Supplemental Digital Table 1

Codes, Definitions, and Examples for Hurdles to Speaking Up

Code	Definition	Examples	Related references
Climate			
Not an environmental norm	Feeling that the culture of the organization does not support speaking up	"This is not a place for speaking up."	1-5
Repercussion expected	Fear of punishment (e.g., losing job, not getting promoted, not wanting someone to get in trouble)	"If I say something now, they will pay me back later."	1,2,6-8
Absence of a speaking-up rubric	Not knowing how to speak when challenging others	"I did not know how to say it."	1,7
Content			
Uncertainty about the issue	Lack of certainty about the speaking-up issue	"I did not know the surgeon and how sleepy she really was."	1,7,8
Uncertainty about the consequences of speaking up	Lack of certainty about the consequences of (not) speaking up	"I wasn't sure what was gonna happen."	1,7,8
Confidence dealing with consequences	Perceived confidence of being able to cope with consequences of not speaking up	"The patient might have gotten more agitated but I could have handled that."	1
Did not realize speaking-up opportunity was happening	Not realizing the issue to speak up about was happening	"I did not hear him saying 'put the head up.'"	New
Impaired situation awareness: Crisis or complexity	Feeling of impaired situation awareness due to the situations' complexity/intensity	"There was so much going on, I did not know what to do first. So l let the speakerphone happen."	New
Not considered a speaking-up situation	Not considering speaking up as a behavioral option	"I would have said something, but here it was clearly not indicated."	New
Routine not to speak up	Not speaking up out of routine	"This is just the way I always do it."	9,10
More immediate action than speaking up	Feeling that the issue required a stronger/more immediate action than speaking up	"I did not challenge him but instead called the chief of staff to have him removed from the OR."	New
Relational			
Perceived hierarchy	Difficulty of speaking up across status differences	"As a resident [in an actual case], it's really hard to challenge an attending."	1,6,7

Respect for territory	Difficulty of speaking up across disciplinary boundaries	"But I am the anesthesiologist and this is a surgical problem."	[1]
Respect for experience	Trusting the recipient's experience; perceived lack of own experience	"She has so much more experience than I have."	[1]
Value of relationship	Fear of damaging the relationship	"You wanna be able to work with him tomorrow."	[1,2,6,7,11]
Familiarity with the individual	Poor relationship with recipient	"But I know him, you just can't talk to him."	[1,2,7]
Futile to speak up	Feeling that speaking up will not make a difference	"Even when you say something, it won't change anything."	[2,3,6,12]
Gender issue	Feeling that gender impairs speaking up	"This is especially difficult for women."	New
Loss of professional respect	Assuming the recipient may not be competent or ambitious enough to understand the concern	"They wouldn't know what I am talking about."	New based on [13,14]
Stereotypes of others on the team	Simplified conception of members of a certain group	"Nurses care much more about the surgeons than about the anesthesiologist." "I would probably faint if a surgeon would say such a reasonable thing."	New
Self			
Perception of limited responsibility	Not feeling responsible for the issue	"It's not my job do to this."	[1]
Avoidance of potentially embarrassing situations	Not wanting to embarrass someone/myself	"That would have been awkward for both of us."	[1,8]
Fear of being wrong	Fear of appearing not knowing, fear of doing more harm when wrongly challenging the recipient	"What if I was wrong?"	[1,7]
Personal reputation	Fear of being viewed negatively/labeled	"I don't want to be the trouble maker."	[2,6-8]
Protection of physician autonomy	Perceived respect for the recipient's autonomy as a physician	"I thought it was her decision."	[1,8]
Natural obedience	Obeying; doing what one has been told to do	"He seemed so confident, so I just did what he said."	[1,15]

Supplemental Digital Table 2

Codes, Definitions, and Examples for Enablers for Speaking Up

Code	Definition	Examples	Related references
Climate			
Environmental norm	Feeling that the culture of the organization supports speaking up	"It's actually the standard in our hospital. You always win when you go with patient safety. That's the triumph card."	[1-5,16-18]
Having a speaking-up rubric	Having a strategy for how to speak when challenging others	"That two-challenge rule for me is very handy."	[1,7,18-21]
Reporting or reflecting on an ineffective speaking-up rubric	Reporting or reflecting on ineffective rubric such as ineffective communication strategy	"I think I did say something but the message somehow did not get through."	New
Debriefing	Perception that debriefing the issue/speaking-up incident is helpful	"I spoke to him afterwards ... I tried to get the message across." "I think there needs to be follow up as close to the moment as possible because trying to gather that team together two or three days later with people's work schedules is impossible. And the further distant you are, the less actual take home learning will occur because people will forget the details." "We can learn so much from this near-miss."	New
Content			
Realizing the speaking-up problem	Noticing the issue to speak up about	"I saw the surgeon nodding off."	New
Should have spoken up	Realization of speaking-up necessity	"Yeah, I should have said something."	New
Certainty about the issue	Certainty about the speaking-up issue	"The surgeon seemed very tired to me."	[1,7,8]
Certainty about the consequences of speaking up	Certainty about the consequences of not speaking up	"If I had allowed the speakerphone, the situation would have been very awkward."	[1,7,8]
Obvious severity of problem	Considering the problem as obviously safety-critical	"When it's obviously wrong, then it's very easy to say something."	[1]
Recognizing the patient safety issue	Considering the issue as patient safety issue	"If a colleague or surgeon is impaired, you have to do something about it." "If we are losing the surgeon, we are losing the patient." "Number one is your patient's safety."	New

Speaking up with ideas is easier than speaking up with concerns	Perception that speaking up with an idea is easier than speaking up with a concern	"I don't have any problem trying to help somebody, say 'Hey listen, what do you think of this?' A lot of times it's just because they hadn't thought of it. That situation I don't find difficult."	[4,16,22]
Performing alternative without prior discussion	Taking over instead of speaking up	"I just put the head down."	New
Relational			
Familiarity with the individual	Being familiar with the recipient	"I know which [surgeons] are better and which ones are worse." "I deal with this surgeon every day, it's a matter of mutual trust."	[1,2,7]
Shared training or experience helps	Perception that shared work/training experience helps to speak up to each other	"You have already worked with them. You are on the same team, openly. It's not as threatening to challenge one of your brothers than someone who has a completely different job description."	New
Maintaining professional respect	Presence of professional respect; assuming the recipient person is competent or ambitious enough to understand the concern	"It did not make sense to me [what they were asking me to do] but I know this person gives good care, so there must be more to the story."	[13,14]
Having a team mental model	Shared idea of how to work together	"There's gotta be an understanding of the situation you are in, how to speak up, what's appropriate or not. Once it's said, 'asystole,' I would assume that most people would back off [and let the patient be treated]."	[23]
Leader inclusiveness	Being explicitly asked to share concerns and ideas and feeling appreciated	"I have a hard time talking to people in my own specialty and criticizing or offering feedback on their behavior unless they ask for it."	[24-26]
Being higher up in hierarchy	Perception that inhabiting a hierarchically high position helps to speak up	"I think it's easier for us to deal with residents because they are, technically, subordinates. They do usually what we ask them to do."	[6]
Asking senior colleague for advice	Calling a more senior colleague for help/reporting person to senior colleague	"I called the chief of staff." "I think the [surgeon] needs to be removed from the operating room. Well, I can't do it. So you gotta get the different chiefs involved."	[27]
Having a second opinion or getting help	Calling another person and asking for second opinion	"I called for help."	[19,28,29]
Having another surgeon there	Calling another surgeon and asking him/her to	"The surgical resident [in an actual case] was expected not to call for	[28,29]

Supplemental digital content for Raemer DB, Kolbe M, Minehart RD, Rudolph JW, Pian-Smith MCM. Improving practicing nontrainee anesthesiologists' ability to speak up to others in the operating room: A simulation-based randomized controlled experiment of an educational intervention and a qualitative analysis of hurdles and enablers to speaking up. Acad Med.

	evaluate or take over the case	help, yet when help arrived he was relieved." "You don't have to take over but allow the surgeon to have a break while someone else takes over."	
Having an ally	Feeling of having someone present who supports one/one's point of view	"It's a big deal to tell a surgeon they are not competent to operate, so if you go and do that, you need backup, because they'll go directly over your head."	28,29
Knowing first names	Knowing first names of members of OR team to be able speak to them	"I call them by their first name and say 'Hey Rob, we need to get XYZ on phone.'"	30
Self			
Feeling responsible for the patient	Perception of responsibility (e.g., for patient)	"I am responsible for the patient's well-being, I had to say something."	1
Feeling invulnerable	Perception of invulnerability	"If I say something, nothing will happen to me."	8
Having an internal speaking-up norm	Being strongly identified with one's profession and feeling an internal norm to speak up	"I have an internal obligation to say something."	4,16,31
Developing more assertiveness	Feeling that personal assertiveness helps to speak up	"There is also an individual growth thing. Where I was five years ago, where I am today, there is a big difference. Like today, I don't care if he is the one who invented the surgery. If something isn't right it's gonna be [a] simple [choice to speak up]."	8,32,33
Having a good reputation	Feeling that one's good reputation allows oneself to take the risk to speak up	"A person who is known, like the 'floorwalker' [who manages the operating rooms], he is usually respected, the surgeons will listen to the 'floorwalker.'"	New

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