

## Expanding frontiers of risk management: care safety in nursing home during COVID-19 pandemic

Running title: Nursing home safety in COVID-19

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Abstract word count: 285

Main text word count: 1239

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## **Expanding frontiers of risk management: care safety in nursing home during COVID-19 pandemic**

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### **Abstract**

**Background** - Nursing homes provide long-term care and have residential-oriented hospitalizations characterized by medical, nursing, and social-care treatments for a typically geriatric population. In the current emergency phase, the problem of infections in residential structures for the elderly is taking on considerable importance in relation to the significant prevalence rates of COVID-19.

**Safety improvement strategies** - Prevention and control measures for SARS-CoV-2 infection in nursing homes should be planned before a possible outbreak of COVID-19 occurs and should be intensified during any exacerbation of the same. Each facility should identify a properly trained contact person - also external - for the prevention and control of infections, who can refer to a multidisciplinary support committee and who is in close contact with the local health authorities. The contact person should collaborate with professionals in order to prepare a prevention and intervention plan that considers national provisions and scientific evidence, the requirements for reporting patients with symptoms compatible with COVID-19, the indications for the management of suspected, probable or confirmed cases of COVID-19.

**Discussion** - Adequate risk management in residential structures implies the establishment of a coordination committee with dedicated staff, the implementation of a surveillance program for the rapid recognition of the outbreaks, the identification of suitable premises and equipment, the application of universal precautions, the adaptation of care plans to reduce the possibility of contagion among residents, the protection of operators and staff training initiatives.

**Keywords:** COVID-19 pandemic, nursing homes, risk management, care safety, infection control.

Abstract word count: 235

Main text word count: 1239

## **Introduction**

The management of SARS-CoV-2 infections constitutes a vital task in the field of health care due to the costs in terms of human and economic resources, as well as the possibility of prevention through the implementation of surveillance and control measures [1].

In the current emergency phase, the problem of infections in residential structures for the elderly is taking on considerable importance in relation to the significant prevalence rates of COVID-19 [2].

The management of the COVID-19 outbreak in similar contexts is extremely more complex than that in the hospital for three main reasons. Firstly, an important reflection must be made on the features of the assisted population. Indeed, the clinical manifestations of infectious diseases are often subtle in older people. In addition, the patient may not be able to complain of clinical ailments or may do so late. Finally, the clinical data can be difficult to interpret because of the presence of concomitant diseases and because the symptoms present themselves with nuanced features. Secondly, it is useful to consider the reduced number of health professionals, mainly nurses, involved in the care pathway. Thirdly, the difficult access to virological and instrumental investigations complicates the correct diagnostic classification and poses serious problems concerning the safety of patients and professionals.

In view of the foregoing, the guidelines and standards used for the prevention, diagnosis, and surveillance of COVID-19 in hospital patients may not be applicable or may be inappropriate for nursing home patients [3]. Therefore, it is currently essential for nursing homes to implement risk management plans to significantly tackle the pandemic emergency [4].

The prevention strategies outlined are based on the general principles of infection control as well as on the experience of clinical risk managers and health professionals engaged in the management of these facilities during the pandemic. From a methodological point of view, the present paper proposes preventive strategies to be developed through a theoretical construct that indicates the measures to be taken. In particular, the evaluation of the nursing home system was carried out using the SEIPS (Systems Engineering Initiative for Patient Safety) model to correlate the design aspects (structure) to patient safety (outcome) through the care processes [5]. The evaluation of the structural aspects (e.g. physical environment, organizational culture, infection surveillance systems) was carried out taking into account the peculiarities of the care paths and the operativeness of the professionals involved in the assistance, producing results that can be expressed in terms of desirable outcomes. Briefly, the improvement strategies were developed by addressing specific questions (Table 1)

## **Safety improvement strategies**

Prevention and control measures for SARS-CoV-2 infection in nursing homes should be planned before a possible outbreak of COVID-19 occurs and should be intensified during any exacerbation of the same [6].

Each facility should identify a properly trained contact person - also external - for the prevention and control of infections, who can refer to a multidisciplinary support committee and who is in close contact with the local health authorities. The contact person should collaborate with professionals in order to prepare a prevention and intervention plan that considers national provisions and scientific evidence, the requirements for reporting patients with symptoms compatible with COVID-19, the indications for the management of suspected, probable or confirmed cases of COVID-19 (Figure 1).

The protection of healthcare professionals is imperative not only to safeguard the continuity of care but also to ensure that professionals do not become a vehicle of infection [7]. It is also crucial to protect operators as far as possible from physical and psychological stress so that they can fulfill their role in the context of a high workload. Nonetheless, the risk management unit must activate training and refresher courses, also online, on the risks of occupational exposure, the prevention and protection measures available, as well as the clinical features of COVID-19. The training activity must focus on hand and respiratory hygiene, use of appropriate personal protective equipment (in relation to risk assessment), good safety practices in the use of injection needles, safe waste disposal, appropriate management of the linen, environmental cleaning and sterilization of equipment.

As for the prevention of dissemination among guests, it is essential to promptly activate the division of the structure into separate operating areas, control movement between areas, and avoid overcrowding. [8]. For the same purpose, it is useful to identify a single access point to the structure where the temperature can be measured and personal protective equipment can be found. Require personnel to always wear the surgical mask and disposable gloves recommending the replacement of gloves and hand hygiene after each contact with a guest. Furthermore, it is important to start an active search for potential cases between guests and operators by detecting body temperature and performing swabs for SARS-CoV-2.

Concerning the management of COVID-19 cases, it is recommended to provide insulation in a single room, equipped with good ventilation and its own bathroom; if possible, medical devices for monitoring should be left inside and the access door must be kept closed. If single rooms cannot be provided, cohort isolation of COVID-19 cases in multi-bed rooms should be planned. In addition, it is important to identify predetermined routes for transfers within the facility. Finally, direct assistance in suspected cases should be planned so as to limit the number of operators in contact and optimize the use of personal protective equipment.

Visits by family members, visitors and volunteers should be limited, if not interrupted, to prevent contagion. In case of necessity and with prior authorization, access to the structure can be allowed in compliance with the necessary

precautions [9]. In particular, access should only be granted to a single family member who has been properly trained on hand hygiene and on the proper use of the surgical mask. It would be advisable to promote communication through phone calls and video calls with relatives and friends.

## **Discussion**

The important differences between hospitals and nursing homes in terms of population, type of care provided, transmission potential, economic resources, availability of health professionals, diagnostic possibilities, prevention, and control imply the development of specific strategies [10].

Unfortunately, the heavy situation in terms of infections and deaths in nursing homes is attributable to the absence of systemic planning aimed at anticipating risks. In this perspective, a systemic approach that allows both a proactive and reactive assessment for the implementation of the safety of care through the redefinition of care pathways is fundamental [11]. The implementation of an operational methodology aimed at defining the different aspects of a caring environment and characterizing the interactions between the different components can guarantee the correct adaptive response to the pandemic emergency.

The commitment for the management of the emergency phase in nursing homes must involve the implementation of projects aimed at improving care through the early detection of signs and symptoms, the use of standard diagnostic criteria, the adoption of adequate preventive measures, the establishment of systems for surveillance and control. Similar measures can help achieve desirable outcomes such as patient safety, worker well-being, reduction of infectious risk, and improvement of organizational performance [12-13].

Consequently, for adequate risk management in residential structures, the establishment of a coordination committee with dedicated staff, the implementation of a surveillance program for the rapid recognition of the outbreaks, the identification of suitable premises and equipment, the application of universal precautions, the adaptation of care plans to reduce the possibility of contagion among residents, the protection of operators and staff training initiatives are considered essential [14].

## **Authors' contributions**

All Authors contributed to manuscript drafting and critical discussion and approved the definitive version.

## **Competing interests**

The Authors have no competing interests to disclose

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## Figures legend

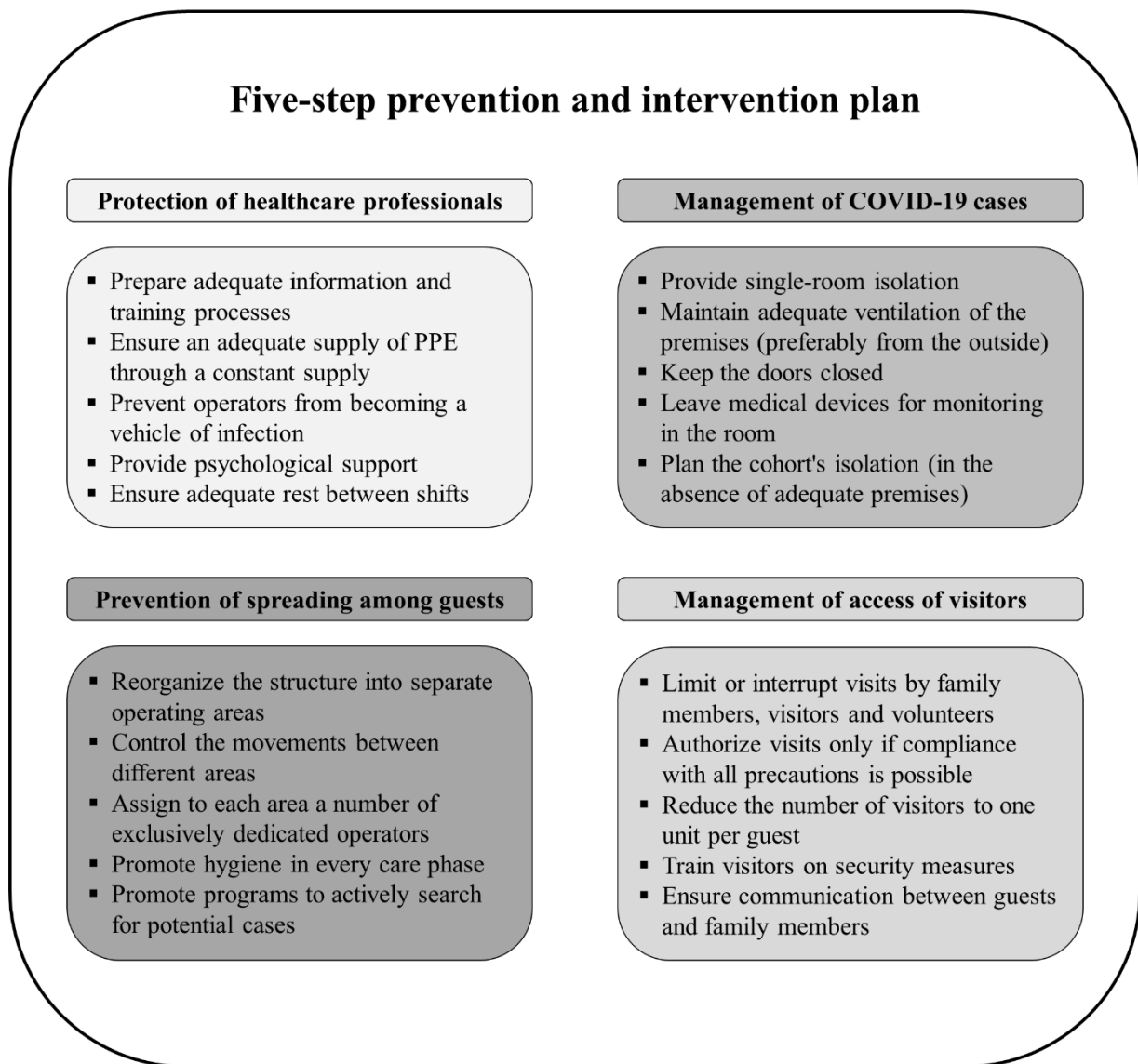


Figure 1. Five-step prevention and intervention plan for management of COVID-19 pandemic in nursing homes.



## Table legend

Table 1. Questions addressed for the development of improvement strategies.

1. Definition of the characteristics and duties of the professional involved in the assistance
2. Definition of care activities and tasks that can increase the infectious risk by affecting the safety of the patient and professionals
3. Characterization of the environment for the identification of sources of risk
4. Identification of the devices used in the care pathways capable of increasing or decreasing the probability of adverse events
5. Characterization of organizational aspects capable of promoting or preventing exposure to infectious risk
6. Definition of the ways in which the environment, professionals, devices and organization can facilitate or hinder the prevention of infectious risk