Group Dynamics: Groupthink and Polythink, Social and Cognitive Biases in Medical Team Decision-Making

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ABSTRACT Beyond the individual cognitive biases of single clinicians, medical teams are subject to distinct group-level biases that emerge from social dynamics, hierarchical structures, and interpersonal interactions. These biases, including groupthink, group polarization, and conformity, as well as the less known polythink bias, are systematically amplified or attenuated by environmental factors such as incivility, psychological safety, and gratitude. In this narrative review, we integrate group psychology, organizational behavior, and empirical studies of medical team performance. This includes experimental randomized research on the effects of rudeness and gratitude on clinical outcomes. We examine the theoretical foundations of group decision-making dynamics for medical teams, the major group-level biases and their clinical manifestations, the evidence on the social environment of clinical work, and the strategies available for reducing group biases in practice. Medical teams are structurally predisposed to groupthink, which is the premature consensus at the expense of critical analysis, because of hierarchical authority gradients, team cohesion, and time pressure. The polythink framework identifies the opposite failure: paralytic disagreement that prevents timely decisions. On the axes between these poles, the convergence–divergence model describes optimal group dynamics. Experimental evidence demonstrates that workplace incivility significantly impairs diagnostic performance and procedural accuracy in medical teams, while expressions of gratitude reliably improve team performance. Psychological safety, structured debriefing, designated devil's advocate roles, software that facilitates brainstorming by team members, and shared decision-making are evidence-based group-level debiasing strategies. Group-level biases in medical teams are not merely the sum of individual biases; they represent emergent phenomena of team interaction, and their mitigation requires organizational and cultural interventions alongside individual cognitive training.

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The literature on medical decision-making typically examines cognitive biases at the level of the individual clinician [1]. In this review article, we address a distinct and complementary domain: the biases that emerge when medical decisions are made not by an individual but by a team. These decisions are not simply the sum of individual biases aggregated in a group setting; they are emergent phenomena of social interaction, hierarchy, and group psychology that can amplify some individual biases, suppress others, and generate new ones entirely.

Medical teams share structural features that make them particularly susceptible to group-level biases. They operate under time pressure and with high stakes that are within clear hierarchical structures that concentrate authority and inhibit information flow from lower-status members. Their members work in sustained proximity, developing cohesion that, while valuable for coordination, creates conditions for conformity-driven error [2-4]. Understanding these dynamics is not an academic exercise. Most adverse events in medicine occur in team settings, and a substantial proportion involve communication failures and hierarchical inhibition of critical information [5,6].

In this review, we examine the theoretical framework of group decision-making dynamics from groupthink and polythink to the convergence–divergence model, including the major group-level biases and their clinical manifestations, the empirical evidence on social environmental factors including incivility and gratitude, and the evidence-based strategies available to reduce group-level biases in clinical practice.

THEORETICAL FRAMEWORK: GROUP DECISION-MAKING DYNAMICS

Groupthink

Janis [2,3] developed the concept of groupthink to describe a process in which cohesive groups converge pre-

maturely to consensus, suppressing dissent, excluding external perspectives, and failing to critically evaluate alternatives. Eight symptoms characterize groupthink-affected groups: an illusion of invulnerability, collective rationalization, unquestioned belief in the group's morality, stereotyped views of external threats, direct pressure on dissenters, self-censorship, an illusion of unanimity, and self-appointed mindguards who filter threatening information.

Heinemann and colleagues [4] demonstrated that groupthink is not confined to political cabinets or corporate boards. It is a real and documented phenomenon in healthcare teams, particularly in small, cohesive units that make decisions under pressure. The structural conditions of many medical specialties, including intensive care and surgical and emergency medicine teams, precisely match those Janis identified as predisposing to groupthink: high stakes, time pressure, strong hierarchical leadership, and team cohesion developed over extended proximity.

MEDICAL TEAMS ARE STRUCTURALLY PREDISPOSED TO GROUPTHINK, WHICH IS THE PREMATURE CONSENSUS DRIVEN BY HIERARCHICAL AUTHORITY, TIME PRESSURE, AND TEAM COHESION.

Clinical example

In a weekly multidisciplinary oncology meeting, the senior oncologist opens the discussion of a complex case with her own assessment, "I think aggressive chemotherapy is the right approach here." Three junior colleagues agree immediately. The palliative care physician, who privately believes the evidence supports comfort-focused care, does not raise her view, partly because she does not want to seem obstructionist in front of the team, partly because she assumes the oncologist knows the case better. The decision for aggressive chemotherapy is made unanimously. The patient dies during the second cycle; retrospective chart review could have revealed clear contraindications that no one voiced.

Polythink

The opposite failure is polythink [7,8], which is a fragmented group in which multiple conflicting perspectives produce chronic disagreement that prevents timely or coherent decision-making. Mintz and Wayne [7] developed the polythink framework in the context of foreign policy advisory groups but demonstrated its direct applicability to any setting in which a small group must reach consensus under uncertainty.

Polythink is relevant to any medical team, including large multidisciplinary teams, committees, and ethics consultations, where the diversity of professional perspectives that is an asset for information gathering becomes an obstacle to decision making. Clinical polythink manifests as repeated deferral of decisions, fragmented treatment plans with conflicting recommendations from different specialties, and patient and family confusion about who is responsible for the overall care.

Clinical example

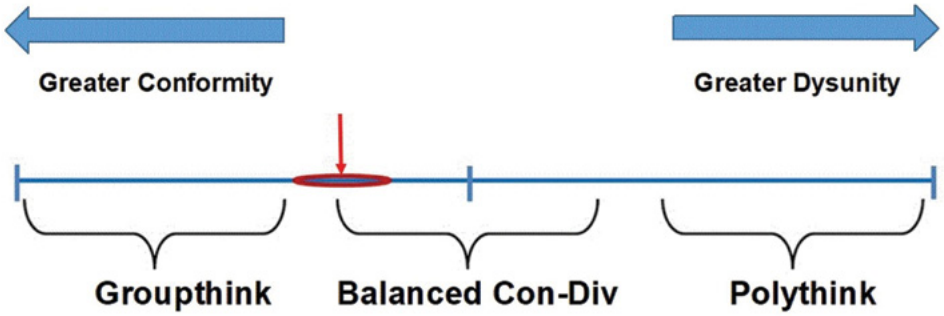
A 58-year-old man arrives at the intensive care unit with severe septic shock and a bleeding abdominal mass. A multidisciplinary emergency consult is called to determine the next step. Specialist 1 (radiologist) demands immediate embolization to stop the bleeding. They warn that aggressive fluid resuscitation will worsen hemorrhage. Specialist 2 (intensivist) rejects any intervention or surgery, insisting the patient is too unstable to move. They push for immediate vasopressors and volume expansion. Specialist 3 (oncologist) deems the tumor inoperable and recommends transitioning to palliative comfort care, refusing to sign off on interventions. Due to fragmented paradigms and professional rivalries, the team suffers decision paralysis. Two critical hours pass in heated debate with no unified orders entered. The patient suffers a fatal cardiac arrest from uncorrected hemorrhagic shock before any treatment begins. In polythink, the medical team fractures into opposing factions, causing fatal delays because no single plan could be agreed on.

While polythink destroys a patient's care through gridlock, disagreement, and total inability to act, groupthink kills through premature, uncritical agreement. In groupthink, the team would rush to a single, flawed decision without questioning it, such as blindly following a dominant surgeon's incorrect choice for surgical intervention ignoring critical warning signs in a collective desire to avoid conflict. Both dynamics lead to fatal outcomes, but polythink kills through paralysis, while groupthink kills through compliance.

CONVERGENCE–DIVERGENCE MODEL

In the axis between groupthink and polythink, the convergence–divergence (Con-Div) model [7] describes the optimal dynamic. Team members present diverse perspectives and engage in genuine critical analysis while maintaining shared goals and sufficient cohesion for efficient decision-making. In the clinical context, this model describes

Figure 1. An example of a medical team's decision-making process placed on a continuum of group decision-making dynamics
Adapted from Mintz and Wayne [7]



a team culture in which a junior member feels comfortable raising a concern, the most senior member actively seeks alternative perspectives, and the group completes a decision cycle in a timeframe appropriate to the clinical urgency.

Riskin and co-authors [9] developed and validated the first quantitative instrument for assessing the position of medical team decisions on the groupthink–polythink spectrum (the Con-Div scale) demonstrating its feasibility in real-time neonatal intensive care unit team settings. This tool creates a foundation for systematic study of group dynamics in clinical teams.

KEY GROUP-LEVEL BIASES IN MEDICAL TEAMS

Conformity and the authority gradient

Conformity pressure, the tendency to align with majority or authority opinion, is perhaps the most consequential group-level bias in medicine. Asch's conformity studies and Milgram's obedience experiments identified a fundamental human tendency to override private judgment in response to social pressure [10].

GROUPTHINK CAN SUPPRESS THE CRITICAL ANALYSIS AND DISSENTING INFORMATION THAT COULD PREVENT DIAGNOSTIC ERROR.

The authority gradient is the steepness of the rank differential between team members. Studies of aviation cockpit crew resource management, which directly inspired the World Health Organization Surgical Safety Checklist, identified the authority gradient as the primary obstacle to effective error communication. In medical hierarchies this tendency is formalized. The authority gradient is one of the most documented contributors to communication failure in medicine [5].

Clinical example

A scrub nurse notices a discrepancy in the surgical instrument count before wound closure. She is uncertain whether to raise it because the operating surgeon, who is known for impatience, has already announced completion. She raises it tentatively: "I might be wrong, but…" The surgeon dismisses it. The patient returns to the operating room 3 days later for retained instrument retrieval.

PROFESSIONAL SILENCE

Professional silence is the systematic inhibition of relevant information by team members who possess it but do not share it because of hierarchical or interpersonal concerns [4,11]. It differs from simple conformity in that the silent team member is not agreeing with the group; they are withholding a view they hold privately. It is one of the most dangerous team-level phenomena in medicine precisely because it is invisible: the information gap it creates is unknown to the decision makers.

Albisser Schleger and colleagues [11] identified professional silence as a primary mechanism through which group decision-making in healthcare teams diverges from the optimal. Medical training, by socializing junior clinicians to defer to seniors, institutionally reinforces the tendencies that produce silence, making its mitigation a systemic as well as an individual challenge.

GROUP POLARIZATION

Group polarization is the tendency for groups to make more extreme decisions than the individuals composing them would make independently. Groups of risk-averse individuals who discuss a case tend to produce a more conservative recommendation than any member would have offered alone; groups of risk-tolerant members produce more aggressive recommendations [12]. In oncology, often the phenomenon manifests in tumor board decisions that drift toward more aggressive treatment than the

individual specialists' private assessments would have recommended.

STATUS QUO BIAS AND SUNK COST IN TEAM SETTINGS

Status quo bias, which is the preference for existing protocols and practices, is amplified in team settings because changing the status quo requires not only individual motivation but group consensus [13]. This idea is described at the individual level in the review of cognitive biases and heuristics in this issue of the *Israel Medical Association Journal* (*IMAJ*) [1]. The transaction cost of reorganizing team practice around new evidence is high, particularly in specialties with a strong professional culture. Sunk cost bias is similarly amplified. A team that has invested significant resources and emotional commitment in a treatment pathway has stronger collective resistance to abandoning it than any individual member would have alone.

WORKPLACE INCIVILITY, EVEN LOW-LEVEL RUDENESS FROM A THIRD PARTY, SIGNIFICANTLY IMPAIRS MEDICAL TEAM PERFORMANCE ON DIAGNOSTIC AND PROCEDURAL TASKS; CONVERSELY, EXPRESSIONS OF GRATITUDE RELIABLY ENHANCE TEAM FUNCTION.

SOCIAL ENVIRONMENT AND MEDICAL TEAM PERFORMANCE

The effect of incivility

A program of experimental research by Riskin and colleagues provides the strongest evidence in the literature on the effect of the social environment on clinical team performance. In two randomized trials, medical teams were assigned to receive rude or neutral communication from a third-party confederate before performing standardized neonatal resuscitation simulations [14,15].

In the first study [14], teams exposed to a brief rude comment showed significantly impaired performance on diagnostic accuracy ($P < 0.001$) and information sharing ($P = 0.02$) compared with teams in the neutral condition. A follow-up study [15] replicated these findings and demonstrated that the impairment extended to procedural performance. Porath and Erez [16] had previously demonstrated in organizational settings that even low-intensity rudeness that did not show hostility or aggressive behavior, just simple discourtesy, reliably impaired cognitive performance. Riskin and colleagues [14,15] translated this finding into the clinical context with direct measurement of patient care outcomes. Teams exposed to rudeness showed reduced information sharing, possibly leading to reduced critical questioning, and faster, lower-quality consensus. The mechanism is consistent with dual-process theory as set out in a review in this issue of *IMAJ* [6]. Incivility creates cognitive load and threat-based arousal that shifts System 2 resources toward social threat-monitoring, reducing the deliberative capacity available for clinical reasoning.

Clinical example

During a pediatric resuscitation, the attending physician responds sharply to a resident's suggested intervention: "That's not remotely appropriate." The resident, now uncertain, fails to share a piece of information about the patient's medication history that would have altered the treatment plan. The cognitive impact of incivility operates not through intent but rather through the diversion of working memory and attention resources. The resident is now partially occupied with threat processing rather than clinical analysis [14-16].

The effect of gratitude

Riskin and colleagues [17] extended this experimental program to examine the converse condition: the effect of patient-expressed gratitude on medical team performance. In a randomized trial, neonatal teams receiving a brief gratitude expression before a standardized simulation showed significantly better diagnostic and procedural performance than teams in the neutral condition. The effect was mediated by information sharing within the team.

DeSteno and colleagues [18] demonstrated the mechanism: gratitude activates prosocial cognition, strengthens trust, and reduces temporal discounting, thus increasing willingness to invest effort in careful deliberation rather than accepting fast, effort-saving heuristics, which is critical for clinical decision-making. Grant and Gino [19] showed that gratitude expressions motivate prosocial behavior in recipients beyond the dyadic relationship. Emmons and McCullough [20] demonstrated sustained effects of gratitude practices on well-being. Together, these findings support gratitude not as a social nicety but as a clinical performance variable.

COMMUNICATION, TRUST, AND INFORMATION-SHARING

Chen and colleagues [21] conducted a large-scale study of shared decision-making (SDM) in Chinese public hospitals, which demonstrated that communication quality was the strongest direct predictor of SDM ($R^2 > 30\%$ across all hospital tiers; $P < 0.001$), and that trust mediated a substantial portion of this effect (39.89% in primary care

settings). Respect from providers independently moderated the communication–SDM relationship in secondary hospitals. The physician–patient relationship within which SDM is enacted, and the models that structure it, are the subject of a review in the January 2027 issue of *IMAJ*. Our review treats SDM solely as a group-level debiasing mechanism.

Tekïn and colleagues [22] studied social interaction in emergency ambulance teams and found that the volume and quality of intra-team information sharing, and not years of experience, was the strongest predictor of correct intervention. Paradoxically, more experienced teams sometimes performed worse because their experience-based pattern matching reduced the perceived need for verbal hypothesis testing within the team, suppressing information sharing and thereby increasing vulnerability to missed diagnoses.

DEBIASING STRATEGIES FOR MEDICAL TEAMS

Consistent with the ownership of debiasing content across this issue, the following strategies address specifically the group-level mechanism identified here: the structural preservation of independent reasoning within an interacting team.

Psychological safety

Edmondson [23] defined psychological safety as the shared belief that the team is safe for interpersonal risk taking and that speaking up, disagreeing, or acknowledging uncertainty will not be punished. She demonstrated in healthcare settings that psychologically safe teams showed better learning behavior, fewer medication errors, and better information sharing. It is the foundational condition for the behavioral antidotes to conformity and professional silence: without psychological safety, devil's advocate roles and structured dissent protocols are implemented performatively rather than substantively.

Team reflexivity and structured debriefing

Team reflexivity is the deliberate collective review of team processes, not just outcomes. The concept was originally adopted from military aviation and was translated into medical settings [24-26]. Structured pre-briefings define roles and invite questions before high-stakes procedures. Structured debriefings review what happened, why, and what should change. Both components have demonstrated efficacy: Vashdi and colleagues [26] showed that teams trained in structured reflexivity protocols showed better coordination and learning on subsequent tasks, and Neily et al. [5] demonstrated that implementing a medical team training program incorporating structured communication and reflexivity was associated with reduced surgical mortality.

Devil's advocate role

Formal assignment of a devil's advocate: a team member whose explicit responsibility is to identify weaknesses in the group's dominant hypothesis, argue for alternatives, and voice concerns is the most direct structural counter to groupthink [8]. The formal assignment removes the social cost that normally suppresses dissent. The devil's advocate is not perceived as obstructionist because their role is institutionalized.

Shared decision-making as input diversification

Formal SDM protocols, which structure the inclusion of patient values and preferences alongside clinical evidence, represent a group-level debiasing intervention of a different kind. They diversify the inputs to the decision by systematically including the patient as a participant [27]. SDM has been shown to reduce overtreatment, improve patient satisfaction, and increase decision concordance between patients and clinicians, which is an empirical demonstration that shows that including diverse perspectives improves group decision quality [21,27]. For the models of the physician–patient relationship within which this occurs, see a corresponding review, which will appear in a review in the January 2027 issue of *IMAJ*.

Software that facilitates brainstorming among team members

Software that facilitates brainstorming by senior physicians and residents, or by any medical team, on the diagnosis and potential treatment, encourages multiple views, opinions and deliberation, and leads to a so-called *democratizing* of the team's discussion.

DISCUSSION AND CONCLUSIONS

Group-level biases in medical teams are not a secondary concern and are not subordinate to the individual cognitive biases, which are reviewed elsewhere in this issue of *IMAJ* [1]. They are a distinct class of errors, with distinct mechanisms, distinct clinical manifestations, and distinct interventions. A medical team composed entirely of metacognitively skilled, low-bias clinicians can still make poor group decisions if its hierarchical structure suppresses information, its social climate creates incivility-driven cognitive impairment, or its decision processes

produce groupthink-driven premature consensus.

The experimental evidence on incivility [14-16] is particularly actionable. It demonstrates that a modifiable social environmental variable, the presence or absence of rude behavior, has measurable, direct effects on clinical performance at the task level. It follows that interventions targeting team culture, not only individual cognition, are genuine patient safety interventions.

Several evidence gaps remain. Most experimental studies use simulated scenarios. Direct measurement of group bias effects on real patient outcomes is methodologically challenging and ethically constrained. The relative contribution of different group biases to clinical error in naturalistic settings is not yet characterized. The scalability of interventions such as structured debriefing and psychological safety training [5,23-26] across diverse healthcare systems requires further study.

The evidence show that medical teams require explicit group dynamics training alongside individual clinical reasoning education. Optimal team performance, described by the Con-Div model as the zone where diverse perspectives are voiced, critically evaluated, and resolved into timely decisions [7-9], does not emerge spontaneously from grouping skilled individuals. It requires structural support, deliberate practice, and a social environment in which information sharing is safe and valued.

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Taxes are the price we pay for a civilized society.
Oliver Wendell Holmes, Jr. (1841–1935), U.S. Supreme Court Justice