

Physician and administrator experience of preparing to implement Ontario's intensive care unit Triage Emergency Standard of Care during the COVID-19 pandemic: a qualitative study

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Abstract

Background: As the COVID-19 pandemic created a surge in demand for critical care resources, the province of Ontario, Canada, released the Adult Critical Care Clinical Emergency Standard of Care for Major Surge (Emergency Standard of Care [ESoC]), a triage framework to guide the allocation of critical care resources in the expectation that intensive care units would be overwhelmed. Our aim was to understand physicians' and administrators' experiences and perceptions of planning to implement the ESoC, and to identify ways to improve critical care triage processes for future pandemics.

Methods: We conducted semistructured qualitative interviews with critical care, emergency and internal medicine physicians, and hospital administrators from various Ontario health regions who were involved in their hospital's or region's ESoC implementation planning. Interviews were conducted virtually between April and October 2021. We analyzed the data using thematic analysis.

Results: We conducted interviews with 11 physicians and 10 hospital administrators representing 9 health regions. We identified 4 themes regarding participants' preparation to implement the ESoC: infrastructure to enable effective triage implementation; social, medical and political supports to enable effective triage implementation; moral dimensions of triage implementation; and communication of triage results. Participants outlined administrative and implementation-related improvements that could be provided at the provincial level, such as billing codes for ESoC. They also suggested improving ethical supports for the usability and quality of the ESoC (e.g., designating an ethicist in each region), and ways to improve the efficiency and usability of the tools for assessing short-term mortality risk (e.g., create information technology solutions such as a dashboard).

Interpretation: The implementation of a jurisdiction-level triage framework poses moral challenges for a health care system, but it also requires dedicated infrastructure, as well as institutional supports. Lessons learned from Ontario's process to prepare for ESoC implementation, as well as participants' suggestions, can be used for planning for current and future pandemics.

Published intensive care unit (ICU) triage protocols were generally designed for sudden mass casualty events. However, practical considerations for triage due to infectious illnesses are different,¹ as hospitals have time to prepare for triage, with modelling providing advance notice.² The COVID-19 pandemic produced a worldwide demand for critical care,³ with triage frameworks developed to guide critical care resources rationing.^{4,5} In March 2020, the province of Ontario, Canada, developed a triage framework, the Adult Critical Care Clinical Emergency Standard of Care for Major Surge,⁶ forming the basis of an Emergency Standard of Care (ESoC) to be applied if critical care triage was initiated. The ESoC was intended to balance ethical principles (e.g., utility, fairness) to save the most lives. It defines 3 hospital-wide levels of triage, depending on the degree of surge in demand, and also incorporates a clinical judgment of short-term mortality

risk (STMR) to determine which patients would be prioritized to receive critical care resources.⁶ Although the ESoC includes criteria and principles, it does not include a detailed ground-level implementation plan; the development of such a plan is

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up to health regions and institutions within Ontario based on local resources and considerations. More information on the ESoC can be found in the work by Downar and colleagues.⁶ To date, this ESoC has not been implemented.

Previous studies examining physicians' perspectives regarding the use and structure of triage protocols showed that physicians differed in their attitudes toward the directive nature of the protocols,⁷ with some feeling that the protocols would conflict with their decision-making autonomy.⁸ However, implementing an ESoC involves considerable preparation. Little is known about the barriers that leaders of health care systems would face preparing for implementation.

In May 2021, at the peak of wave 3 of the COVID-19 pandemic, the number of patients requiring a mechanical ventilator in Ontario ICUs reached 180% of the pre-pandemic average.⁹ Accordingly, the province instructed physician leaders and hospital administrators to prepare for the implementation of the ESoC. In this study, we sought to understand physicians' and hospital administrators' experiences and perspectives of planning for implementing the ESoC, and to identify ways to improve critical care triage processes for future pandemics.

Methods

Setting and design

Ontario is Canada's most populous province, with 15 million people.¹⁰ The coordination of health care services within the province is regional; Ontario was previously organized into 14 distinct Local Health Integration Networks (LHINs), but these were being consolidated into 5 "zones" when the COVID-19 pandemic began.

In this qualitative study, we conducted interviews with physicians and hospital administrators involved in ESoC implementation planning at the hospital or regional level in Ontario. The research team consisted of a clinician (J.D.), a bioethicist (A.F.), a qualitative researcher (S.R.I.), a research coordinator (B.A.H.) and a research volunteer (A.D.). Our underlying epistemologic assumptions were informed by post-positivism, which combines positivism and interpretivism. Postpositivism focuses on the experiences of the majority and asserts that there is no universal truth and that multidimensional evidence can be inferred by perceived data (e.g., data obtained in interviews).¹¹

Participants

We started with purposive recruitment by seeking out the participation of senior staff at the highest levels of involvement in their hospital's or region's ESoC implementation planning. The incident commander of the Ontario Critical Care COVID Command Centre sent recruitment emails to eligible potential participants across Ontario. Owing to low response rates, we introduced snowball sampling, allowing current study participants to discuss the study with their colleagues. We asked our potential participants to self-identify as eligible based on their interpretation of their involvement in ESoC implementation planning.

Data collection

Three authors (A.F., J.D. and S.R.I.) collaborated to create the first iteration of the semistructured interview guides (Appendix 1, available at www.cmajopen.ca/content/11/5/E838/suppl/DC1). Pilot interviews were conducted with A.F. (representing hospital administrators) and J.D. (representing physicians), who were involved in regional and local ESoC implementation planning.

The development of the interview guides was iterative. The content, format and ordering of the guiding questions were modified after each pilot interview and after the first 5 interviews. Guiding questions were similar for physicians and hospital administrators; some questions addressed potentially different roles and perspectives. The interview guides included a question asking participants how they thought the ESoC could be improved. Additional details regarding recruitment, data collection, and study confirmability, credibility and transferability are presented in Appendix 2 (available at www.cmajopen.ca/content/11/5/E838/suppl/DC1).

Interviews were conducted by B.A.H. and S.R.I. via Zoom. The interviewer obtained verbal consent and administered a demographics survey, based on a survey developed at Sinai Health, Toronto, Canada. Response categories were adapted to the needs of the current study (Appendix 1). Interviews were audio-recorded and transcribed.

Recruitment and interviews took place from April to October 2021.

Data analysis

We synthesized participants' suggestions as to how the ESoC could be improved with the ones that came up naturally during the interviews. We analyzed transcripts using a coding reliability approach to thematic analysis.^{12,13} First, researchers engaged in close readings of transcripts to thoroughly understand the data set. Second, we arranged preliminary codes into a coding frame. The codebook evolved as further interviews were transcribed. Once no new codes were developed based on the transcripts, we determined that thematic saturation had been reached.¹⁴ We inserted the finalized codebook into qualitative analysis software (MAXQDA, VERBI Software), along with the interview transcripts. The reliability and accuracy of thematic coding were established through consensus coding by S.R.I., B.A.H. and A.D.; S.R.I. trained B.A.H. and A.D. on how to effectively code and ensure consistency across coders. All 3 coded the same 8 randomly chosen transcripts. Then, the 3 coded versions of each transcript were merged into 1 working document per transcript in MAXQDA. The 3 coders then consensus coded each transcript together, discussing their coding rationale and adjusted the coding frame to resolve conflicts. The remaining transcripts were then double-coded by B.A.H. and A.D., who ensured agreement between coders through discussion and comparison. We then reviewed the coded segments and explored preliminary patterns, after which we fleshed out core themes that we developed from the data. We then refined, defined and named our themes, and identified illustrative quotations.

We analyzed the results from physicians and hospital administrators separately for intergroup variability and found no differences.

Two of the authors, A.F. and J.D., were interviewed as study participants; the interviewers had a prior professional relationship with these 2 participants. To mitigate bias, A.F. and J.D. did not interview participants, or review or code any transcripts.

Ethics approval

Approval was granted by the Bruyère (no. M16-21-011) and the Ottawa Health Science Network (no. 20210231-01H) research ethics boards.

Results

Eleven critical care, emergency and internal medicine physicians and 10 hospital administrators representing 9 of the 14 LHINs in Ontario participated (Table 1); all had the highest levels of involvement in ESoC implementation planning at their hospitals or regions, from either a clinical or an administrative standpoint. Participant demographic characteristics are presented in Table 1. The average interview length was 48 (range 27–75) minutes.

We incorporated the data generated from the 2 pilot interviews into the study data, as they were rich with insight.

Themes

We identified 4 major themes relating to participants' perspectives and experiences with preparing to implement the ESoC: infrastructure to enable effective triage implementation; social, medical and political supports for effective triage implementation; moral dimensions of triage implementation; and communication of triage results. Themes/subthemes and supporting quotations are presented in Table 2.

Infrastructure to enable effective triage implementation

Participants discussed how infrastructure (e.g., human resources) can enable effective triage implementation. The most challenging aspects of implementing the ESoC were perceived to be the logistic and administrative processes, including managing documents, creating personnel schedules and after-hours processes, necessary to triage patients. One region appointed a project manager to address these challenges.

For many participants, information technology (IT) processes (including using secure messaging apps and integrating the STMR tools into electronic health records) were essential in reducing administrative barriers. Several participants noted that provincially created IT solutions would prevent duplication of efforts across regions. A frequently discussed IT concept was the “real-time bed map,” a means of identifying the availability of local ICU beds.

Hospitals and regions were at varying stages of readiness to implement the ESoC. Participants discussed developing local ESoC policies, resources for goals-of-care discussions for physicians and early IT department engagement. Participants had concerns regarding the feasibility of implementing the

Table 1: Participants' demographic characteristics

Characteristic	No. (%) of participants*	
	Hospital administrators n = 10	Physicians n = 11
Age, mean ± SD (range), yr	48 ± 8.9 (34–60)	47 ± 8.3 (36–61)
Female sex	8 (80)	2 (18)
First language		
English	10 (100)	9 (82)
Other	0 (0)	2 (18)
Racial or ethnic group		
White European	9 (90)	10 (91)
Other	1 (10)	1 (9)
Religious or spiritual affiliation		
Christianity/Roman Catholic	3 (30)	0 (0)
No religious/spiritual affiliation/atheism	4 (40)	7 (64)
Other	3 (30)	3 (27)
Prefer not to answer	0 (0)	1 (9)
Importance of faith/religion/spirituality in everyday life,* mean score ± SD	3.1 ± 1.4	0.6 ± 1.0
Years in current role, mean ± SD (range)	6.5 ± 5.6 (1–20)	11.2 ± 8.0 (3–26)
Years in profession, † mean ± SD (range)	12.1 ± 4.9 (6–20)	18.4 ± 9.8 (4–35)
% of job devoted to clinical duties, mean ± SD (range)	9.0 ± 10.4 (0–30)	69.1 ± 18.3 (50–100)
Type of physician		
Critical care	–	7 (64)
Internal medicine	–	2 (18)
Emergency medicine	–	1 (9)
Palliative care medicine	–	1 (9)
Local Health Integration Network		
Erie St. Clair	0 (0)	1 (9)
South West	0 (0)	1 (9)
Hamilton Niagara Haldimand Brant	4 (40)	1 (9)
Mississauga Halton	1 (10)	1 (9)
Toronto Central	1 (10)	3 (27)
Central	2 (20)	1 (9)
Central East	0 (0)	1 (9)
Champlain	1 (10)	2 (18)
North East	1 (10)	0 (0)

Note: SD = standard deviation.
 *Except where noted otherwise.
 †Rated from 1 (very unimportant) to 5 (very important).
 ‡For hospital administrators, number of years working as a hospital administrator; for physicians, number of years working in health care.

Table 2 (part 1 of 2): Themes, subthemes and illustrative quotations identified through qualitative analysis

Theme; subtheme	Illustrative quotation
Theme 1: Infrastructure to enable effective triage implementation	
Administrative logistics of implementation	
Processes	Who's our administrator on call? How does this interact with our electronic medical record? Who's on our [triage] committee? How often does it meet? Who's chairing it? ... It's all of those kinds of things that I think would be challenging. (HA-7)
Human resources	I think the plans required pretty extensive resources to be able to implement, particularly in terms of [human resources] and also administrative support. ... And so, I think there was a lot of need to depend on a very small number of people who are already likely going to be overtaxed with clinical responsibilities. (P-10)
Project manager	All those logistic things have actually been handled by a project manager at the regional level. I have a ton of respect for that person and faith that we would figure it out because we have that knowledge translation skill set available to us. (HA-1)
Information technology processes	Our electronic medical record team was very impressive because they, in a week, got things organized, got our STMR all put into a document online, had an order put in so that [it was] similar to our advanced directives category status, you could just put STMR level I, II, III, colour code it, bring the reports over. (P-2)
Real-time bed map	My concern was always that if we have 1 bed and 2 patients [whose condition is deteriorating], how do we communicate as an organization that we only have 1 bed? Because I've got 3 different intensive care units plus 3 to 4 different spaces for critical care. So, how do we ... communicate if there is a bed, yes or no? How do we then communicate to all of the various stakeholders involved? (HA-3)
Readiness to implement ESoC	
Ready	We would be very well prepared to enact [the ESoC] in [health region] and the hospitals that are affiliated with that. I mean, we put so much work and time into understanding the tool, doing various case scenarios, role plays, problem solving, troubleshooting, information packages are out, resources about goals of care, advanced care planning. I think we would do very well. (P-1)
Not ready	I think there was a little bit of variability between the hospitals within the subregion [in] their levels of preparedness. ... I'd estimate it varied between 60% ready versus 90% ready. The smaller hospitals with the level 2 critical care unit or hospitals without critical care units at all with ... [fewer] resources ... they weren't quite as ready and probably needed some more time and support. But the larger hospitals ... were around that sort of 90% threshold, that with a little bit of notice ... they would've been able to ... be ready for ESoC [implementation]. (P-10)
Applicability of ESoC to smaller institutions	There [are] other hospitals where the physician is not even in-house. So, how would something like [ESoC implementation] look in communities that don't have a tertiary care structure, and how would those inequities across the different health care settings be addressed, both for supporting the health care providers but also ensuring that patients in those settings were not disadvantaged or vice versa? (P-3)
Simulations	I think we need to do a better job of educating and simulating and having people truly prepared. And I think you can only do that through the simulation. (P-10)
Provincial leadership	We weren't clear on what was coming out from ... the province, what could be shared, what was not being shared. So, even when we were included, it was late in the day or not in the right way. And we certainly weren't able to have safe conversations with a reasonable size of people about [ethical] questions. And that all would've been easier if the document had been released publicly. (HA-10)
Theme 2: Social, medical and political supports for effective triage implementation	
Leadership	What helped us was getting a triage physician leader ... who was trustworthy and trusted, less hierarchical, and allowed opportunities in our simulations for expression of uncertainty or a very inclusive conversation about how to resolve uncertainty. (HA-10)
Education on ESoC	Given the uncertainty of whether or not [the ESoC protocol] would be enacted, [we assumed] giving [staff] the information ... would immediately likely cause them to have that moral distress. We chose not to fully educate people on it. (HA-4)
Interregional collaboration	It was nice to be able to have material that other [regions] had already tried. Because there's so much potential duplication of effort, and, in a moment like this, that's going to be really problematic. (P-9)
Intraregional collaboration	I think I would hate to be a lone hospital trying to do this on our own and not having the support of the hospitals in our region. (HA-4)

Table 2 (part 2 of 2): Themes, subthemes and illustrative quotations identified through qualitative analysis

Theme; subtheme	Illustrative quotation
Psychosocial impact on staff	I think nurses, personal support workers, anybody who isn't a physician has a much higher risk of being treated like absolute crap by patients and family members. So, in all honesty, the moral distress, the risk factor for that, educated guess, is higher than it would be even for the people filling out something like the [STMR] tool. (P-1)
Psychosocial support	We have the resilience team. We have the ethics team. We have social workers that will help. We have physicians who are experts ... in STMR [assessment] but also in those difficult conversations like rules of care that are available to other physicians. We have — as an administrator, I'm available through the region because I have a very good understanding of the process, but also, within the organization, I would support anybody on call. (HA-5)
Time to process ESoC	If we don't give [staff] time to process it and we just make them do it, I think the risk of traumatization and posttraumatic stress from having to implement something that they haven't had time to digest is going to be really profound. ... I think it runs a real risk of traumatizing people who have to make those decisions without understanding why they're making those decisions or understanding some of the ... ethics behind it. (P-3)
Palliative care	I think since day 1, I was a big proponent of the abandonment issue and making sure patients were not abandoned. And then appropriate palliative care was done. And I know we worked on a palliative care order set ... Making sure that the patients were not abandoned, and they were getting appropriate symptom management. (HA-6)
Liability protection	I'm not very concerned about ending up in court 2 years from now over this, personally, as an individual. However, many people in my region and subregion have articulated that as a concern or even a complete impediment for starting to use the ESoC. And so, as an administrator or a leader, it's a concern, but as a professional, it's not. (P-5)
Theme 3: Moral dimensions of triage implementation	
Ethical concerns	I don't have ethical qualms about the ESoC. I have qualms about not implementing it in a timely manner. I have qualms about our risk threshold ... getting higher ... in terms of how much we're expected to surge. And ... we've become blind to the fact that people will die as we build this capacity. And we have blindness to the people we're invisibly triaging. (HA-1)
Moral distress	[ESoC implementation] would have put physicians in a position of practising in a way that they have never practised before in their careers and is in direct conflict with their standard medical ethics. And I think that would've caused significant distress. ... There would've been posttraumatic stress for sure. Burnout. People leaving the profession. ... I just think it would've been disastrous, to be honest with you. (HA-8)
Conscientious objection	A big concern I have is that some providers may refuse to [triage], which would lead ... to inconsistency of implementation. (P-5)
Withdrawal of care	
Moral distress	I absolutely do not believe [ESoC implementation] could be done without [withdrawal of care]. That would be morally distressing to the front-line staff, the physicians and the staff, having a patient in a bed who will not survive because the family doesn't want to turn them off the ventilator. And yet we're turning away other people who do have a chance of survival. (HA-5)
Liability concerns	I actually think [physicians] have a lot of backing for the ESoC. Now, withdrawal of treatment is a whole other ballgame, and that would require an executive order. But the ESoC — I feel like physicians are well covered. It's us, as administrators, who, I think, are more at risk. (HA-1)
Appeals process	There was this ongoing discussion around appeals processes for patients who would be denied critical care. ... I think there was a big divide around that piece because it makes sense from a procedural point of view, but it's hard to imagine how that could ever work in practice. (HA-7)
Theme 4: Communication of triage results	
STMR communications among staff	We were doing a lot of [communication regarding care provision among staff] via teams. And ... one of the things that's really essential to this process is very rapidly trusting the other people on your team and being able to have frank conversations and raise concerns. And the greatest barrier was actually not knowing each other in advance and building that kind of environment of trust right away when we're remote from one another. (HA-10)
Communications with deprioritized patient's family	It's going to be awful to just have to go and tell [the deprioritized patient's family] and say, "We're not ... [providing your family member with a ventilator or other critical care]." ... I do think I have the skill set to have that conversation. I don't want to have that conversation. (P-3)
Nonphysician staff's being abandoned	That physician does not want to have that bad-news conversation alone with the patient. They want the social worker with them, the bedside nurse with them. And then, guess what? The physician walks away, but who is left taking care of that patient, who now feels abandoned? It's that nurse, that social worker and that family. (HA-1)
Note: ESoC = Emergency Standard of Care, HA = hospital administrator, P = physician, STMR = short-term mortality risk.	

ESoC in smaller hospitals, such as difficulty with after-hours staffing, forming triage committees providing oversight and creating resources supporting front-line clinicians. Practising end-to-end simulations helped some participants feel ready for implementation.

Finally, some participants indicated a lack of top-down information regarding how the ESoC would be operationalized provincially, including who would be making decisions about the level of triage and how that information would be communicated to leaders. This lack of clarity hampered the ability of some participants to prepare. Participants also discussed increasing the transparency of provincial ESoC documents to health care staff and the public. As the ESoC policy was not publicly released, some participants noted that staff heard updates from the media before receiving internal updates, which caused confusion.

Social, medical and political supports for effective triage implementation

Many participants discussed the social, medical and political supports that enable effective triage implementation by empowering participants and reducing the impact of the ESoC on workflow. Several participants discussed how leaders took charge of ESoC operationalization, overcoming institutional and communication-related barriers to support a hospital-wide multidisciplinary rollout. Leaders also motivated “burned-out” staff to participate in implementation preparations and discussed the ESoC rationale with staff, thereby diminishing distress.

Participants noted that educating staff through working groups, role-playing and information packages ensured effective preparation. The Critical Care Secretariat of Ontario (now Critical Care Services Ontario) offered webinars, which some participants mentioned as helpful. However, some hospitals postponed educating their staff on the ESoC to prevent moral distress. Several participants discussed how ESoC-related documents and processes were shared between regions, preventing duplication of efforts. Intra-regional collaboration was also common, with larger hospitals sharing resources with smaller hospitals.

Given the expected impact of ESoC implementation, hospitals planned varying degrees of psychosocial support for staff, including spiritual care, social workers, ethicists and physicians experienced in having difficult conversations. Participants mentioned that, owing to the complexity of the ESoC, staff require time to understand and morally accept it. In addition, participants mentioned that the ESoC document is lengthy and takes time to process.

Participants discussed how palliative care resources were being used to ensure deprioritized patients received adequate care. At some hospitals, palliative care physicians prepared to deliver bad news to triaged patients’ family members and supported colleagues to have these conversations. Participants expressed the value of documenting patient goals of care early and systematically to reduce ESoC-related workload. To feel comfortable initiating triage, some participants felt that it was vital to know they had liability protection.

Moral dimensions of triage implementation

Throughout the interviews, participants discussed ethical and moral considerations of the ESoC and how these might affect its implementation. Some participants expressed concern about whether the ESoC would be equitable across regions and populations. Others were concerned that the ESoC would not be implemented early enough, leading to potentially fatal delays in care to patients without COVID-19.

For many participants, the use of the ESoC would have been a weighty departure from normal practice, thereby leading to “moral distress.” Some participants expected moral distress if patients were denied care at one hospital owing to a surge while there was capacity at another. Others expressed concern that some physicians lack the clinical expertise or resources to assess STMR adequately, particularly at smaller hospitals. There were concerns about physicians’ conscientiously objecting to the ESoC, which participants felt would result in inconsistent application of the ESoC. This would lead to a disproportionate burden on physicians at centres that were implementing the ESoC consistently.

As it stood, the ESoC would have applied only to the withholding of care from newly admitted patients, not to the withdrawal of care from those already in the ICU. Almost all participants voiced ethical concerns about inconsistency, arguing that withdrawal of intensive care should be a necessary component of the ESoC to ensure equal access for patients with a chance of benefit, rather than prioritizing resources for patients who presented earlier. Participants expressed concern about the legal ramifications of denying patients access to critical care, and some hospital administrators were concerned about perceived inadequate legal protection offered by some professional bodies. Finally, participants noted that staff in their hospitals were uncertain whether appeals processes would be included in the ESoC and how timely they would be.

Communication of triage results

Participants were concerned about their staff’s having discussions with triaged patients’ families. Many saw these conversations as one of the most challenging aspects of the ESoC. Participants mentioned that some staff did not have the expertise to have these conversations; however, simulations helped improve physicians’ comfort in this regard. A common concern was that nurses and social workers would be “abandoned,” left with the burden of caring for the deprioritized patient and their family.

Some physicians indicated that the process of telling family members that their loved one was not eligible for critical care was part of their regular job and thus did not concern them. However, they noted that there was no mechanism to manage the “blowback” from family and that the stress and extra workload could affect their workflow. They also acknowledged that these conversations would be distressing when patients would be deprioritized despite having less than a 30% chance of death.

Improvements

Participants had suggestions for improving the ESoC implementation process and the ESoC document (Box 1). Participants outlined administrative and implementation-related improvements that could be provided at the provincial level, such as billing codes for ESoC. They also suggested improving ethical supports for the usability and quality of the ESoC, such as designating an ethicist in each region. Finally, participants suggested ways to improve the efficiency and usability of the STMR tools (e.g., create IT solutions such as a dashboard) (Box 1).

Box 1: Participants' suggestions for improving the ESoC implementation process, the ESoC document and STMR assessment

Administrative and implementation improvements

- Create a provincial centre that facilitates the sharing of ESoC-related resources between health regions, instead of the onus' being on individual regions and hospitals.
- Create billing codes for the ESoC, including STMR assessments, having discussions with deprioritized patients and family members, and after-hours care.
- Include resources or a plan for supporting smaller hospitals with fewer resources (e.g., guidelines around the use of telemedicine). Include documentation in the ESoC regarding remote STMR assessments in these situations.
- Provide provincial-level support (e.g., a provincial hotline) for staff implementing the ESoC who have questions regarding processes.

ESoC supports and quality improvement

- Include discussion points and prompts related to moral distress in the ESoC.
- Designate a regional ethicist in each health region who supports hospitals with ESoC-related ethical concerns and moral distress.
- Clarify the intention to or process for retrospectively validating the mortality prediction tools in patient populations, and calibrating and improving the tools over time. This quality-improvement process should be transparent and included in the ESoC.
- Create a shorter, consolidated ESoC document, or break it up into 2 documents, 1 focused on the background and the other on implementation.
- Include resources (e.g., scripts, the inclusion of "physician extenders" to be the ones to talk to family members) to help physicians have conversations with triaged patients and family members.

STMR assessment efficiency

- Include clinical resources at the provincial or regional level for physicians determining the STMR who do not have critical care expertise.
- Release a centralized, provincially created app that can be used to standardize the scoring of tools used to calculate the STMR.
- Create information technology solutions at the provincial level to help hospitals add the STMR tools into electronic health records, and include a dashboard to prevent duplication of efforts.
- Create a way to prepopulate the STMR tools with patient information already in the electronic health record.

Note: ESoC = Emergency Standard of Care, STMR = short-term mortality risk.

Interpretation

We identified 4 themes integral to the experiences and perceptions of physicians and hospital administrators who prepared to implement the ESoC in Ontario: participants perceived infrastructure and lack thereof as both barriers to and enablers of ESoC implementation; preparation was also facilitated through social, medical and political supports; ethical and moral considerations were prevalent throughout the implementation planning process; and participants were concerned about communicating triage results.

Of the 4 themes, infrastructure-related barriers is least present and discussed in the literature. The prevalence of this theme in our data may stem from the participation of hospital administrators and physician leaders in our study, all of whom were involved in preparation for implementing the triage policy. In contrast, previous studies focused on clinicians in the position of adhering to these policies.^{7,8,15} In our study, participants highlighted the importance of having logistic, administrative and IT processes to support ESoC implementation. To our knowledge, this finding has not previously been identified as a barrier, which suggests that ground-level implementation planning for ICU triage policies reveals unexpected barriers. Many participants highlighted the importance of having a real-time bed map. Lack of this resource was mentioned as a barrier in a South African study of regional triage committees,¹⁶ as well as in the Brigham and Women's Hospital triage plan.¹⁷

Hospitals and regions within Ontario were at varying degrees of readiness to fully implement the ESoC. Although the CHEST Implementation Guide (a guideline for implementing regional triage) underlines the importance of consistent application within regions,¹⁸ participants identified lower levels of preparedness at smaller hospitals, as mentioned previously.¹⁴ In keeping with past studies,^{17,19} several participants discussed the importance of end-to-end simulations.

Many participants expressed frustration with their inability to access up-to-date provincial ESoC information and the lack of transparency regarding metrics for its activation. Triage policies in Austria and elsewhere in Europe emphasize transparent communication.⁴

Participants also discussed how social, medical and political supports enable effective triage implementation. They discussed procedures carried out at their hospitals for documenting goals of care for all inpatients early and systematically, consistent with recommendations for the provision of palliative care in pandemics.²⁰ In keeping with prior reports,^{15,21} liability protection was critical to ensuring that participants would feel comfortable implementing the ESoC.

Many participants discussed the ethical and moral considerations of ESoC implementation. Most of the moral issues raised speak to the expected psychologic trauma for clinicians and leaders who implement triage. Thus, effective triage protocol implementation requires that leaders acknowledge this

reality and develop appropriate supports (such as debriefing and psychologic first aid at the front lines) using a trauma-informed approach.¹⁵ A distressing issue for participants was the lack of provincial legislation to support withdrawal of ICU treatment without the patient's consent.¹⁷ Many jurisdictions have included withdrawal of ICU treatment in their ESoC,^{4,16,17,22} and, in a study in the United Kingdom, a majority of the general public surveyed during the pandemic supported such a withdrawal policy.²³ Although previous research points to the morally distressing nature of withdrawing critical care resources,²⁴ our participants indicated that they experienced moral distress over the lack of legislation regarding withdrawal of ICU treatment because of the inequities in access that would result.

Finally, consistent with previous studies,^{8,15} many participants felt unprepared to have conversations with the family of patients deprioritized to receive critical care.

The feasibility of participants' suggested improvements to the ESoC implementation process, the ESoC document and STMR assessment is not clear. Creation of fee codes, for example, may require agreement of multiple parties (e.g., ministry of health, physicians). Legal liability may theoretically exist for people who serve in a regional role if they are responsible for decisions that affect people whom they have not personally assessed, although, to our knowledge, this has never been established in court.

Although our study provides an understanding of the experiences of physician leaders and hospital administrators of ESoC implementation planning, key perspectives missing are those of the patient and caregiver. Therefore, future studies should explore patient and caregiver perspectives on the ESoC. Furthermore, in jurisdictions where triage protocols have been implemented, evaluation of the barriers to and facilitators of their success is needed.

Limitations

Our study limitations concern the transferability of our findings owing to the regional implementation structure in Ontario, which makes our findings less relevant to implementing institution-level triage protocols. Furthermore, because there were no participants from 5 LHINs: Central West, North Simcoe Muskoka, North West, South East and Waterloo Wellington, we may have missed important regional-specific insights relating to implementation preparation. Finally, although we initially intended to recruit participants purposefully, we later included snowball sampling because of low recruitment rates. This may have increased the homogeneity of our sample and findings, as participants may have recruited colleagues with insights similar to theirs.

Conclusion

Multifaceted planning of ESoC implementation during the COVID-19 pandemic unfolded across Ontario with varying levels of readiness. Key lessons learned from these regional experiences and the suggestions provided by our participants can be leveraged for current and future pandemics.

References

1. Aziz S, Arabi YM, Alhazzani W, et al. Managing ICU surge during the COVID-19 crisis: rapid guidelines. *Intensive Care Med* 2020;46:1303-25.
2. Barrett K, Khan YA, Mac S, et al. Estimation of COVID-19-induced depletion of hospital resources in Ontario, Canada. *CMAJ* 2020;192:E640-6.
3. Karim SSA, Karim QA. Omicron SARS-CoV-2 variant: a new chapter in the COVID-19 pandemic. *Lancet* 2021;398:2126-8.
4. Ehni HJ, Wiesing U, Ranisch R. Saving the most lives: a comparison of European triage guidelines in the context of the COVID-19 pandemic. *Bioethics* 2021;35:125-34.
5. Kerlin MP, Costa DK, Davis BS, et al. Actions taken by US hospitals to prepare for increased demand for intensive care during the first wave of COVID-19: a national survey. *Chest* 2021;160:519-28.
6. Downar J, Smith MJ, Godkin D, et al. A framework for critical care triage during a major surge in critical illness. *Can J Anesth* 2022;69:774-81.
7. Merlo F, Lepori M, Malacrida R, et al. Physicians' acceptance of triage guidelines in the context of the COVID-19 pandemic: a qualitative study. *Front Public Health* 2021;9:695231.
8. Chuang E, Cuartas PA, Powell T, et al. "We're not ready, but I don't think you're ever ready." Clinician perspectives on implementation of crisis standards of care. *AJOB Empir Bioeth* 2020;11:148-59.
9. Barrett KA, VandeVyvere C, Haque N, et al. Ontario COVID-19 Science Advisory Table. Critical care capacity during the COVID-19 pandemic. Version 1.0 Ontario COVID-19 Science Advisory Table. Available: <https://covid19-sciencetable.ca/sciencebrief/critical-care-capacity-during-the-covid-19-pandemic/> (accessed 2022 Jan. 28).
10. Table 17-10-0009-01: Population estimates, quarterly. Ottawa: Statistics Canada; 2022. Available: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710000901> (accessed 2022 Jan. 28).
11. Panhwar AH, Ansari S, Shah AA. Post-positivism: an effective paradigm for social and educational research. *Int Res J Arts Hum* 2017;45:253-9.
12. Boyatzis RE. *Transforming qualitative information: thematic analysis and code development*. Thousand Oaks (CA): Sage Publications; 1998.
13. Guest G, MacQueen K, Namey E. *Applied thematic analysis*. Thousand Oaks (CA): Sage Publications; 2012. Available: <https://methods.sagepub.com/book/applied-thematic-analysis> (accessed 2023 Jan. 19).
14. Creswell JW, Poth CN. *Qualitative inquiry and research design: choosing among five approaches*. 4th ed. Thousand Oaks (CA): Sage Publications; 2017.
15. Mulla A, Bigham BL, Frolic A, et al. Canadian emergency medicine and critical care physician perspectives on pandemic triage in COVID-19. *J Emerg Manag* 2020;18:31-5.
16. Naidoo R, Naidoo K. Prioritising 'already-scarce' intensive care unit resources in the midst of COVID-19: a call for regional triage committees in South Africa. *BMC Med Ethics* 2021;22:28.
17. Milliken A, Jurchak M, Sadovnikoff N, et al. Addressing challenges associated with operationalizing a crisis standards of care protocol for the COVID-19 pandemic. *NEJM Catal Innov Care Deliv* 2020 Aug. 12. doi: 10.1056/CAT.20.0384.
18. Maves RC, Downar J, Dichter JR, et al.; ACCP Task Force for Mass Critical Care. Triage of scarce critical care resources in COVID-19: an implementation guide for regional allocation: an expert panel report of the Task Force for Mass Critical Care and the American College of Chest Physicians. *Chest* 2020; 158:212-25.
19. Devereaux A, Yang H, Seda G, et al. Optimizing scarce resource allocation during COVID-19: rapid creation of a regional health-care coalition and triage teams in San Diego County, California. *Disaster Med Public Health Prep* 2022; 16:321-7.
20. Arya A, Buchman S, Gagnon B, et al. Pandemic palliative care: beyond ventilators and saving lives. *CMAJ* 2020;192:E400-4.
21. Institute of Medicine (US) Committee on Guidance for Establishing Standards of Care for Use in Disaster Situations. Altevogt BM, Stroud C, Hanson SL, et al., editors. *Guidance for establishing crisis standards of care for use in disaster situations: a letter report*. Washington: National Academies Press; 2009.
22. Sprung CL, Zimmerman JL, Christian MD, et al.; European Society of Intensive Care Medicine Task Force for Intensive Care Unit Triage during an Influenza Epidemic or Mass Disaster. Recommendations for intensive care unit and hospital preparations for an influenza epidemic or mass disaster: summary report of the European Society of Intensive Care Medicine's Task Force for intensive care unit triage during an influenza epidemic or mass disaster. *Intensive Care Med* 2010;36:428-43.
23. Wilkinson D, Zohny H, Kappes A, et al. Which factors should be included in triage? An online survey of the attitudes of the UK general public to pandemic triage dilemmas. *BMJ Open* 2020;10:e045593.
24. Truog RD, Mitchell C, Daley GQ. The toughest triage: allocating ventilators in a pandemic. *N Engl J Med* 2020;382:1973-5.

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