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A National Modified Delphi Consensus Process to Prioritize Experiences and Interventions for Antipsychotic Medication Deprescribing Among Adult Patients With Critical Illness

OBJECTIVES: Antipsychotic medications are frequently prescribed to critically ill patients leading to their continuation at transitions of care thereafter. The aim of this study was to generate evidence-informed consensus statements with key stakeholders on antipsychotic minimization and deprescribing for ICU patients.

DESIGN: We completed three rounds of surveys in a National modified Delphi consensus process. During rounds 1 and 2, participants used a 9-point Likert scale (1–strongly disagree, 9–strongly agree) to rate perceptions related to antipsychotic prescribing (i.e., experiences regarding delivery of patient care), knowledge and frequency of antipsychotic use, knowledge surrounding antipsychotic guideline recommendations, and strategies (i.e., interventions addressing current antipsychotic prescribing practices) for antipsychotic minimization and deprescribing. Consensus was defined as a median score of 1–3 or 7–9. During round 3, participants ranked statements on antipsychotic minimization and deprescribing strategies that achieved consensus (median score 7–9) using a weighted ranking scale (0–100 points) to determine priority.

SETTING: Online surveys distributed across Canada.

SUBJECTS: Fifty-seven stakeholders (physicians, nurses, pharmacists) who work with ICU patients.

INTERVENTIONS: None.

MEASUREMENTS AND MAIN RESULTS: Participants prioritized six consensus statements on strategies for consideration when developing and implementing interventions to guide antipsychotic minimization and deprescribing. Statements focused on limiting antipsychotic prescribing to patients: 1) with hyperactive delirium, 2) at risk to themselves, their family, and/or staff due to agitation, and 3) whose care and treatment are being impacted due to agitation or delirium, and prioritizing 4) communication among staff about antipsychotic effectiveness, 5) direct and efficient communication tools on antipsychotic deprescribing at transitions of care, and 6) medication reconciliation at transitions of care.

CONCLUSIONS: We engaged diverse stakeholders to generate evidence-informed consensus statements regarding antipsychotic prescribing perceptions and practices that can be used to implement interventions to promote antipsychotic minimization and deprescribing strategies for ICU patients with and following critical illness.

KEY WORDS: antipsychotic medications; critical care; modified Delphi; prescribing practices; transitions of care

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Antipsychotic medications are prescribed for critically ill patients to manage symptoms related to delirium and agitation (1–5), although it is well-established that antipsychotic medications do not alter delirium outcomes



KEY POINTS

Question: What evidence-informed consensus statements do key stakeholders prioritize regarding strategies for antipsychotic minimization and deprescribing in ICU patients?

Findings: Six statements on strategies were prioritized that focused on limiting antipsychotic prescribing clinical indications and facilitation of strategies to promote antipsychotic deprescribing including direct and efficient communication tools on antipsychotic deprescribing at transitions of care and medication reconciliation at transitions of care.

Meanings: Key stakeholders generated evidence-informed consensus statements on antipsychotic prescribing practices that can be used to support implementation interventions that promote antipsychotic minimization as well as deprescribing strategies for ICU patients with and following critical illness.

(6–11). Current guidelines recommend against routine antipsychotic use in this patient population (12). Antipsychotics are also increasingly being prescribed as sleep aids in critically ill patients (13), despite limited data to support this indication. Approximately one in three patients newly prescribed an antipsychotic medication in the ICU will be discharged from hospital with an ongoing prescription where the clinical indication for ongoing use is not clear (1, 14, 15). Long-term antipsychotic medication use in noncritically ill older patients increases the risk of stroke, cardiovascular events, and sudden cardiac death (16–18). Evidence-informed guidance on strategies to promote antipsychotic minimization and deprescribing to limit potentially inappropriate long-term antipsychotic therapy in critically ill patients after critical illness is currently lacking.

The ICU environment presents a unique challenge with respect to medication management. Critically ill patients are exposed to twice as many medications as noncritically ill patients and may be unable to actively participate in their medical care due to delirium, sedation exposure, and/or the severity of illness (19, 20). Time-limited use of antipsychotics may be necessary in critically ill patients with severe agitation due to anxiety or hallucinations who are at risk of harm

to themselves or staff (12). Additionally, transitions of care—where patients move from a resource-rich environment to an environment with fewer available resources—are high risk periods for medication errors and continuation of potentially inappropriate medications such as antipsychotics (21, 22). Insufficient communication of information at transitions of care can lead to medication errors during and following hospitalization and can contribute to polypharmacy, adverse drug events, and hospital readmission (23–25).

By engaging healthcare professionals in the process of defining appropriate antipsychotic prescribing and deprescribing practices, key clinically relevant facilitators and barriers to antipsychotic minimization and deprescribing may be identified and targeted. We embarked on a program of research to understand the factors influencing healthcare professionals' antipsychotic prescribing and deprescribing practices and to review the relevant literature exploring healthcare professional perceptions and practices related to antipsychotic prescribing and deprescribing (unpublished data). With input from key stakeholders including physicians, nurses, and pharmacists, we aimed to develop evidence-informed, consensus-based statements on strategies to promote antipsychotic minimization and facilitate deprescribing for patients with and following critical illness.

METHODS

Selection of Key Stakeholders

Stakeholders who engage in prescribing and/or deprescribing of antipsychotic medications and delirium management for adult patients with (i.e., ICU) and/or following (i.e., ward) critical illness in Canada were invited to participate. Participants were eligible to participate if they were 18 years old or greater, English-speaking, a physician, nurse, or pharmacist who cared for adult patients with and/or following critical illness and were able to provide informed consent. Participants who cared for adult patients following critical illness were eligible if they represented inpatient pharmacists, nurses and physicians (e.g., internists, geriatricians, surgeons, neurologists). Healthcare professionals providing only outpatient care were excluded. Board certification for pharmacists and physicians in critical care medicine was not required to participate in this study. We purposively recruited participants by contacting professional societies (Canadian Critical Care Society, Canadian Association of Critical Care Nurses)

and through nontraditional means including social media (i.e., Twitter, Facebook). Participants from prior semi-structured interviews on antipsychotic prescribing practices completed by the research team were also invited to participate via email.

Study Design

We conducted a virtual modified Delphi consensus process aligned with the RAND-UCLA appropriateness methodology (26) and reported our results in accordance with the Conducting and REporting DELphi Studies guidelines (27) (**Appendix 1**, <http://links.lww.com/CCX/B96>). Initial statements were generated following thematic analysis of a scoping review and semi-structured interviews (unpublished data) conducted by the research team. The overall modified Delphi consensus process is shown in **Figure 1**. The statements consisted of seven themes divided into three domains: 1) perceptions on antipsychotic medication use ($n = 23$ statements), 2) triggers for antipsychotic prescription ($n = 19$), and 3) antipsychotic minimization and deprescribing activities ($n = 20$). Participants reviewed and rated (based on perceived importance of individual statements) perceptions on antipsychotic medication prescribing, triggers for antipsychotic prescribing, and antipsychotic minimization and deprescribing strategies during two of three rounds of voting. Participants subsequently ranked (based on perceived order of importance) triggers for antipsychotic prescribing and antipsychotic minimization and deprescribing strategies during the third round of voting. Statements were rated based on importance of individual statements on a 9-point Likert scale where 1 signified strongly disagree and 9 signified strongly agree. Ranking of statements was completed using a 100-point scale where participants ordered statements by importance relative to other consensus statements in the same theme. Participants were offered the opportunity to provide textual comments and additional statements during the first round, which were then incorporated into preexisting statements or generated as new statements for subsequent rating. Three rounds of voting were completed between February 2022 and April 2022 with all rounds taking place via emailed self-administered surveys using a secure and encrypted online survey platform (Qualtrics, Provo, UT). Details for each round are included in **Appendices 2–4** (<http://links.lww.com/CCX/B96>).

All surveys were developed and pilot-tested by research team members including physicians, nurses, and pharmacists to ensure that statements were clear and comprehensive.

Participants provided informed consent prior to participating in each round of the modified Delphi consensus process. This study was approved by the University of Calgary Conjoint Health Research Ethics Board (Facilitators and barriers to deprescribing antipsychotic medications in critically ill adult patients at transitions of care: A mixed methods study, REB21-0963, June 21, 2021). Procedures were followed in accordance with the ethical standards of the responsible institutional committee on human experimentation and with the Helsinki Declaration of 1975.

Data Analysis

After each round of voting, participants were emailed a summary of aggregate results containing median rating or mean ranking scores for each statement. During rounds 1 and 2 where statements were rated based on importance, we defined consensus a priori as any statement with a median score of 1–3 signifying nonsignificance or 7–9 signifying high significance. Statements achieving a median score of 4–6 in round 1 were re-rated in round 2. During round 3, individual statements having achieved consensus with a median score of 7–9 were ranked. Consensus statements were ranked based on order of importance where we defined a statement to have priority if the statement's mean ranking was equal to or greater than one SD above the theme's mean ranking to ensure that themes with unequal numbers of statements were equalized (28, 29). Data analysis was conducted using Microsoft Excel (Microsoft Corporation, Redmond, WA).

RESULTS

Participant Characteristics

Fifty-seven participants (100%) completed round 1, 48 participants (82.5%) completed round 2, and 30 participants (52.6%) completed round 3 of the modified Delphi consensus process. Participants from eight provinces and all stakeholder groups were represented (**Table 1**).

Modified Delphi Results

Overall results of rounds 1–3 are reported in **Figure 2**. Significant consensus statements and priority strategies

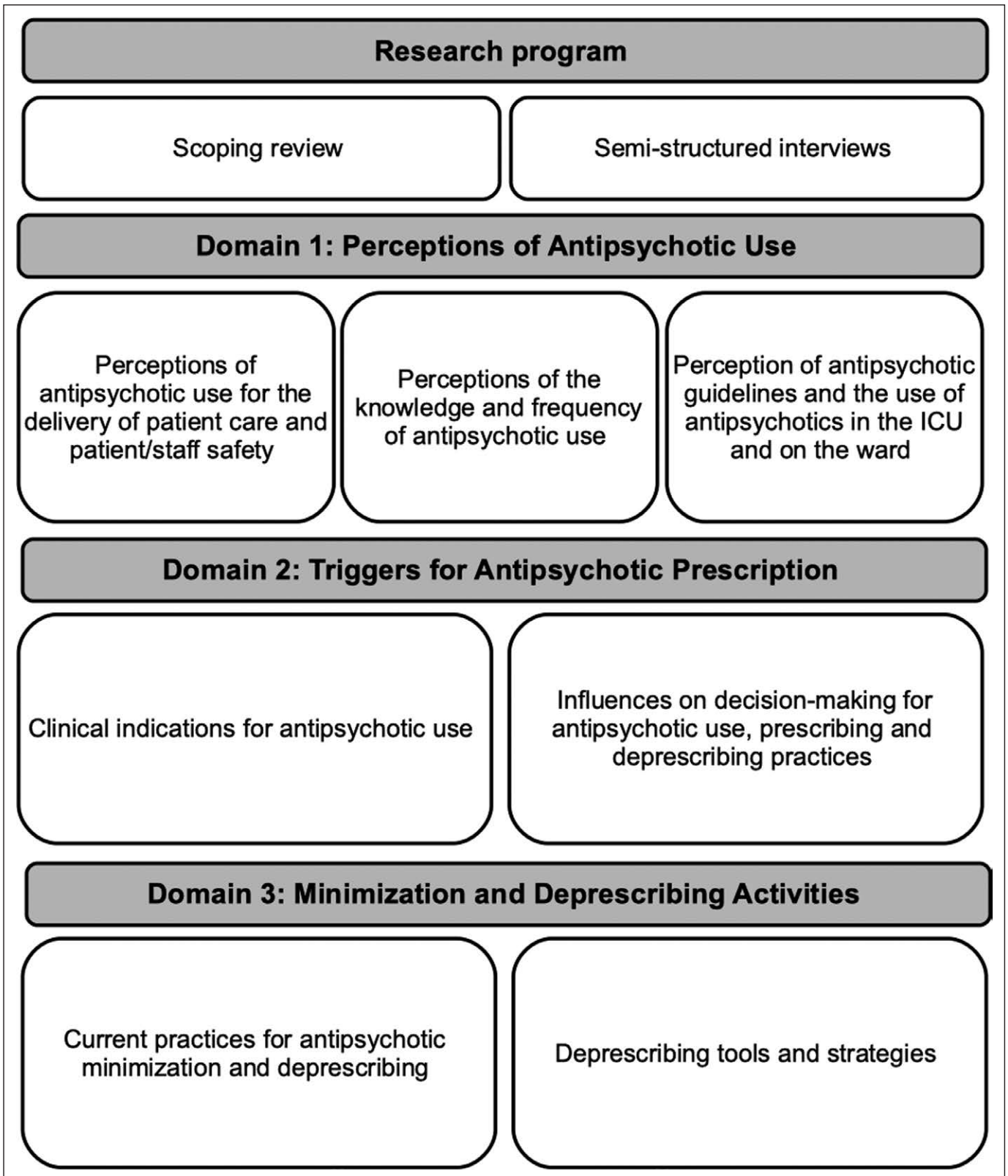


Figure 1. Research program overview informing the modified Delphi consensus process. The results of the research program generated three domains and seven themes evaluated during the survey rounds.

TABLE 1.
Participant Characteristics of All Rounds of Modified Delphi Consensus Process

Characteristic	Round 1 (n = 57)	Round 2 (n = 47)	Round 3 (n = 30)
Age category, yr, n (%)			
20–29	1 (1.8)	1 (2.1)	0 (0.0)
30–39	26 (45.6)	20 (42.6)	13 (43.3)
40–49	14 (24.6)	13 (27.7)	7 (23.3)
50–59	9 (15.8)	8 (17.0)	6 (20.0)
60 and above	7 (12.3)	5 (10.6)	4 (13.3)
Sex, n (%)			
Female	33 (57.9)	27 (57.4)	16 (53.3)
Province, n (%)			
British Columbia	3 (5.3)	3 (6.4)	2 (6.7)
Alberta	19 (33.3)	16 (34.0)	9 (30.0)
Saskatchewan	3 (5.3)	3 (6.4)	1 (3.3)
Manitoba	1 (1.8)	1 (2.1)	1 (3.3)
Ontario	20 (35.1)	15 (31.9)	10 (33.3)
Quebec	3 (5.3)	2 (4.3)	2 (6.7)
Nova Scotia	5 (8.8)	4 (8.5)	2 (6.7)
New Brunswick	0 (0.0)	0 (0.0)	0 (0.0)
Newfoundland	2 (3.5)	2 (4.3)	2 (6.7)
Prince Edward Island	0 (0.0)	0 (0.0)	0 (0.0)
Territories (Northwest Territories, Nunavut, and Yukon)	0 (0.0)	0 (0.0)	0 (0.0)
Did not answer	1 (1.8)	1 (2.1)	1 (3.3)
Stakeholder role, n (%)			
Attending physician	28 (49.1)	25 (53.2)	14 (46.7)
Clinician administrator	2 (7.1)	2 (8.0)	1 (7.1)
Clinician educator	6 (21.4)	4 (16.0)	3 (21.4)
Clinician scientist	7 (25.0)	6 (24.0)	5 (35.7)
Primary clinician	13 (46.4)	13 (52.0)	5 (35.7)
Advanced practice provider, n (%)			
Nurse practitioner	2 (3.5)	2 (4.3)	1 (3.3)
Fellow	1 (1.8)	1 (2.1)	1 (3.3)
Resident	1 (1.8)	0 (0.0)	0 (0.0)
Registered nurse	15 (26.3)	11 (23.4)	7 (23.3)
Licensed practical nurse	1 (1.8)	0 (0.0)	0 (0.0)
Pharmacist	9 (15.8)	8 (17.0)	7 (23.3)
Work environment			
Academic, n (%)	43 (75.4)	37 (78.7)	25 (83.3)
Years worked in critical care or hospital environment, median (interquartile range)	12.0 (6–23)	13.0 (7–22)	16.0 (9–24)

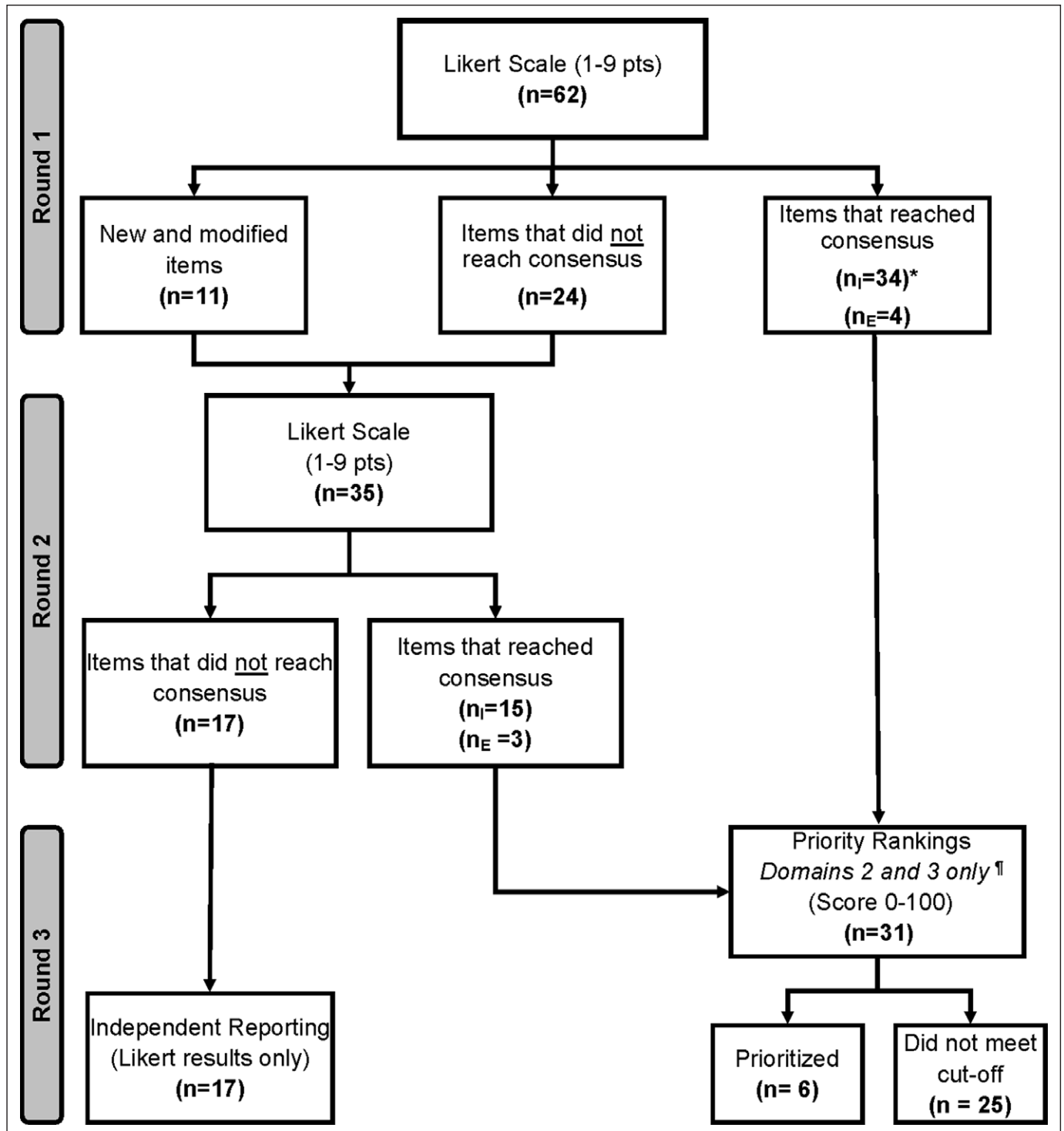


Figure 2. Overview of the results from the modified Delphi consensus process for perceptions on antipsychotic prescribing practices and antipsychotic minimization and deprescribing strategies. Rated statements must have achieved a median score of 1–3 or 7–9 to reach consensus. Priority ranked statements were determined to be priority strategies if their mean score was greater than the theme mean score plus one sd. *One participant was identified to have completed round 1 twice following completion of all consensus rounds. Evaluation with their responses using the mean of their two completed surveys resulted in this statement no longer reaching consensus (i.e., median change from 7 to 6). This statement was subsequently ranked and deemed to be low priority. [†]Statements from domains 2 and 3 with a median score of 7–9 statements included [n_I] were included in rounds for ranking and those with a median score of 1–3 statements excluded [n_E] were excluded.

TABLE 2.
Prioritized Statements on Strategies for Antipsychotic Minimization and Deprescribing

Item	Theme Mean (SD)	Item Mean (SD)
Theme 4: Clinical indications for antipsychotic use		
Antipsychotics should be used for hyperactive delirium (i.e., agitated delirium) treatment and management.	11.1 (3.3)	15.5 (18.1)
Antipsychotics should be used when patient, family and/or staff safety (e.g., pulling tubes, falling out of bed, physical aggression, etc.) is at risk.		17.4 (8.7)
Theme 5: Influences on decision-making for antipsychotic use, prescribing and deprescribing practices		
Antipsychotics are prescribed when necessary care for the patient and treatment are being impacted (i.e., due to agitation, delirium, etc.).	16.7 (2.6)	20.6 (11.2)
Theme 6: Current practices for antipsychotic minimization and deprescribing		
Ongoing assessment of the patient and communication between staff about the effectiveness of the treatment (including qualitative feedback) helps to minimize antipsychotic use and promote deprescribing.	14.3 (4.1)	21.8 (14.7)
Theme 7: Deprescribing tools and strategies		
There is a need for a direct and efficient communication tool within transfer or discharge summaries between prescribers at transitions of care to identify continued medications such as antipsychotics and to provide discontinuation recommendations.	11.1 (3.5)	16.1 (8.3)
Additional medication reconciliation should occur at transitions of care to identify antipsychotics that have been continued without clear ongoing clinical indication.		15.1 (9.6)

Statements defined to have priority if the statement's mean ranking from all participants was equal to or greater than one SD above the theme's mean ranking ensuring that themes with unequal numbers of statements were equalized.

from the modified Delphi consensus process are presented in **Supplementary Table 1** (<http://links.lww.com/CCX/B96>) and **Table 2**. Details from each round are collated in **Supplementary Tables 2–4** (<http://links.lww.com/CCX/B96>). In round 1, 38 statements (38/62; 61.3%) across all domains reached consensus. Participants generated an additional nine statements and recommended modification of two additional statements between round 1 and round 2. Round 2 included 11 additional participant-generated statements, with a total of 35 statements that were rated. Eighteen statements (18/35; 51.4%) achieved consensus in round 2. In round 3, statements on triggers for antipsychotic medication prescription and antipsychotic minimization and deprescribing activities were ranked as these statements would have the potential to inform practice changes. Perceptions on antipsychotic medication use were not ranked as all healthcare professional perceptions were considered valid. Thirty-one statements on antipsychotic minimization and deprescribing strategies that achieved consensus with a median score of 7–9 from rounds 1 and 2 were ranked with six statements (6/31; 19.4%) meeting the threshold to be defined as priority statements.

Domain 1: Perceptions on Antipsychotic Medication Use

Perceptions on antipsychotic use for the delivery of patient care and patient/staff safety, knowledge and frequency of antipsychotic use, and antipsychotic use guidelines were rated in two rounds. In round 1, eight statements (8/23; 34.8%) related to participant perceptions on antipsychotic medication use in adult ICU patients with and following critical illness reached consensus (Supplementary Table 2, <http://links.lww.com/CCX/B96>). For round 2, seven new statements were recommended for rating by participants and one statement was modified (informed by participant feedback). In total, 22 statements underwent rating in round 2 with 13 additional statements reaching consensus (Supplementary Table 3, <http://links.lww.com/CCX/B96>). After two rounds of rating, 21 statements out of a total of 30 rated statements reached consensus. Statements reaching consensus focused on perceptions of antipsychotic guidelines and use of antipsychotics in the ICU and on the ward (13/30; 56.5%), perceptions of antipsychotic use for the delivery of patient care and patient/staff safety (4/30; 17.4%), and perceptions on the knowledge and frequency of antipsychotic

use (4/30; 17.4%). Two statements reached consensus as nonsignificant (median 1–3) and the remaining 19 statements were considered significant (median 7–9). Nine statements did not reach consensus after two rounds of rating.

Domain 2: Triggers for Antipsychotic Medication Prescription

In round 1, 14 statements (14/18; 77.8%) related to triggers and clinical indications for antipsychotic medication use in adult patients with and following critical illness reached consensus (Supplementary Table 2, <http://links.lww.com/CCX/B96>). For round 2, one new statement was recommended for rating by participants and one statement was modified based on participant feedback. Eight statements were rated in round 2 with an additional five statements reaching consensus after round 2 (Supplementary Table 3, <http://links.lww.com/CCX/B96>). After two rounds of rating, 22 statements out of a total of 26 rated statements reached consensus. Statements reaching consensus addressed clinical indications for antipsychotic use (12/26; 46.2%) and the influencing factors informing decision-making for antipsychotic use, prescribing and deprescribing practices (7/26; 26.9%). Three statements reached consensus as nonsignificant (median 1–3) and the remaining 19 statements were considered significant (median 7–9). Four statements did not reach consensus after two rounds of rating. One participant was identified to have completed round 1 twice following completion of all consensus rounds. Evaluation of their responses using the mean of their two completed surveys resulted in one statement during round 1 no longer reaching consensus (i.e., median change from 7 to 6). This statement was subsequently ranked and deemed to be low priority (Supplementary Tables 2 and 4, <http://links.lww.com/CCX/B96>).

In round 3, the 19 statements that reached consensus and were significant (median 7–9) in rounds 1 and 2 were ranked by participant perceived priority (i.e., current clinical practice and perceived beneficial interventions). Three (3/19; 15.8%) reached the threshold for priority (Supplementary Table 4, <http://links.lww.com/CCX/B96>). These included statements identifying antipsychotics being used for the clinical indications of hyperactive delirium and patient, family, and/or staff safety (2/3; 66.7%) and not being able to deliver necessary care and treatment for patients as an

important influence on antipsychotic prescribing and deprescribing (1/3; 33.3%).

Domain 3: Antipsychotic Minimization and Deprescribing Activities

In round 1, 16 statements (16/20; 80.0%) related to antipsychotic minimization and deprescribing activities in adult patients with and following critical illness reached consensus (Supplementary Table 2, <http://links.lww.com/CCX/B96>). For round 2, one new statement was recommended for rating by participants. Five statements were rated in round 2, with no additional statements reaching consensus after round 2 (Supplementary Table 3, <http://links.lww.com/CCX/B96>). Statements reaching consensus addressed current antipsychotic minimization and deprescribing practices (7/20; 35.0%) and potential deprescribing tools and strategies (9/20; 45.0%). All 16 statements were considered significant (median 7–9). Five statements did not reach consensus after two rounds of rating.

In round 3, the 16 statements that reached consensus and were significant (median 7–9) in rounds 1 and 2 were ranked by participant perceived priority for clinically effective antipsychotic minimization and deprescribing strategies. Three (3/19; 15.8%) reached the threshold for priority (Supplementary Table 4, <http://links.lww.com/CCX/B96>). These included statements recommending ongoing assessment of patients and communication between staff about effectiveness of antipsychotics to help antipsychotic minimization (1/3; 33.3%) and the use of direct communication tools within transfer summaries and additional medication reconciliation at transitions of care as mechanisms to facilitate antipsychotic deprescribing (2/3; 66.7%).

DISCUSSION

In this National modified Delphi consensus process, we engaged healthcare professionals to determine consensus on three domains related to antipsychotic prescribing (perceptions, current practices, and minimization and deprescribing strategies) for adult patients with and following critical illness. Participant perceptions suggest that antipsychotics are prescribed for three common indications: patient and staff safety, sleep promotion, and clinician concern for team members caring for agitated patients. Further,

antipsychotics were perceived to be prescribed more frequently in circumstances where there are resource shortages (e.g., staff availability), high patient volumes, or high work demands.

Participants prioritized six consensus statements on strategies for consideration when developing and implementing interventions to guide antipsychotic minimization and deprescribing. These statements focused on limiting antipsychotic prescribing to patients with hyperactive delirium, those patients who are at risk of harm to themselves, their family, and/or staff due to agitation, and those patients where care and treatment are being impacted due to agitation or delirium. Additionally, participant-recommended strategies focused on the need for ongoing assessment of patients, communication between staff supported by direct and efficient communication tools within transfer or discharge summaries, and additional medication reconciliation at transitions of care to identify antipsychotics amenable to deprescribing. Participants agreed that insufficient information about the use of antipsychotics in the ICU generated uncertainty at transitions of care about the indications for continuation of antipsychotics, leading to these medications being continued rather than deprescribed.

Our study highlights two important considerations related to the development of interventions for antipsychotic minimization and deprescribing in critically ill patients: 1) defining appropriate indications for antipsychotic administration in critically ill patients and 2) establishing clear verbal and electronic communication mechanisms at transitions of care to address continued antipsychotic prescriptions and to provide discontinuation recommendations. The priority clinical indications identified by participants for antipsychotic medication administration in critically ill patients is consistent with previously reported data on common prescribing indications (30–33). Antipsychotic medication prescribing in the ICU may at times be necessary due to challenging clinical circumstances and defining these indications may provide decision-making support for clinicians. Additional relevant clinical indications were identified by participants reflecting current antipsychotic prescribing practices including their use for sleep management, during attempts to wean off IV sedation infusions, and when nonpharmacologic interventions for delirium were ineffective. In a recent study

characterizing the administration of antipsychotics for sleep management, 36.7% of patients prescribed a medication for sleep management received an antipsychotic medication, particularly when patients were experiencing delirium and were frequently continued at transitions to the hospital ward (13). What remains unclear from our study results is how healthcare professionals perceive antipsychotics affect sleep (i.e., restoration of circadian rhythm, aiding in sleep initiation). Limited data are currently available to advocate for the routine use of antipsychotic medications for these suggested clinical indications. Addressing specific clinical indications where antipsychotic medications should be discouraged may be an important intervention when establishing strategies for antipsychotic minimization.

Participants prioritized the use of communication tools embedded in transfer and discharge summaries as well as additional medication reconciliation to facilitate deprescribing of antipsychotic medications in critically ill patients. Poor communication during patient transitions of care from the ICU to the hospital ward can lead to medication errors and the continuation of potentially inappropriate medications such as antipsychotics (21, 34). Communication tools embedded in handoffs at transitions of care are associated with a reduction in medical errors and preventable adverse events (35). Several systematic reviews identify medication review (i.e., review of current medication list) as an effective tool for short-term drug-related outcome measures (e.g., number of drugs prescribed, adverse drug events) (36–39). However, in isolation, medication review is likely to be ineffective in improving patient-related outcomes (36, 38, 39). Medication review in combination with additional tools such as medication reconciliation may be more effective in reducing hospital readmissions in older adults (37). Medication reconciliation is the deliberate and conscientious interprofessional process of supporting optimal medication management through verification, clarification, and reconciliation of a patient's appropriate medication list (23, 40). Interventions aimed at improving medication reconciliation may address both drug-related and patient-centered outcomes by supporting communication between all healthcare team members in the medication use process (23). Computer-enabled tools with automated communication tools and electronic medication reconciliation may offer solutions to reduce medication errors such

as inappropriately continued antipsychotic medications (41–43). It is important to ensure that these communication tools are bidirectional between healthcare professionals to ensure action requests for medication changes or deprescribing are completed (44). As identified by participants in our study, the merging of bidirectional communication tools with additional purposeful medication reconciliation may provide an effective systematic framework to establish appropriate antipsychotic deprescribing recommendations at transitions of care. Further research is required to address the nuances of antipsychotic prescribing within these systematic frameworks including thresholds of when to initiate antipsychotic deprescribing, specific weaning strategies and which antipsychotic to use for patients with hyperactive delirium.

Our modified Delphi consensus process has identified several areas for future research to better understand the influence of antipsychotic medication prescribing and deprescribing in critically ill adult patients. These areas reflect scenarios where participants could not achieve consensus including the effectiveness and safety of antipsychotic to achieve sedation compared with other sedative options and the use of antipsychotics for patients who experience symptoms of fear, delusions, and anxiety in the setting of delirium. Although participants agreed that antipsychotics did not treat delirium, gaps remain in understanding whether considerations of long-term outcomes associated with longer durations of delirium (i.e., long-term cognitive impairment) impact antipsychotic prescribing practices. Further, participants agreed that nonpharmacologic interventions remain an important strategy for antipsychotic minimization, but ongoing research is needed to understand how specific nonpharmacologic interventions frequently used for delirium such as mobilization or the use of physical restraints affect antipsychotic prescribing practices. Last, evaluating how specific patient populations such as those patients receiving noninvasive positive pressure ventilation impacts how antipsychotics are prescribed remains an important area for future research.

Our study has several strengths. We engaged a diverse group of disciplines in this modified Delphi consensus process including both ward and critical care healthcare professionals (physicians, nurses, and pharmacists) to comprehensively understand and identify priority considerations for antipsychotic prescribing and deprescribing

strategies throughout the course of hospitalization of critically ill adults. Participants were recruited from eight Canadian provinces with representation across all health-care professional groups, providing diverse perspectives from across Canada. This study also has limitations. First, priorities from healthcare professional groups can broadly vary. As the ratings and rankings from all health-care professional groups across all critical care subspecialties (i.e., neurocritical care, medical surgical critical care) were evaluated together, it is possible that perspectives may differ on specific statements between healthcare professional groups or subspecialties. To address this limitation, the initial consensus statements were informed by individual interviews and a review of the relevant literature. We also provided free text boxes during each round of the consensus process to refine and strengthen perceptions or statements that may have been missed. Second, completion of all consensus rounds via a virtual format limits discussion between participants and may allow for open interpretation of statements. We provided the opportunity for participants to contact the research team directly if questions regarding interpretation arose. Third, generalizability of the consensus results is limited to a Canadian context where included participants working primarily in an academic environment may have different perspectives compared with participants working in a community environment. Last, despite steps to minimize attrition through summaries emailed to participants, surveys that could be completed at participant convenience and multiple follow-up emails, there was a decrease in response rate across the three rounds of the Delphi consensus process. It is possible that this loss of participants may have led to missed perceptions from these stakeholder groups.

CONCLUSIONS

Antipsychotic medications are frequently prescribed in critically ill adult patients to manage symptoms of hyperactive delirium, agitation, and as part of pharmacologic sleep management strategies. This study reports important healthcare professional perceptions on antipsychotic prescribing practices for the delivery of patient care, knowledge and frequency of antipsychotic use, and perceptions of antipsychotic guidelines and ongoing prescribing at transitions of care. Key healthcare professional stakeholders prioritized evidence-informed statements on strategies to define appropriate clinical indications for

antipsychotic medication use in critically ill patients with delirium and agitation, and to facilitate appropriate antipsychotic deprescribing at transitions of care. These statements on statements include suggestions on the use of bidirectional communication tools embedded in transfer and discharge summaries as well as additional purposeful medication reconciliation at transitions of care.

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All data available in published records.

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