

Advancing perioperative communication training in anesthesiology: an AIDET-informed simulation curriculum with preliminary local evaluation

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Abstract

Communication in anesthesiology is often compressed, high stakes, and emotionally charged, yet simulation in this specialty has traditionally focused more on technical or crisis-management skills than on clinician-patient-family communication. To address this gap, we developed an AIDET-informed simulation curriculum for third-year anesthesiology residents that combined a simple communication scaffold with scenario-based rehearsal, role rotation, structured observation, and debriefing. The curriculum was designed using principles from adult learning, experiential learning, and deliberate practice, and targeted four recurrent perioperative communication challenges: preoperative option discussion, high-risk consent with surrogate decision-making, disclosure after difficult airway management, and postoperative complication discussion. In a preliminary single-center historical-control evaluation, the 2021 cohort received standard communication teaching in January-February 2024 and completed OSCE assessment in June 2024, whereas the 2022 cohort received the AIDET-informed simulation curriculum in January-February 2025 and completed OSCE assessment in June 2025. Sixty residents were included, with 30 in each cohort. The curriculum was delivered over 270 minutes using existing simulation infrastructure and trained standardized patients. Local evaluation data showed higher simulated communication performance scores and more favorable simulated patient ratings in the intervention cohort, together with lower self-reported stress and higher confidence in difficult conversations. We interpret these findings cautiously because allocation was by cohort rather than randomization, the evaluation was conducted in one center, and outcomes were assessed in simulated rather than workplace settings. This article therefore presents the curriculum primarily as a theory-informed and practice-oriented simulation strategy, supported by early local evidence, rather than as definitive effectiveness research. We outline the rationale, design principles, implementation process, evaluation methods, practical lessons, and boundary conditions to help simulation educators adapt the approach to other procedural and high-pressure specialties.

Background

Communication in anesthesiology occurs under conditions that are often unusually brief, risky, and emotionally charged [1–9]. Residents are expected to establish rapport quickly, explain uncertainty, obtain informed consent, respond to anxiety, and discuss complications or changing plans in situations where time pressure and patient vulnerability can make empathic communication difficult to sustain [4–9]. These demands are educationally important but have often been addressed less systematically than technical or crisis-resource-management training.

To inform the design of our curriculum, we synthesized literature in three overlapping areas: perioperative and anesthesiology communication, simulation-based communication training, and structured communication frameworks applicable to time-pressured clinical encounters [1–24]. Across this literature, three points were especially relevant. First, perioperative communication is not simply a generic communication problem in a different setting; it is shaped by urgency, procedural risk, distress, and rapidly changing decisions [4–9]. Second, simulation-based education offers a credible way to teach

challenging conversations because it allows rehearsal, feedback, and reflection in psychologically safer settings than the workplace [10–15, 24]. Third, structured scaffolds may help learners organize communication under pressure, but frameworks alone are unlikely to be sufficient unless paired with deliberate rehearsal and debriefing [15–20].

The AIDET framework, which emphasizes acknowledge, introduce, duration, explanation, and thank, offered a useful starting scaffold because it is memorable, simple, and readily adaptable to short perioperative encounters [16–20]. However, we did not view AIDET as a script to be memorized. Rather, we used it as an organizing structure within a broader simulation curriculum. The goal of the present article is therefore not to claim definitive effectiveness, but to describe a thoughtfully designed and theoretically grounded simulation practice that may help programs strengthen perioperative communication training. In keeping with the aims of an Advancing Simulation Practice article, we focus on the practical application of the curriculum, the mechanisms by which it may work, preliminary local evidence supporting its use, and the lessons most relevant to simulation educators.

Main text

Why this practice innovation was needed

In our residency context, communication teaching was historically delivered through lectures, case discussion, and opportunistic feedback during clinical work. This approach provided conceptual exposure, but it did not offer a shared structure for communication, repeated practice in emotionally difficult encounters, or a routine process for debriefing performance. We judged this gap to be particularly important in anesthesiology because many communication failures arise not from lack of knowledge alone, but from difficulty maintaining clarity, empathy, and relational control under time pressure.

Simulation offered an attractive educational response for two reasons. First, it enabled residents to practice uncommon but high-impact conversations without exposing patients or families to learner error. Second, it allowed the educational team to slow down interactions that are usually rushed, making tacit communication practices visible and discussable. Our aim was therefore to create a simulation curriculum that would help residents communicate more coherently and empathically in perioperative encounters while remaining feasible within an existing residency program.

Design principles and mechanisms

The curriculum was designed around four linked educational principles. The first was cognitive scaffolding. AIDET gave residents a simple organizing structure that could reduce the cognitive load of beginning, pacing, and closing difficult encounters [16–20]. The second was experiential learning. Rather than teaching communication as a list of desirable behaviors, the curriculum situated residents in realistic perioperative scenarios that required communication choices in context [10,11,24]. The third was deliberate practice. Residents were given repeated opportunities to perform, receive focused

feedback, and revise their approach [10,11,15]. The fourth was perspective-taking. Role rotation among anesthesiologist, patient or family member, and observer roles was intended to help residents appreciate how wording, pacing, and affect are experienced by others.

Taken together, these design principles suggest a plausible mechanism of action. AIDET may help residents organize communication under stress; simulation creates authentic pressure and emotional salience; role rotation broadens understanding of the interpersonal encounter; and debriefing supports reflection and behavioral adjustment. In this sense, the curriculum is best understood as a bundled simulation strategy rather than as a simple AIDET teaching session.

Curriculum structure and implementation

The curriculum was implemented for third-year anesthesiology residents at Sun Yat-sen Cancer Center. It was delivered over five sessions totaling 270 minutes. The opening 45-minute session introduced the AIDET framework and demonstrated how its elements could be adapted for perioperative communication. Four simulation scenarios then occupied 180 minutes in total. The program ended with a 45-minute debriefing and summary session.

We selected four communication challenges that were judged to be educationally important, emotionally demanding, and sufficiently recurrent to justify focused rehearsal: preoperative assessment and anesthesia option discussion; informed consent for high-risk surgery with surrogate decision-making; disclosure after unanticipated difficult airway management; and postoperative complication discussion. Each scenario was accompanied by structured role scripts, including clinical information, emotional state, likely concerns, and behavioral cues. Standardized patients were trained jointly by anesthesiology faculty, communication specialists, and simulation educators before the sessions. Training addressed case facts, expected emotional responses, role consistency, and feedback boundaries.

Each scenario used the same broad sequence. Residents received a short orientation to the scenario goals, the simulation environment, and their assigned roles; reviewed a short case brief; conducted the encounter; observed peers in parallel; and then participated in facilitated debriefing. Debriefing focused on how the communication structure was used, where the resident recognized or missed emotional cues, how information was sequenced, and how trust was maintained or undermined during the interaction. This repetitive structure made the curriculum practical to deliver and easy for faculty to learn.

Table 1. Four anesthesiology-specific simulation scenarios adapted with the AIDET framework for SST-AIDET training

Scenario	Clinical Context	AIDET Adaptation Focus
Scenario 1	Preoperative assessment and anesthesia options discussion	Rapid Acknowledge/Introduce; efficient Duration setting; structured Explanation of anesthesia risks/benefits
Scenario 2	Informed consent for high-risk surgery (elderly, ASA III-IV)	Managing patient/family anxiety; clear Explanation of anesthetic risks; anticipatory guidance
Scenario 3	Disclosure of unanticipated difficult airway management	Delivering unexpected bad news; maintaining trust; transparent Explanation; emotional support
Scenario 4	Postoperative complication discussion (e.g., awareness, dental injury, nerve injury)	Apologetic Acknowledge; detailed Explanation of events; empathetic Duration for recovery; Thank with follow-up commitment

Note. ASA = American Society of Anesthesiologists physical status classification.

How the local evaluation was conducted

The local evaluation was a single-center, nonrandomized, historical-control educational evaluation conducted in the anesthesiology residency program at Sun Yat-sen Cancer Center, China. We report it as an observational evaluation rather than as a controlled trial because allocation was determined by training cohort. The reporting was checked against the STROBE statement and simulation-based research reporting extensions, while retaining the practice-oriented format of an Advancing Simulation Practice article [25,26].

Eligible participants were third-year anesthesiology residents undertaking residency training during the study period. Residents with prior formal training in structured AIDET-based communication were excluded. The standard-teaching comparison group comprised residents from the 2021 cohort, who completed standard communication training in January-February 2024 and underwent OSCE assessment in June 2024. The intervention group comprised residents from the 2022 cohort, who completed the AIDET-informed simulation curriculum in January-February 2025 and underwent OSCE assessment in June 2025. Each group included 30 residents. Written informed consent was obtained from all participants, and the study was approved by the institutional review board.

The comparator was the existing communication teaching format, which used lectures, case discussion, and clinical demonstration. It provided conceptual exposure and instructor modeling but did not include a structured AIDET scaffold, standardized-patient simulation, role rotation, structured observation, or facilitated debriefing. The intervention exposure was the 270-minute curriculum described above.

Assessment was conducted through an objective structured clinical examination using perioperative communication scenarios relevant to anesthesiology practice. The primary outcome was total score on the SEGUE Framework, which assesses communication behaviors across five domains: set the stage, elicit information, give information, understand the patient's perspective, and end the encounter [27]. Secondary outcomes were total score on a modified Chinese Physician-Patient Communication

Assessment Scale (CPPC-AS) and total score on the Consultation and Relational Empathy (CARE) measure, which was completed by simulated patients to capture perceived empathy and relational communication [28]. Exploratory outcomes included self-reported stress when handling difficult communication scenarios, confidence in specific perioperative conversations, and overall training satisfaction.

Two independent supervising experts with more than 10 years of anesthesiology teaching experience and no involvement in course delivery assessed resident performance on site. The final assessor-rated score was calculated by averaging the two expert ratings. Simulated patient ratings were collected separately using the CARE measure. Categorical variables are presented as counts and percentages. Continuous variables are summarized using medians and interquartile ranges. Normality was assessed using the Shapiro-Wilk test. For non-normally distributed continuous variables, between-group comparisons were conducted using the Mann-Whitney U test. Categorical variables were compared using the chi-square test or Fisher's exact test, as appropriate. A two-sided $P < 0.05$ was considered statistically significant. Analyses were performed using IBM SPSS Statistics version 26.0.

Preliminary local evaluation

Sixty residents were included in the evaluation, with 30 residents in each cohort. Baseline demographic characteristics were broadly similar between groups, with no statistically significant differences in gender, age category, or prior communication training (Additional file 1).

In simulated OSCE assessment, scores were higher in the AIDET-informed simulation cohort than in the standard-teaching cohort. SEGUE total score was 22 (IQR 20-24) versus 17 (IQR 15-19), respectively ($P < 0.001$). Modified CPPC-AS total score was 91 (IQR 88-94) versus 80 (IQR 77-84), respectively ($P < 0.001$). CARE total score from simulated patients was 47 (IQR 44-49) versus 43 (IQR 38-46), respectively ($P < 0.001$). Exploratory findings also suggested lower post-training stress and higher confidence in managing preoperative anxiety, delivering bad news, and conducting family conferences. Headline findings are summarized in Table 2, and detailed baseline characteristics, domain-level score breakdowns, and exploratory outcomes are provided in Additional file 1.

For the purposes of Advancing Simulation Practice, the key interpretation is not that these data prove effectiveness, but that they provide early local support for the feasibility and educational promise of the curriculum. The pattern is consistent with the underlying design logic: a structured scaffold embedded in realistic simulation was associated with better learner performance in simulated communication encounters. At the same time, the data remain limited to a single institution and to outcomes that sit primarily at the level of learner performance in simulation.

Table 2. Headline findings from the preliminary local evaluation of the AIDET-informed simulation curriculum (n = 60)

Outcome domain	Measure	Standard teaching cohort (2021 cohort; n = 30)	AIDET-informed simulation cohort (2022 cohort; n = 30)	Cautious interpretation
Observed communication performance	SEGUE total score, median (IQR); P < 0.001	17 (15-19)	22 (20-24)	Higher simulated communication performance after curriculum implementation
Observed communication performance	Modified CPPC-AS total score, median (IQR); P < 0.001	80 (77-84)	91 (88-94)	Higher assessor-rated simulated communication performance
Simulated patient perspective	CARE total score, median (IQR); P < 0.001	43 (38-46)	47 (44-49)	More favorable simulated patient ratings in OSCE encounters
Learner experience	Post-training stress, VAS 0-100, median (IQR); P < 0.001	68 (60-75)	45 (38-52)	Lower self-reported stress in difficult simulated conversations
Learner experience	Confidence managing preoperative anxiety, 5-point Likert, median (IQR); P < 0.001	3 (2-3)	4 (4-5)	Greater confidence in one representative difficult conversation; other confidence outcomes are in Additional file 1

Abbreviations: CARE, Consultation and Relational Empathy; CPPC-AS, Chinese Physician-Patient Communication Assessment Scale; IQR, interquartile range; OSCE, objective structured clinical examination; SEGUE, set the stage- elicit information-give information-understand the patient's perspective-end the encounter; VAS, visual analogue scale.

Note. This table presents headline local evaluation signals only. Full baseline characteristics, domain-level score breakdowns, detailed CARE item-level findings, and exploratory self-reported outcomes are provided in Additional file 1. These findings derive from a single-center historical-control comparison and should be interpreted as preliminary local evidence rather than definitive effectiveness evidence.

What makes this useful for simulation professionals

The most transferable contribution of this work lies in its implementation logic rather than in any single score. The curriculum may be helpful for simulation professionals in other settings because it is relatively lightweight, can be delivered using existing simulation infrastructure, and does not depend on specialty-specific technology beyond scenario design. The essential ingredients are a small number of

high-yield scenarios, well-trained simulated participants, a communication scaffold, structured observation, and debriefing that explicitly links performance to the intended communication principles.

This approach may also be adaptable beyond anesthesiology. Other specialties face similarly brief, high-risk, and emotionally loaded conversations, including emergency medicine, critical care, obstetrics, oncology, perioperative nursing, and procedural specialties [7,13,18,24]. Educators in those settings could retain the core structure while changing the scenarios, behavioral anchors, and debriefing prompts to suit local needs.

Practical lessons for implementation elsewhere

Several implementation lessons emerged from our local experience. First, the communication scaffold should be introduced as a flexible support rather than a rigid script. Residents responded better when AIDET was framed as a way to organize communication under pressure than when it was treated as a checklist to be recited. Second, simulation scenarios benefited from emotional specificity. Encounters became much more educational when simulated patients were trained not only in factual history, but also in anxiety, anger, confusion, or mistrust. Third, observer roles should be structured. When observers were given explicit behaviors to watch for, the quality of peer feedback improved substantially. Fourth, debriefing time should be protected. Much of the educational value appeared to lie in discussing why a communication choice helped or harmed the interaction, not merely in identifying whether a checklist item was completed.

Programs with limited faculty time may simplify the curriculum. Rather than implementing four scenarios at once, centers could begin with one or two recurrent high-impact conversations, use shorter briefing materials, and rely on a smaller set of observable communication markers. What should be preserved is the relationship among scaffold, rehearsal, perspective-taking, and debriefing. That relationship appears more important than any one scenario.

Limitations and boundary conditions

The local evidence underpinning this practice report has important limitations. First, the evaluation used a historical-control design, so cohort effects, secular changes, and unmeasured differences in clinical exposure cannot be excluded. Second, allocation was not randomized and the sample was modest, with 30 residents per group. Third, the curriculum was bundled, meaning the relative contribution of AIDET, scenario design, role rotation, standardized-patient enactment, peer observation, and debriefing cannot be disentangled. Fourth, the modified CPPC-AS involved local adaptation with anesthesia-specific behavioral anchors and requires stronger validity evidence beyond the present context.

The outcome level also constrains interpretation. The OSCE measured performance in simulated perioperative encounters rather than routine workplace behavior. Simulated patient ratings should not be interpreted as real patient experience or satisfaction. Although assessment occurred several months after training, the study did not test longer-term retention, transfer to clinical practice, or patient-level

outcomes. Finally, all work was conducted in one cancer-center residency program, which may limit transferability to other specialties, institutions, countries, and simulation-resource environments.

These limitations define the proper claim for this article. We are not arguing that the curriculum has been definitively proven effective, nor that it should replace more rigorous research. Rather, we argue that it represents a theoretically grounded, practically feasible, and preliminarily supported simulation strategy that others may wish to adapt, test, and refine. Future work could examine durability of learning, transfer to workplace behavior, multicenter implementation, and the relative value of individual curriculum components.

Conclusions

An AIDET-informed simulation curriculum may offer simulation educators a practical way to strengthen perioperative communication training in anesthesiology and related specialties. In our local setting, the curriculum was feasible to deliver within existing infrastructure and was associated with encouraging preliminary evaluation findings from simulated assessment. Its potential value appears to lie not in AIDET alone, but in the combination of communication scaffolding, emotionally credible scenarios, perspective-taking, structured observation, and debriefing. For the field of simulation, the main message is that communication in high-pressure specialties can be taught more deliberately and more visibly, while still remaining adaptable to local needs and future empirical refinement.

Abbreviations

AIDET, acknowledge-introduce-duration-explanation-thank

CARE, Consultation and Relational Empathy

CPPC-AS, Chinese Physician-Patient Communication Assessment Scale

ICC, intraclass correlation coefficient

IQR, interquartile range

OSCE, objective structured clinical examination

SEGUE, set the stage-elicite information-give information-understand the patient's perspective-end the encounter

SPSS, Statistical Package for the Social Sciences

STROBE, Strengthening the Reporting of Observational Studies in Epidemiology

Declarations

Ethics approval and consent to participate

This study was approved by the independent research ethics committee of Sun Yat-sen University Cancer Center (B2024-752-MS01). Written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Availability of data and materials

All data generated or analysed during this study are included in this published article and its additional supporting file. Additional de-identified data are available from the corresponding authors on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

NG, JG, and YL conceived and designed the curriculum report. NG, WX, and WH developed the simulation scenarios, trained the standardized patients, and delivered the curriculum. JG and WH collected and managed the local evaluation data. JG and WX performed the statistical analyses used in the preliminary evaluation. NG and JG drafted the manuscript. ZZ and YL critically revised the manuscript and supervised the project. All authors read and approved the final manuscript.

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References

1. Tobin SA, Watters DA. Communication: an enabling competency. *ANZ J Surg*. 2020;90:364–9.
2. Stern DT, Wojtczak A, Schwarz MR. The assessment of global minimum essential requirements in medical education. *Med Teach*. 2003;25:589–95.

3. Stewart MA. Effective physician-patient communication and health outcomes: a review. *CMAJ*. 1995;152:1423–33.
4. De Jong A, Penne C, Kapandji N, et al. Determinants of information provided by anaesthesiologists to relatives of patients during surgical procedures. *BJA Open*. 2023;7:100205.
5. Kindler CH, Harms C, Amsler F, Ihde-Scholl T, Scheidegger D. The visual analog scale allows effective measurement of preoperative anxiety and detection of patients' anesthetic concerns. *Anesth Analg*. 2000;90:706–12.
6. Lee A, Chui PT, Gin T. Educating patients about anesthesia: a systematic review of randomized controlled trials of media-based interventions. *Anesth Analg*. 2003;96:1424–31.
7. Schenker Y, Crowley-Matoka M, Dohan D, Tiver GA, Arnold RM, White DB. I don't want to be the one saying 'we should just let him die': intrapersonal tensions experienced by surrogate decision makers in the ICU. *J Gen Intern Med*. 2012;27:1657–65.
8. Levinson W, Pizzo PA. Patient-physician communication: it's about time. *JAMA*. 2011;305:1802–3.
9. Wijesundera DN. Preoperative consultations by anesthesiologists. *Curr Opin Anaesthesiol*. 2011;24:326–30.
10. Issenberg SB, McGaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. *Med Teach*. 2005;27:10–28.
11. Motola I, Devine LA, Chung HS, Sullivan JE, Issenberg SB. Simulation in healthcare education: a best evidence practical guide. *AMEE guide 82 Med Teach*. 2013;35:e1511–30.
12. Schröder T, von Heymann CH, Ortwein H, Rau J, Wernecke KD, Spies C. [Simulation-based anaesthesia crisis resource management training. Results of a survey on learning success]. *Anaesthesist*. 2009;58:992–1004.
13. Rosen MA, Hunt EA, Pronovost PJ, Federowicz MA, Weaver SJ. In situ simulation in continuing education for the health care professions: a systematic review. *J Contin Educ Health Prof*. 2012;32:243–54.
14. Cooper JB, Taqueti VR. A brief history of the development of mannequin simulators for clinical education and training. *Postgrad Med J*. 2008;84:563–70.
15. Berkhof M, van Rijssen HJ, Schellart AJM, Anema JR, van der Beek AJ. Effective training strategies for teaching communication skills to physicians: an overview of systematic reviews. *Patient Educ Couns*. 2011;84:152–62.
16. Scott J. Utilizing AIDET and other tools to increase patient satisfaction scores. *Radiol Manage*. 2012;34:29–33. 34 – 5.
17. Yang H, Luo W, Du X, Guan Y, Peng W. The implementation and effect evaluation of AIDET standard communication health education mode under the king theory of goal attainment: a randomized control study. *Med (Baltim)*. 2023;102:e36083.

18. Liang Y, Liu ZW, Qiu HB, et al. Effect of situational simulation teaching combined with the AIDET framework on communication skills training for oncology residents. *Support Care Cancer*. 2025;33:505.
19. Madayag RA, Esteron JV, Lozano DAA, Bautista EC, Fernandez ZS, Ramirez DQ. Nursing students' lived experiences with using AIDET in patient communication: a qualitative study in the Philippines. *Belitung Nurs J*. 2024;10:294–303.
20. Li L, Li Y, Yin T, Chen J, Shi F. A cohort study of the effects of integrated medical and nursing rounds combined with AIDET communication mode on recovery and quality of life in patients undergoing percutaneous coronary intervention. *Comput Math Methods Med*. 2022;2022:9489203.
21. Ruiz-Moral R, Monge Martin D, Garcia De Leonardo C, Denizon S, Cerro Perez A, Caballero Martínez F. Medical students' attitudes towards communication skills training: a longitudinal study with one cohort. *GMS J Med Educ*. 2021;38:Doc107.
22. Givron H, Desseilles M. Longitudinal study: impact of communication skills training and a traineeship on medical students' attitudes toward communication skills. *Patient Educ Couns*. 2021;104:785–91.
23. Artino AR Jr. Academic self-efficacy: from educational theory to instructional practice. *Perspect Med Educ*. 2012;1:76–85.
24. Bearman M, Greenhill J, Nestel D. The power of simulation: a large-scale narrative analysis of learners' experiences. *Med Educ*. 2019;53:369–79.
25. Cheng A, Kessler D, Mackinnon R, et al. Reporting guidelines for health care simulation research: extensions to the CONSORT and STROBE statements. *Adv Simul (Lond)*. 2016;1:25.
26. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Lancet*. 2007;370:1453–7.
27. Makoul G. The SEGUE framework for teaching and assessing communication skills. *Patient Educ Couns*. 2001;45:23–34.
28. Mercer SW, Maxwell M, Heaney D, Watt GC. The consultation and relational empathy (CARE) measure: development and preliminary validation and reliability of an empathy-based consultation process measure. *Fam Pract*. 2004;21:699–705.

Figures

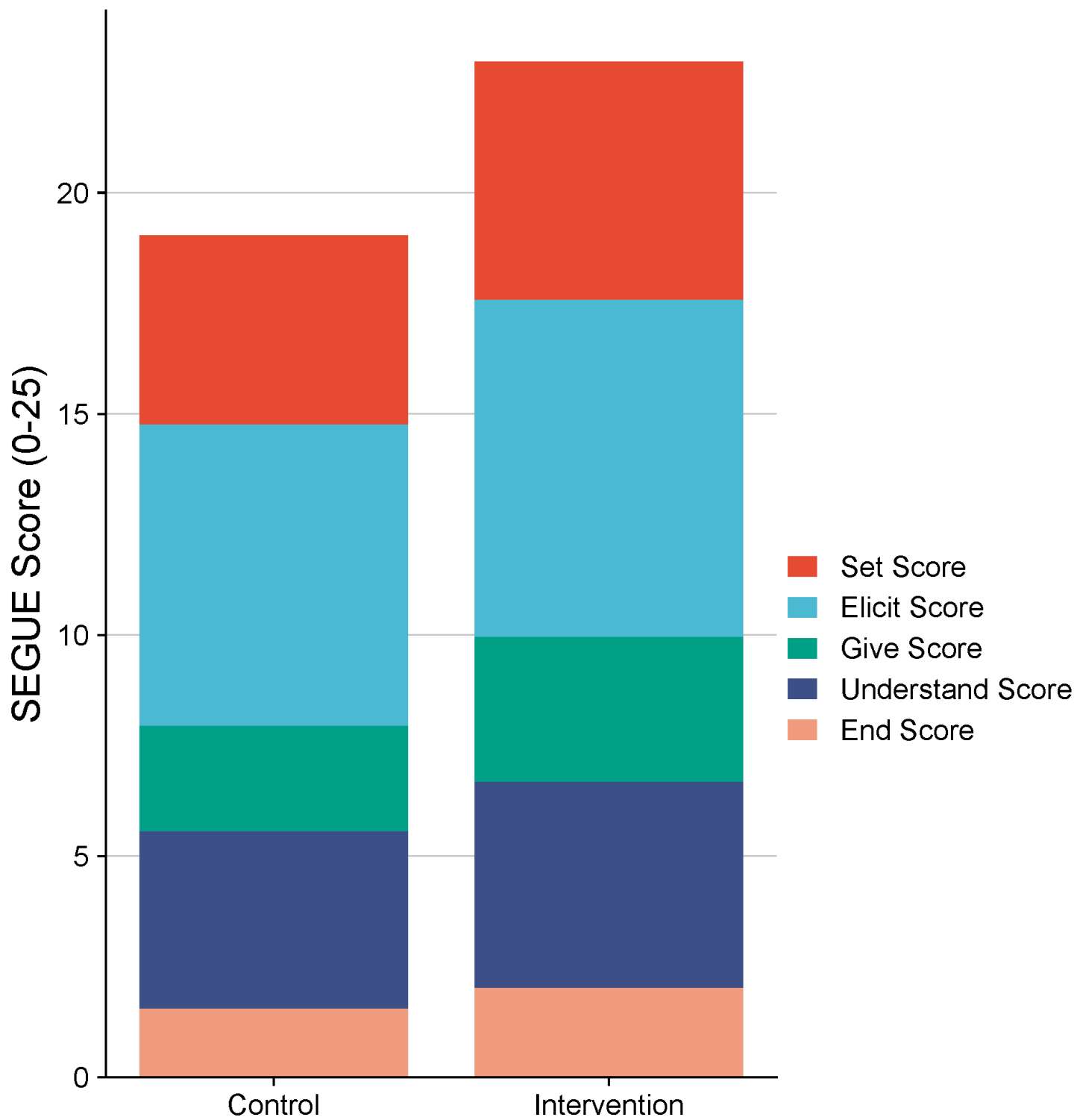


Figure 1

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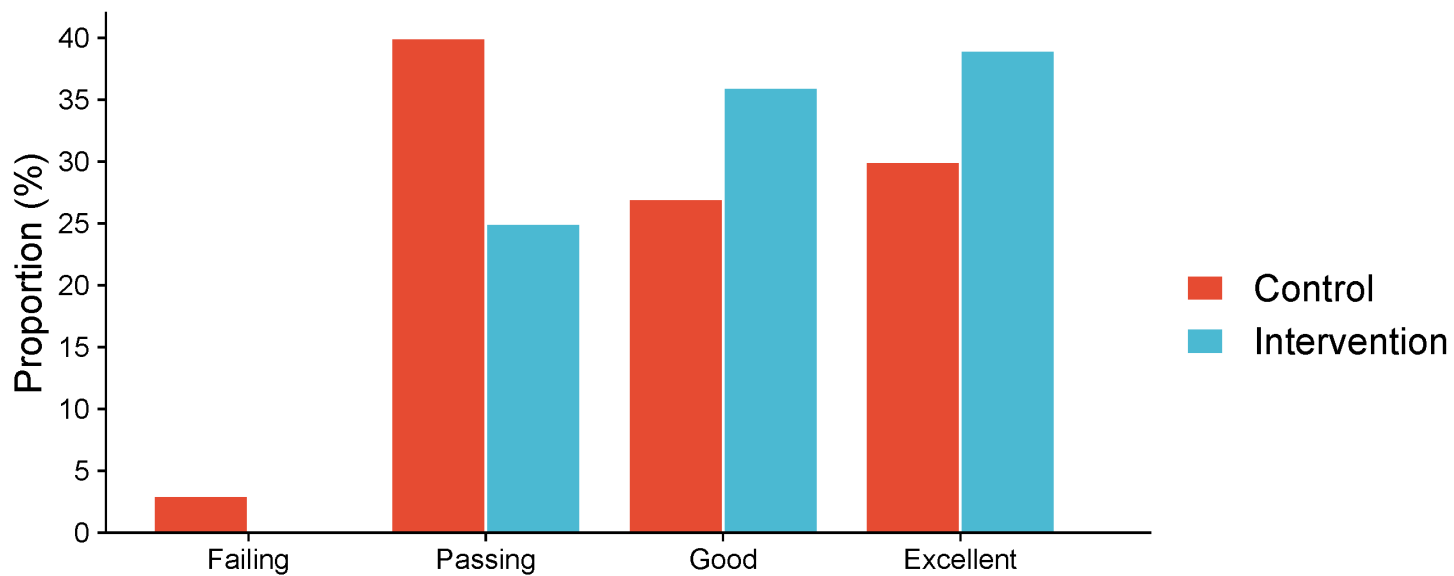


Figure 2

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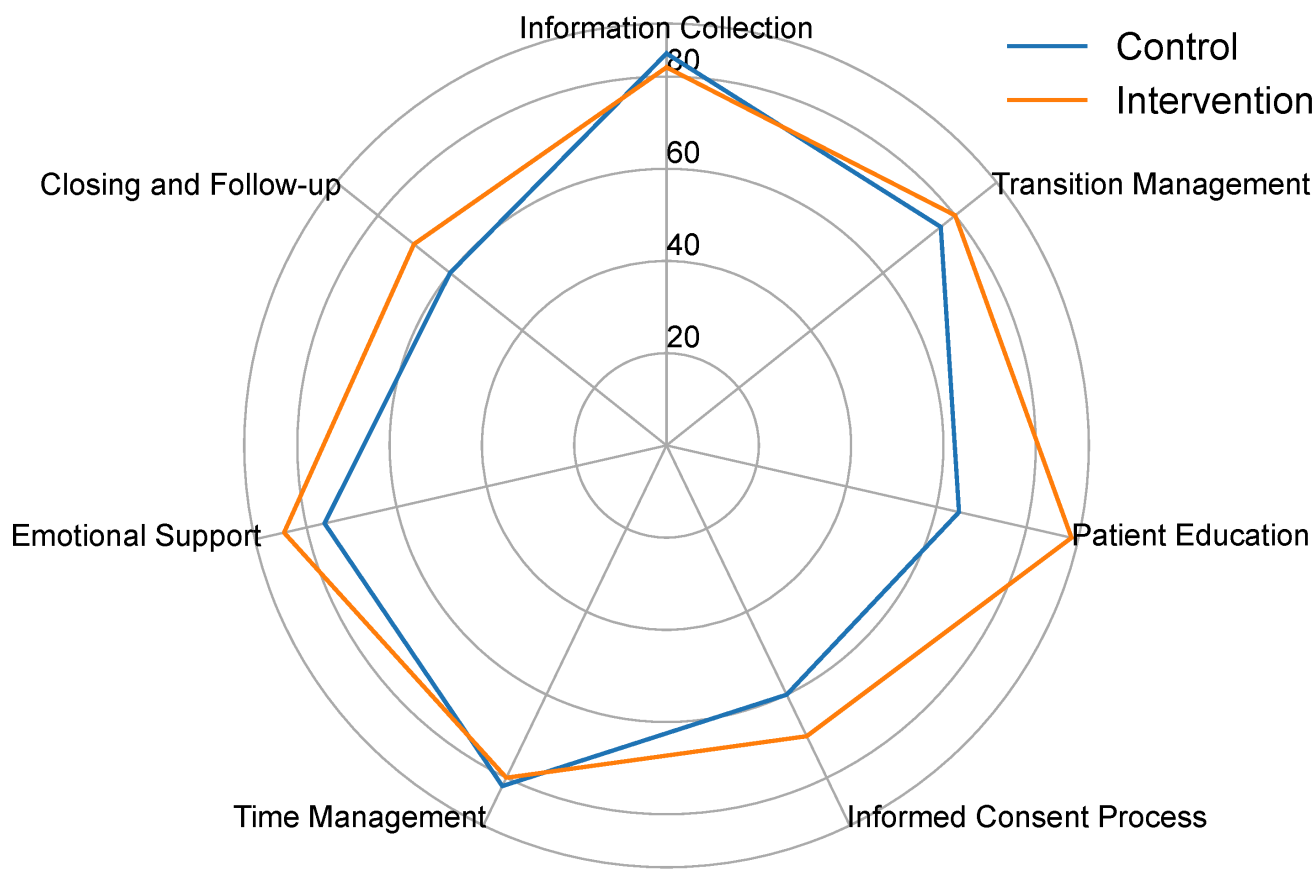


Figure 3

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Group  Control  Intervention

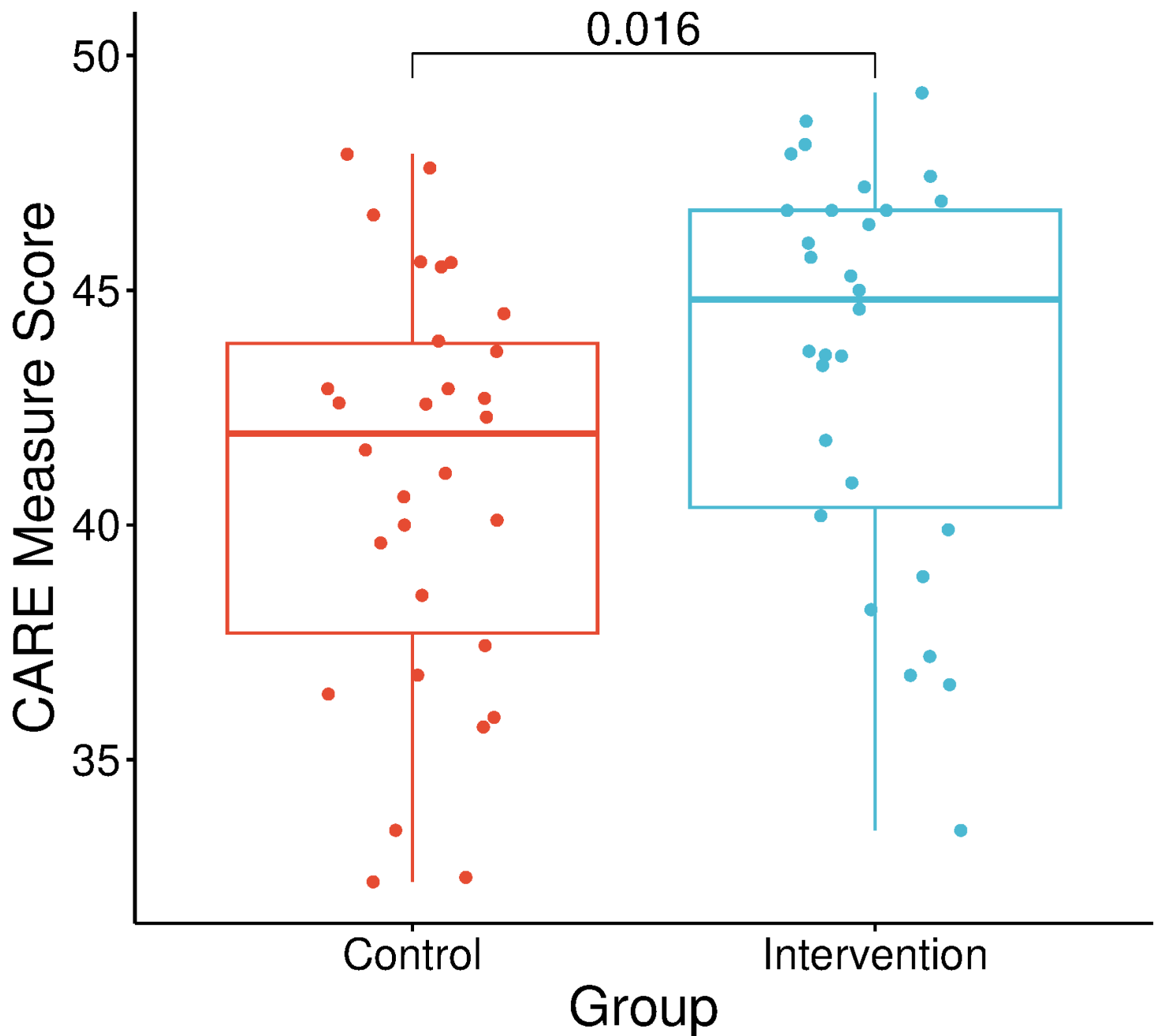


Figure 4

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