinical exposure, and no single figure should be presented as settled.

The American Dental Association's guidance reaches the practical conclusion directly: because emergency skills are not used daily, regular review is necessary — at least annually and preferably more often — and mock emergencies help staff become confident in their roles.¹⁷ [EVIDENCE]

What reinforcement can reasonably look like

Short scenario refreshers between certification cycles. Retrieval practice rather than re-presentation of content. Equipment checks conducted as drills rather than as inventory. Team walkthroughs of role allocation when staffing changes. Scheduled

reinforcement dates set at the time of the original booking rather than remembered later.

The 2025 Guidelines note that rapid-cycle deliberate practice may be reasonable as part of BLS or ALS training for health care professionals, and that gamified learning elements may be reasonable as a component of training.¹ Both sit at a lower recommendation tier, and an ILCOR-conducted systematic review of rapid-cycle deliberate practice — searching Medline, Embase and Cochrane through February 2024, with GRADE assessment — found nine simulated studies meeting inclusion criteria.¹⁸ **[EVIDENCE]** That is a small evidence base. The guidelines phrase it cautiously and so should any provider describing it.

The guidelines also address debriefing, both as scripted debriefing in education and as immediate and delayed clinical debriefing at the systems level.¹ Paragon Medical's position on debriefing method is substantial enough to warrant separate treatment, and is set out in Practice Paper No. 02.

Certificates prove training happened. Readiness is a different question, and it is asked in month seven.

SIDEBAR — WHAT THE FIELD MEASURES ABOUT AN INSTRUCTOR

The 2026 ILCOR education consensus statement places **instructor outcomes at the base of its outcomes pyramid**, above which sit learner outcomes, then patient outcomes, then systems- and population-level outcomes. The stated reason is that instructor performance is foundational to the quality of the educational experience.¹³

The statement is careful to note that the tiering does not imply improvement at one level necessarily produces improvement above it — but that success at each lower level matters to success at the next.

It identifies what future research on instructor performance should report: instructor knowledge of key principles, quality of instruction, quality of feedback, quality of debriefing, and instructor workload and cognitive load. It also observes that little is currently known about how to optimize instructor development.

Two things follow for an organization selecting a provider. The first is that the instructor is not an interchangeable delivery mechanism sitting beneath the curriculum; in the field's own model, the instructor is the base the rest of the structure rests on. The second is a caution about the evidence overall: ILCOR notes that its education treatment recommendations are frequently based on low-certainty evidence with substantial heterogeneity in reported outcomes, which can make pooling results difficult or impossible.¹³

That is the honest state of resuscitation education science. Anyone claiming more certainty than that is selling something.

SECTION EIGHT

MULTI-LOCATION CONSISTENCY WITHOUT GENERICISM

Organizations operating across many sites face an apparent contradiction. They need a common standard so that a certificate means the same thing at every location and documentation survives an audit. They also need delivery that reflects each site's layout, equipment and staffing, because a scenario built for one clinic is inert in another.

The contradiction dissolves once the fixed and designed elements from Section 1 are separated properly.

Held common across all sites: learning objectives, competency criteria, assessment standards, certification and card issuance, instructor currency, documentation format and record retention, the reinforcement schedule, and the evaluation criteria applied to the programme itself.

Adapted locally: scenario content, equipment references and placement, room and layout considerations, role allocation reflecting actual staffing, scheduling reflecting local shift patterns, and language provision reflecting the personnel present.

A pilot-to-rollout sequence is usually the right structure. One or two representative sites first, with observations captured deliberately; scenario templates and role maps refined against what those sites reveal; then phased rollout with local adaptation applied to a stable common core. This produces a programme that improves as it scales rather than one that degrades into a lowest common denominator.

Paragon Medical describes its multi-location model as coordinated, scalable and location-planned. It does not claim instructor presence in every Canadian region, and organizations should treat any provider's coverage claims as a question to be verified rather than a statement to be accepted. **[PARAGON PRACTICE]**

SECTION NINE

THE CLINICAL BLS TRAINING DESIGN TEST

This framework is intended to be used against any provider, including Paragon Medical. It is reproduced separately as a standalone checklist.

For each domain, ask the question and note whether the provider can answer specifically, answers generally, or cannot answer.

01 Personnel Before proposing a course, does the provider ask who will be in the room — roles, prior experience, clinical exposure, languages spoken, and who is clinical versus administrative?	02 Schedule Does the provider ask what shift patterns exist, and does scheduling begin from your operations or from their calendar?	03 Environment Has anyone from the provider seen, or asked in detail about, the space where the emergency would actually happen?
04 Scenarios Are scenarios drawn from emergencies plausible in your setting, and do they begin before the collapse with recognition as the skill under assessment?	05 Equipment specification and ratio Does the provider meet the instrumented feedback device requirement, and what equipment-to-participant ratio will be observed? Will participants practise as teams or queue individually?	06 Materials and instructor currency Is 2025 science being taught, through which materials or addenda, and can the provider explain the current Canadian position accurately when asked?

07 Roles Will the course produce a role map your team can actually use, including the roles nobody assigns — meeting EMS, managing other patients, recording the start time?	08 Accessibility and language How will the provider accommodate participants working in a second language, or with differing physical capacity?	09 Assessment What is assessed, against what standard, and what happens when a participant does not meet it?
10 Reinforcement What is proposed between certification cycles, and are reinforcement dates set at the time of booking or left to memory?	11 Documentation What records will you hold afterwards, in what format, and will they satisfy your own audit requirements without further work?	12 Multi-site consistency What is held identical across locations, what is adapted, and who decides?

A note on how to use the answers. A provider who answers most of these specifically is thinking about design. A provider who answers most of them generally is selling a certificate. Neither outcome is disqualifying on its own — some organizations need only a certificate, and there is no dishonour in supplying one — but the two should not cost the same and should not be compared as though they were the same product.

The Paragon Medical practice model

Operational review • **Personnel and schedule analysis** • **Environment and equipment review** • **Scenario design** • **Training delivery** • **Competency assessment** • **Readiness observations** • **Reinforcement and lifecycle planning**

Not every engagement includes every component. Scope is agreed in advance, and an organization purchasing a single session should expect a single session. **[PARAGON PRACTICE]**

SECTION TEN

WHAT RESPONSIBLE BLS TRAINING SHOULD NOT PROMISE

The credibility of everything above depends on this section being specific.

No guarantee of survival. Survival after cardiac arrest depends on factors far outside any training provider's control. Approximately 60,000 out-of-hospital cardiac arrests occur in Canada each year, and survival in most communities is fewer than one in ten — while CPR and AED use can double the chance of survival.² Training contributes to that. It does not determine it. **[GUIDELINE]**

No guarantee of real-world performance. Assessment demonstrates competence under assessment conditions. It does not predict behaviour during an actual emergency, and the recognition literature discussed in Section 4 shows precisely how a trained person can still fail to act.⁹

No claim that certification resolves organizational readiness. Certification is one input. Equipment placement, role allocation, staffing, layout and reinforcement are others, and they are the organization's to own.

No claim that BLS prepares a team for every medical emergency. Cardiac arrest is among the less common events in a dental setting, and the dental education literature warns explicitly against relying on a BLS course as a comprehensive emergency preparedness programme.¹⁹ **[EVIDENCE]** BLS remains the required baseline, and its transferable structure — recognition, activation, role assignment, equipment retrieval, EMS direction, handover — supports the management of syncope, hypoglycaemia, anaphylaxis and airway obstruction. But it is a foundation, not a complete programme, and any provider implying otherwise is overselling.

No claim that any scheduling choice eliminates fatigue effects. See Section 5.

No claim of national coverage beyond what Paragon Medical can actually staff, and no claim of technology capability that does not exist.

No claim of institutional backing. A provider's certifications describe what that provider is authorised to deliver and to what standard. They are not sponsorship, partnership or endorsement by the certifying body, and a provider presenting them that way is overstating what they hold.

And what the guidelines themselves rule out

The 2025 Guidelines state that **virtual reality should not be used to teach CPR skills** to lay rescuers or health care professionals. Virtual reality may be reasonable to support knowledge acquisition in BLS and ALS training, and augmented reality providing real-time CPR feedback may be considered — but for teaching the skills themselves, the direction is against.¹

[GUIDELINE]

The 2026 ILCOR education statement adds that the rapid evolution of artificial intelligence as a surrogate instructor and source of feedback requires further exploration before integration into mainstream training.¹³ **[GUIDELINE — ILCOR CONSENSUS]**

A related caution from the clinical literature is worth noting by analogy rather than as evidence about training tools. Correspondence in *Resuscitation* examining large language models in cardiac diagnosis observed that these systems generate authoritative narrative justifications rather than bare probability scores, and that a plausible natural-language explanation increases user reliance even when the explanation is wrong — an effect the authors term the AI transparency paradox, noting that a tired clinician is more readily persuaded by a confident narrative than by a silent score.²⁰

[EVIDENCE — CORRESPONDENCE, AND AN ANALOGY RATHER THAN A FINDING ABOUT EDUCATION TECHNOLOGY]

The position that follows is simple. Screens can carry knowledge. Skills are learned by doing them, in a room, with feedback, alongside the people you would actually be working with.

PARAGON MEDICAL PRACTICE PAPERS — NO. 01

CONCLUSION

Certification should remain standardized. It is what allows an organization to know that a card means something, and it should not be negotiable.

The learning environment should not be generic. The personnel in the room, their schedules, the emergencies plausible in their setting, the equipment they will actually reach for, the roles they will occupy, and the operational reality they work inside should shape how the training is delivered.

Those two sentences are not in tension. Holding the standard fixed is precisely what creates the freedom to design everything else deliberately.

The 2025 Guidelines put prevention and preparedness at the front of the Chain of Survival. The 2026 ILCOR education consensus separated learning from retention from performance from patient outcome, and placed the instructor at the base of the structure. The field has been moving toward the same conclusion from several directions at once: what happens in the room matters, and it matters in ways a certificate cannot record.

An organization that has trained its people has done something worthwhile. Whether it has prepared them is a different question — and it is one worth asking before it is asked by circumstances.

IMPLEMENTATION QUESTIONS FOR YOUR ORGANIZATION

Ten questions to work through internally, independent of any provider.

- 01** When did we last time how long it takes to bring the AED to the furthest treatment room?
- 02** Who calls EMS, and have they ever said our address and nearest entrance out loud under pressure?
- 03** Who meets the paramedics at the door, and does that person know they have that job?
- 04** Has anyone opened the emergency kit in the last twelve months?
- 05** Do our administrative personnel have a defined role, or are they assumed to stay out of the way?
- 06** When our people were last trained, was the scenario recognizable as our workplace?
- 07** Do we have personnel on permanent nights, and when were they last scheduled for daytime mandatory training?
- 08** What happens between certification cycles, and is it on a calendar?
- 09** If two of our team left tomorrow, would the role allocation still work?
- 10** What evidence do we hold that our people could act, beyond the certificates in the file?

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This paper is general professional information for clinical education, operations and health and safety leaders, current as of August 2026. It is not clinical advice and does not replace current resuscitation guidelines, the standards of any regulatory college, or applicable occupational health and safety legislation.

Paragon Medical instructors hold current Canadian Red Cross and Heart & Stroke instructor certification. Paragon Medical delivers Heart & Stroke Basic Life Support across Ontario.

Practice Paper No. 02, on debriefing method, is in preparation.



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BEYOND CERTIFICATION — IN BRIEF

For separate circulation. Designed as a single page.

THE PROBLEM

Certification requirements are standardized. Learning environments are not. Organizations that treat the two as the same thing buy compliance and assume they have bought readiness.

WHAT THE GUIDELINES NOW SAY

The 2025 Chain of Survival begins with prevention and preparedness, before any arrest occurs. Preparedness is an organizational property, not a certificate. The 2025 Guidelines recommend that life support training for health care professionals include specific emphasis on teamwork competencies, and state that virtual reality should not be used to teach CPR skills.

WHAT THE FIELD MEASURES

The 2026 ILCOR education consensus statement defines learning, short-term retention, intermediate-term retention, long-term retention, real-arrest performance, patient outcomes and systems outcomes as separate categories — and places instructor performance at the base of the structure.

WHAT DECAYS

Skills decay faster than knowledge, and meaningfully within a three-year certification cycle. The precise interval varies; no single figure is settled.

WHAT FAILS FIRST

In witnessed airway obstruction, bystander intervention occurs in roughly half of cases — a failure of recognition rather than technique, including among people with BLS training.

WHAT WE DO NOT CLAIM

No guarantee of survival. No guarantee of real-world performance. No claim that a BLS course is a complete emergency preparedness programme. No claim that any scheduling choice removes fatigue effects.

THE ONE QUESTION TO ASK A PROVIDER

Before you propose dates, what do you need to know about our people, our space, and our schedule?

Providers who need to know a great deal are designing. Providers who need to know nothing are scheduling.