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Major Article

Lessons learned from a failed implementation: Effective communication with patients in transmission-based precautions

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A B S T R A C T

Background: Patient engagement with transmission-based precautions can be an important strategy to prevent adverse events related to isolation. Most patient education is still highly prescriptive and is thus unlikely to help. Effective communication requires behavior change, leading to a meaningful dialog between the parties involved.
Objective: evaluate implementation process of a protocol for effective communication with patients in transmission-based precautions (Com-Efe).
Methods: Implementation research using qualitative methods in 4 sequential phases: (1) nonparticipant observation in inpatient wards; (2) design of the intervention for implementation; (3) adaptation of the Com-Efe through workshops with nurses; (4) final assessment of the implementation results through interviews with nurses. Study was performed in a public, secondary, teaching hospital. Consolidated Framework for Implementation Research was used as the reference for interview design and data analysis, aiming to identify barriers and enablers of the implementation process.
Results: Main factors that could have facilitated adherence were beliefs and perceived advantages in using the Com-Efe by nurses. Main barriers that may have contributed to the failure were the unfavorable climate for implementation, insufficient individual and leadership commitment, and the lack of understanding of the concepts underpinning effective communication.
Conclusions: Despite using a systematic approach, the Com-Efe protocol was not fully implemented. The lessons learned in this study allowed us to propose suggestions for future protocol implementations in similar contexts.

BACKGROUND

Standard precautions (SP) and transmission-based precautions (TBP) are fundamental for the prevention and control of the spread of microorganisms in health care facilities.[1] Although the benefits of TBP are recognized, individuals in TBP are exposed to risks related to isolation measures. The results of a systematic review showed evidence of negative effects on the psychological well-being of patients, such as changes in mood, fatigue, anxiety, and depression, among others.[2] Other clinical studies also show that individuals who were isolated had greater dissatisfaction with their care,[3] a greater risk of medication-related errors,[4] and longer hospital stays when compared to patients who were not isolated.[5]

Abbreviations: Com-Efe, Effective Communication; SP, Standard Precautions; TBP, Transmission-Based Precautions; MO, Microorganism; HAI, Health care-associated infection; HCW, Health Care Workers; CFIR, Consolidated Framework for Implementation Research; COVID-19, Coronavirus Disease 2019

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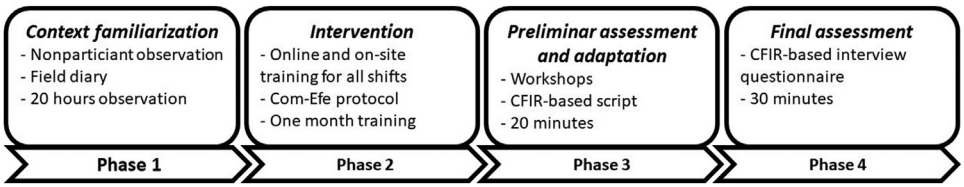

Fig 1. Schematic representation of the phases of the implementation process, provided by authors.

In recent years, the development of institutional policies aimed at health education through effective communication has become a key part of promoting the engagement of patients in their care.[6–13] To support this educational action, in a previous study, we developed and validated a protocol to promote effective communication with patients in TBP. This protocol, called "Com-Efe," aims to provide professionals with tools for the development of educational actions for individuals in TBP to reduce their vulnerability to adverse events related to TBP. The Com-Efe protocol is not intended to be used merely as an adjuvant to the traditional health education process but rather to support a change of approach to a more dialogic action, considering an individual's autonomy and respecting their prior knowledge.[7]

This proposed change in approach can be considered a complex intervention in health facilities. Therefore, we sought to use the tools of implementation science by identifying barriers and facilitators to design the strategy for implementing the Com-Efe protocol in a university hospital. This study aimed to describe the implementation and evaluate both the process and results of implementing the protocol for effective communication with hospitalized patients in TBP (Com-Efe).

METHODS

Study design

This was a study on the implementation of a protocol for effective communication with hospitalized patients in TBP (Com-Efe)[7] using multiple qualitative methods. The theoretical framework used to describe and analyze the implementation process was the Consolidated Framework for Implementation Research - CFIR.[14] The study was developed in 4 phases (Fig 1) to answer the following research questions: "How does the process of implementing the Com-Efe protocol in a hospital happen?," and "What are the barriers and facilitators for implementing the Com-Efe protocol?."

Setting

The study was carried out in the medical and surgical care wards of a teaching hospital with approximately 200 beds, located in the city of São Paulo, Brazil. The hospital have some national awards related to quality of care and humanization, among others, although no specific certification from hospital accreditation bodies.

Participants

The participants were nurses who worked in the medical and surgical care wards and in the Hospital Infection Control Service.

Implementation phases and data collection

The implementation process was carried out in sequential phases (Fig 1), as described below:

Phase 1: Context familiarization - the familiarization of the context was conducted in April and May 2018. Non-participant observation was chosen to deepen understanding of the context in which patient education for TBP was carried out. Observation focused on the interactions among health workers and patients, the adherence to TBP, as well as the environmental physical structure of the ward that could affect such adherence. Information about the context was collected over 20 non-sequential hours (10 observation sessions with an average of 2 hours each) and recorded in a field diary by one of the researchers (L.F.J.). The researcher placed herself in several strategic observation locations, such as the prescription area, medication room, procedure room, hallways, bedrooms, living rooms, administrative rooms, and dining room. To avoid potential bias only the nurse's supervisors were fully informed about the research objectives during the observation phase. As part of the research feedback, this information was further provided to the health care team in the subsequent phase.

Phase 2: Intervention - Initially, the Com-Efe protocol was adapted to the standard format for the operational protocols of the institution in which the study was performed and later inserted into the online training system. Additionally, an expository class on the subject was offered to nurses working at the site. The materials were available for 18 days. After this period, the researcher (L.F.J.) conducted on-site training for all shifts of the wards involved to clarify questions about the materials available on the online platform and to raise awareness among the nurses involved. The training was carried out with a focus on the concepts of health education and vulnerability—concepts used to design the Com-Efe protocol. After the face-to-face trainings, the following support materials were made available for the wards: the Com-Efe protocol was printed in the hospital's standard format, a banner advertising the Com-Efe protocol was placed, and an effective communication stamp was affixed to the patients' medical records after the approach was completed using the Com-Efe protocol.

Phase 3: Preliminary assessment and adaptation - To analyze the implementation process and identify the necessary adaptations, workshops led by one of the researchers (L.F.J.) were held with the nurses, using a questionnaire to identify barriers and facilitators in the implementation process for the Com-Efe protocol. The questions were chosen based on the relevance and importance of the CFIR constructs for this stage of the Com-Efe protocol adaptation. Therefore, the following constructs were used: intervention origin, complexity, relative advantage, and compatibility. The workshops lasted 20 minutes each; the participants received and signed an informed consent form. The workshop results were recorded and transcribed *verbatim*.

Phase 4: Final assessment - The final assessment of the implementation process was carried out through semi structured interviews by telephone with nurses from the wards involved. One of the researchers (L.F.J.) carried out the interviews after the interviewees had signed a consent form, and were recorded and transcribed *verbatim*.

Data analysis

Data analysis was performed using descriptive analysis (Phase 1) and thematic content analysis of the qualitative data (Phases 2 and 4). The data collected in Phase 1, contained in the field diary, were initially organized in the form of a hand-written text to facilitate

discussion among researchers. We identified relevant aspects representative of the relationships and interactions between health professionals and other individuals in the context. These selected aspects were classified according to the CFIR, focusing on the domains "characteristics of individuals" and "internal setting."[14-16] For the analysis of data from the workshops and semi structured interviews, thematic content analysis was used as described by Bardin (2016).[17] After reading the transcript, coding was performed considering the CFIR domains as the categories and attributing the registration units that were found to their respective constructs, according to the inclusion and exclusion criteria for the analysis of the CFIR constructs.[14] In the last stage of data processing, the inference and interpretation of the collected and categorized information was performed, exploring the meanings attributed to the categories.

The study followed the steps recommended in the Consolidated Criteria for Reporting Qualitative Research (COREQ).[18]

RESULTS

Phase 1: Context familiarization

At this stage, we sought to understand the relationships and interactions between HCWs and other individuals in the health care environment, mainly to identify potential barriers and facilitators for the implementation of the Com-Efe protocol. Ten observation sessions were performed in April and May 2018, with an average of 2 hours for each session. The total number of hospital beds available at the time of data collection was 34 and 31 in the surgical and medical clinics, respectively. At the time of observation, there were 10 patients in TBP in the wards, with 7 nursing professionals in the medical clinic and 9 nursing professionals in the surgical clinic.

In the surgical clinic ward, no atypical activities or situations that could interfere with the work process were witnessed. In the medical clinic ward, there was great movement during all the observed sessions, with activities performed by different types of HCWs. It was observed that the registered nurses played a leadership role in this context, which could be demonstrated through the intensity of the interactions with the other HCWs. These nurses represented a reference for all who were present in this context; however, their interactions with patients were less intense compared to the interactions between the patients and the auxiliary nurses.

Through the observations notes in the field diary, elements that were classified as facilitators or barriers emerged and were categorized according to the domains and constructs of the CFIR. We identified 4 main stakeholder groups (nursing supervisors, infection prevention and control teams, nurses and patients). It was observed that all these identified groups had a potentially high impact in influencing the context, while the intervention had great significance in their routines/health once the Com-Efe protocol was implemented.

Phase 2 – Intervention

After meetings with the stakeholders identified in the previous phase, on-site training dissemination was performed. The training was carried out in person by a researcher with experience in teaching and TBP (L.F.J.), in all shifts for both wards. The invited participants were 14 registered nurses from the medical clinic and 14 registered nurses from the surgical clinic, including the nursing supervisors of the respective units; participants were invited via email, with the Com-Efe protocol attached and an indication for reading it. However, the material was accessed for prior reading by only 5 nurses, representing 18% of the total participants. In total, 15 nurses from the medical wards and 9 from the surgical wards participated in the on-site training, corresponding to 100% of the nurses who were on duty during the training period. After the in-person training, the following support materials were made available in the units: the printed Com-Efe protocol, a banner advertising the Com-Efe protocol and Com-Efe self-adhesive stamps. The nurses were encouraged to apply the self-adhesive stamps any time they used Com-Efe approach to ensure this was informed in the patients' medical records.

Phase 3: Preliminary assessment and adaptation

The elements that emerged from the workshops discussion were coded into 24 initial categories, and organized into 17 intermediate categories, which remained as the final thematic categories (TC), which in turn were distributed into the 5 domains of the CFIR. Barriers and facilitators were highlighted within each category inserted in the CFIR domains and constructs (Table 1).

After analyzing the barriers and facilitators, the implementation process underwent adaptations related to the dissemination of available resources and the main Com-Efe concepts among the participant's nurses. Only the adaptable periphery of the Com-Efe protocol was changed; the protocol's core component, the concept of vulnerability, was not changed. This considered the relationships with the patients in a dialectical process. Adaptations were made to the training content and the format of the materials to be used with the patients. An educational video was developed, which presented the Com-Efe protocol and its advantages; the video was published on the institution's official website and on social networks to raise awareness among HCWs regarding the Com-Efe protocol and the essential concepts it is based on. In addition, a booklet was developed and delivered to the wards to support bedside guidance for patients in TBP.

Phase 4: Final assessment

The elements emerging in the final assessment interviews were coded into 8 initial categories and divided into 16 intermediate categories, which were organized into 25 final thematic categories and later categorized into the domains and constructs of the CFIR. Barriers and facilitators were highlighted within each domain and construct of the CFIR (Table 1).

In the construct related to the patients' needs, the lack of dialog between HCWs and the patients was identified as a barrier, which directly impacted the core element of the Com-Efe protocol. As facilitators, we identified the perception of the need to guide patients and their families to improve safety during hospitalization regarding to the TBP-related adverse events. In the other constructs, the most frequently identified barriers were related to the institutional incorporation, such as the fact that there was no formally appointed institutional leader for the implementation process, and the leadership's lack of commitment to the implementation of the Com-Efe protocol. Finally, an important barrier was the unfavorable climate for prioritizing the Com-Efe protocol implementation.

It must be noted that in some circumstances, a given construct was understood as a barrier or facilitator, depending on how the situation was perceived. In terms of the constructs of culture and structural characteristics, the existence of a safety culture for a patient in relation to health care-associated infection (HAI) and the existence of an adequate physical structure were pointed out. At the same time, there are still failures in adherence to TBP, among other failures related to HAI prevention.

Some constructs in the CFIR were not identified in the emergent themes throughout the interviews and workshop analysis, such as cost, testability, external incentive policies, readiness for implementation, self-efficacy, engagement, supporters, reflection and evaluation, and external agents of change.

Finally, our results showed that there was no effective incorporation of the Com-Efe protocol as a routine tool for improving the

Table 1
Classification of barriers and facilitators identified during the implementation effective communication (Com-Efe). São Paulo, Brazil, 2022

Intervention characteristics (CFIR domain)			
CFIR construct	Barriers	Enablers	Quotations (examples)
Intervention Source		X	*"I believe that it is based on evidence; just the fact that it comes from a researcher at the School of Nursing, with all the requirements there, is already based on this principle"*
Evidence Strength and Quality		X	*"Well, I think this implementation comes to add a better quality of care, especially for patients in TBP, mainly at the time of the pandemic, where we have these TBP involved, then you bring quality not only to the professional, but to the patient and family."*
Relative Advantage		X	*"By the methodology of the Com-Efe protocol, I understand that it is a more systematized logic, with the steps you must follow, what are the steps, compared to what we did before Com-Efe; of course we gave the [patient] orientation but it happened in a not so standardized way."*
Adaptability	X		*"I think it has to be put on computers and on TV reminders, because here at the hospital we have people who work with video, this could also be put in hospitalization area"*
Complexity	X		*"[...] what we felt was that during our work, because of the routine, we were in a hurry to do everything, and not using it as it should."*
Design Quality and Packaging	X		*"And what I think about the implementation of this stamp [effective communication stamp in TBP] really is that it is not very useful"*
Outer setting (CFIR Domain)			
CFIR construct	Barriers	Enablers	Quotations (examples)
Cosmopolitanism	X		*"As far as I know, no other place was contacted to talk about Com-Efe"*
Patient's Needs and Resources	X		*[...] "one of the nurses' complaints is the lack of control by the family, and maybe it's lack of guidance. It is difficult for a lay person to understand that a bacterium they do not see can be harmful to other patients. And this is of little importance, because they are only concerned about their family members"*
Peer Pressure		X	*"I think when you bring experiences with positive results from other places and present them before implementing, it makes a difference."*
Inner setting (CFIR Domain)			
CFIR construct	Barriers	Enablers	Quotations (examples)
Structural Characteristics	X	X	*"Frequently there are individuals in TBP, mainly due to colonization/infection by multidrug-resistant microorganisms."* *"[...] there are many family members and companions, and then they stay mainly in the room with 6 patients, they all become friends, the family members, then they keep asking, want to help each other, so the first thing we do is to orient them about isolation, because that way, the family member who is in isolation, [. . .] but this family member can no longer sit in the common TV room, as he/she used to do, so the first thing is to tell this family member not to go to the TV room, not to go to the nursing station and keep putting their hands on the counter when talking to us."*
Networks and Communications	X		*"Effective communication occurs in an insufficient way and suggests that the individual believes that everyone knows what should be done regarding HAI and TBP prevention measures."*
Culture	X	X	*"There is frequent training and continuous presence of students and researchers, which can be a favorable element for the permeability of professionals to innovations in care practices."* *"Lay people and doctors also do not use PPE correctly, what takes away our authority in regards to the family"*
Implementation Climate	X		*"[...] in the case of isolation, you go to the protocol, read, and along the way someone stops you, you have already forgotten the approach points. A simple thing to do, like going to the protocol, checking and seeing if I have oriented everything, can be very difficult."*
Tension for Change		X	*"I had no idea that it would be possible to do something systematized, we felt that maybe what we are doing was not the best."*

engagement of patients in TBP in their own care; thus, the implementation was not successful. The participants recognized that they had low adherence to the Com-Efe protocol. From the main lessons learned in this implementation process, we develop suggestions to increase the likelihood of success in implementing the Com-Efe protocol in similar contexts in the future. The results are presented in a table according to the domain and construct of the CFIR (Table 2).

DISCUSSION

The implementation of the Com-Efe protocol was characterized as a failure since it was not incorporated into the routines of the medical and surgical clinics during the study period. There are few publications dedicated to detailing the reasons for implementation failure, and this is one of the strengths of the present study. The implementation science allows for an organized and in-depth documentation of barriers and facilitators identified throughout an implementation process and for collaboration in the implementation of several innovations in similar contexts, as long as adaptations were made. However, failures in implementation processes are equally relevant from the perspective of institutional and collective learning.[19-21]

In our study, we attributed the implementation failure to 4 main elements: the origin of the intervention, institutional incorporation, understanding the concepts of effective communication, and the

Table 2
Lessons learned and suggestions for future strategies for implementing effective communication (Com-Efe). São Paulo, Brazil, 2021

CFIR Domains and constructs	Main lessons learned in the implementation process	Suggestions for future implementation strategies
INTERVENTION CHARACTERISTICS		
Intervention Source	The individuals did not develop a sense of ownership since they did not feel themselves involved in the intervention development.	• Engage key stakeholders in TBP measures from the beginning of the implementation process. • Identify opinion leaders to form partnerships for the implementation process from the beginning. • Offer technical and scientific support throughout the implementation process.
Evidence Strength and Quality	Familiarization with robust scientific evidence has contributed to promoting the engagement of some key stakeholders.	• Develop innovative strategies, but as close as possible to what is already being done. • Present robust scientific evidence and make the evidence available for consultation throughout the implementation process.
Relative Advantage	Participants were not always able to identify the advantages of using a new work process compared to what was already done.	• Present and discuss the benefits of the intervention to key stakeholders in the early stage of implementation. • Develop strategies to increase awareness of patient-centered care and preservation of patient's autonomy.
OUTER SETTING		
Patient's Needs and Resources	HCWs had different degrees of perception about the health needs of patients in TBP.	• Evaluate the perception of professionals regarding the recognition of the patient as the center of care and the patient's needs as a priority. • Develop diversified strategies for dissemination and training of the health care team, such as virtual and printed materials, online and in loco training. • Establish communities of practice to foster debate about the needs of patients in TBP.
Peer Pressure	The use of the same or similar intervention in other institutions such as benchmarking could positively influence the implementation	• Identify if there is competitive pressure, that is, if the institution is influenced by the actions of another institution. • Develop strategies to integrate experiences from other services. (eg, examples of success using the same tool or similar tools).
INNER SETTING		
Implementation Climate	The institutional climate, external and internal economic and socio-political factors influenced the implementation. The high demand for activities and the insufficient prioritization of the intervention in relation to the existing routine hampered the implementation.	• When planning implementation, consider the political-economic status of the institution. • Consider delaying implementation when identifying a climate incompatible with the intervention. • Identify the degree of importance given to the intervention from an institutional perspective. • Previously investigate the positive and facilitating impact that the intervention may bring to the problems perceived by individuals, especially HCWs.
CHARACTERISTICS OF INDIVIDUALS		
Individual Stage of Change	Great variations in the degree of individual commitment to implementation hampered adherence to the Com-Efe protocol.	• Identify whether key stakeholders perceive the current situation as warranting change. • Identify whether the individuals involved in the context are receptive to the idea of systematizing effective communication processes with patients in TBP. • Identify the level of influence of each of the key stakeholders in the process in order to direct intervention planning.
PROCESS		
Opinion Leaders	The low level of leadership involvement negatively affected adherence by the other team members.	• Identify whether the intervention fits the organization's culture in terms of demands for leadership. • Identify whether the use of the intervention is supported by leaders. • Establish preliminary contacts with service leaders and include them in the implementation planning process.

context of the institution at the time of the study. These elements are not completely independent; in contrast, they exert complex influences on each other.

Regarding the origin of the intervention, even if there was recognition and appreciation by the participants regarding the well-recognized academic origin of the protocol, the need for the intervention did not stem from institutional needs, affecting the feeling of ownership and the urgency of change. The results obtained suggest that the education of patients in TBP although recognized as evidence-based, was not seen as an action that should be prioritized by the institution in that moment. Lack of time, shortage of health care personnel, lack of standardization, lack of knowledge and skills can be factors that influence the prioritization process.[22] Even when patient education is recognized as a priority, it does not seem to have any further reflection on the current process regarding its prescriptive or dialogic nature. Therefore, it is necessary to develop strategies that lead to this reflection, in addition to identifying the institution's level of expectation in reviewing the relationships between HCWs and patients.

Despite being identified in relation to individual influences on the protocol implementation, there was a failure in the engagement of the stakeholders for a new way of thinking about education for TBP, carried out with the aim of engaging patients in their own care.[23] Research has shown that HAI prevention behaviors can be affected by the psychological status of individuals.[24] Therefore, assessing and identifying the main stakeholders on an individual basis can be key for raising the awareness needed to change attitudes and behaviors.

Throughout the implementation process, there was a gap in understanding the concept of effective communication. Most HCWs remain focused on the use of traditional and prescriptive education

models, which can be provided to patients and their families without a real commitment to a dialogic attitude. Therefore, effective communication did not seem to have been incorporated, and the dialogic component was not captured during the training stages. Patient-centered care remains more focused on using hard or soft-hard technologies and immediate problem solving, while the soft skills that produce effective communication have not been prioritized. It is necessary to make changes in the work process through the effective use of soft skills and their links with other technologies.

Nevertheless, the idea of systematizing the educational process of patients in TBP seems to have been fully captured and perceived as a possible advantage in the qualification of nursing actions.

Effective communication among HCWs and between HCWs and patients is essential for the implementation of successful interventions. The Com-Efe protocol can support of effective communication between HCWs and patients, as it is a systematized process while allowing for dialog between the parties, in addition to considering individual elements of the patients, aiming to prevent adverse events related to TBP.

The full incorporation of the Com-Efe protocol did not take place during the Com-Efe implementation process also due to institutional issues. The first was related to the current context of the institution, in which the COVID-19 pandemic were expected to be a favorable moment for the use of Com-Efe protocol, which, however, did not happen. We believe that, in addition to the institution's internal factors, the dramatic context of the Brazilian response to COVID-19 had a negative influence.[25,26] The second was related to the fact that the leaders were not strongly engaged with the implementation process. This was perceived by the frontline nurses, also reflecting their attitudes towards not prioritizing the subject. Leadership is recognized as an important indicator for the development of organizational culture and effective performance in the provision of health care. There is a strong relationship between leadership and safety and effectiveness and equity in care.[27]

In our study, we used the CFIR as a frame of reference for the methodological development and analysis of the results. However, not all constructs proposed by Damschroder et al. (2009)[14] could be identified and addressed.

Study limitations

The concurrence of the pandemic with the development of the study was an uncontrolled element and certainly brought interference in both the implementation process and its assessment. Additionally, due to the high turnover of nurses, many of the participants who engaged in the implementation process in the beginning were no longer in the study setting, reducing the number of potential interviewees. However, we consider that these limitations are unavoidable in real-life studies and are part of the natural challenges of implementation processes.

CONCLUSIONS

The context in which the protocol implementation was carried out proved to be complex, presenting barriers from the beginning of the process, which could not be overcome by the extant facilitating factors and the adopted implementation strategies. In this study, we identified that one of the main barriers to the full implementation of the Com-Efe protocol was the difficulty in incorporating the central element, the concept of vulnerability, which seeks to reduce adverse events related to TBP, through a dialogical relationship between HCWs and patients. Relevant barriers referring to the institutional context also had a negative influence.

The lessons learned in this study allowed us to propose suggestions for future implementations in similar contexts. Among them are the development of strategies to generate awareness of patient-centered care, maintaining a patient's autonomy and seeking a dialogical process for the patient's engagement.

ETHICS APPROVAL AND CONSENT TO PARTICIPANT

The research project was approved by the Research Ethics Committee of the University of São Paulo School of Nursing and the University Hospital of University of São Paulo, and the Free and Informed Consent Terms were drawn up for the participants in accordance with resolution 466/12 (CAEE: 80384517.5.0000.5392).

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