

# Enteral stoma care during the COVID-19 pandemic: practical advice

## Introduction

Coronavirus disease 2019 (COVID-19) is an infection caused by the novel SARS-CoV-2 virus, first detected in China in December 2019 [1] and declared a pandemic by the World Health Organization (WHO) on 11 March 2020 [2]. The COVID-19 outbreak represents the biggest challenge for the global health system since the Second World War [3], with 6 535 354 confirmed cases and 387 155 deaths as of 6 June 2020 [4]. The healthcare, societal and financial burden of COVID-19 on patient management is associated with potentially catastrophic effects for non-COVID-19 patients due to untimely, delayed and suboptimal care during the pandemic [5–7]. Stoma patients may represent a frail and neglected category in this scenario. To face the COVID-19 pandemic, metamorphosis of surgical services is required to prevent in-hospital transmission, optimize allocation of scarce resources, establish new intensive care units (ICUs) and redeploy healthcare workers to emergency departments or wards dedicated to COVID-19 [8–10]. Several recommendations and guidelines on surgery [10–15] and endoscopy [16–19] have already been published, but none are specifically focused on stoma patients. Furthermore, although many recommendations suggest that performance of stoma surgery should be considered instead of primary anastomosis in high-risk emergency situations [14,20–23] none of those consider the potential problems related to reduced availability of stoma care services and reduced access in the hospital to caregivers for stoma training, which may represent a problem for elderly and frail patients after discharge.

The Multidisciplinary Italian Study group for Stomas (MISSTO) is a multidisciplinary group, founded in 2018, with the aim of delivering recommendations, guidelines and educational activities for stoma patients [24]. The guidelines for the surgical management of enteral stomas in adults were published in 2019 [25].

A rapid expert consensus within the MISSTO group, involving stoma nurses and colorectal surgeons, often working in centres severely affected by the COVID-19 outbreak, was organized to debate the potential issues of stoma care during the pandemic, especially in the most critical phases [26]. In light of the authors' personal experience and literature background, mainly based on expert opinion, a consensus was reached when all participants agreed on a topic.

This article provides practical advice for optimal enteral stoma care in adults during the COVID-19 pandemic. A translation into four other languages (Traditional and Simplified Chinese, Spanish and Italian) is available in the online Supporting Information to promote global dissemination.

## Ostomy service organization

The COVID-19 outbreak is severely stressing healthcare systems worldwide. Reduction of nonessential services and reallocation of resources and staff represent the first response to the overwhelming need for ICU beds and dedicated COVID-19 units [27]. A shortage of healthcare workers, due to sickness or imposed isolation, may further stretch the system. In-hospital and outpatient stoma care must be provided with the aim of minimizing the burden on the overall pandemic response.

*Stoma nurses possess a unique skillset in the hospital and a minimum number should be kept to provide such services and not be redeployed to other roles, to avoid service disruption* (Table 1). Keeping senior stoma nurses is preferable, to enable the delivery of timely and effective assistance and to minimize the risk of simultaneous infection. Student nurses, nurses in training or surgical trainees should not attend the clinic. An exception may be made for low-resource settings, when condensed stoma training provided to other healthcare workers can guarantee service continuity to minimize the impact of infection and quarantine on the personnel available to provide specialist nurse care.

*A periodic assessment of stoma devices is also recommended*, because the lock-down initiatives could affect normal supply.

*The stoma outpatient clinic should be located in an easily accessible area of the hospital*, and, if possible, away from the emergency department, with clear visual signs highlighting the route.

*In areas with the highest peaks of COVID-19, ostomy services may be centralized to a few referral centres* in order to reduce local workload and to streamline the local response to the growing number of COVID-19 admissions. In this phase, the establishment of a territorial network of ostomy services may be of benefit for patients whose usual referral centres have been temporarily suspended.

All recommended actions for the organization of the ostomy service environment are summarized in Table 1.

**Table 1** Stoma service organization during the COVID-19 pandemic.

Healthcare workers	Specialized stoma nurse Surgeon Other possible stakeholders (gynaecologist, psychologist, dietician, anesthesiologist)
Main functions	Preoperative information Postoperative stoma management Counselling Initial stoma device selection and delivery Patient and caregiver education Rehabilitation programme
Actions	No redeployment for senior stoma nurses No (or only condensed) training programme in stoma care Periodic assessment of stoma devices Ensure easily accessible stoma outpatient service Consider stoma service centralization and territorial network in critical areas

## Outpatient management

The general philosophy for any healthcare service during the outbreak is to avoid unnecessary risks to both patients and healthcare workers. Viral RNA has been detected in the faeces of COVID-19 patients [28] and potential transmission during enteral stoma manipulation cannot be excluded.

*Follow-up and elective visits to the stoma care clinic should be cancelled and/or postponed.* A phone assessment to triage the patients is necessary to avoid undertreatment. Administrative issues, such as prescriptions for items and accessories, should be carried out remotely. Local authorities should give indications to extend the validity of all administrative procedures.

*Stoma patients need psychological support:* during the COVID-19 outbreak, phone calls by healthcare professionals or caregivers can relieve psychological difficulties that arise from isolation measures (Table 2).

*Telemedicine must be encouraged* and is effective in most cases. During follow-up, evidence suggests that it can reduce readmission rates and the burden of travel [29]. This also allows healthcare workers to visually analyse clinical signs or lesions and to evaluate their relationship with symptoms. Furthermore, telemedicine allows stoma therapists to correct any errors in stoma management, such as cleaning, application of powders or ointments and the correct positioning of stoma devices. Telemedicine may enforce, in this period of social isolation, the relationship between an ostomy patient and his/her caregiver, especially if the caregiver is not a family member. Follow-up care by mobile apps improves the level of psychosocial adjustment and the stoma self-efficacy score when compared with routine discharge care, with a reduction in stoma-related complications [30] (Table 2). The Italian Federation of Incontinent and Stoma Patients (FAIS, Federazione

Associazioni Incontinenti e Stomizzati) released a mobile application called S.O.S. (Smart Ostomy Support) aimed at supporting incontinent and stoma patients and their caregivers to improve their quality of life [31]. Any other issue that is not manageable by telemedicine or remotely should be assessed by homecare service wherever possible.

*In-person visits should be maintained for triaging active symptoms or for the management of relevant stoma complications, such as:*

- 1 significant stoma bleeding;
- 2 stomal prolapse or stoma intussusception with symptoms of intestinal obstruction;
- 3 stoma necrosis;
- 4 severe stoma retraction;
- 5 parastomal abscess or fistula;
- 6 accidental recurrent (more than five times a day) removal of ostomy devices.

In the presence of these criteria, measures should be in place to allow stoma patients to be evaluated directly at a stoma centre and to avoid potentially unsafe exposure to the emergency department.

Preliminary phone or telemedicine interviews, the day before whenever possible, are mandatory in triaging symptoms related to COVID-19 and for risk stratification into two categories:

- 1 low risk: no symptoms (i.e. cough, fever, breathlessness, diarrhoea, hypo/anosmia, hypo/ageusia), no contact with SARS-CoV-2-positive persons, no stay in a high-risk area during the previous 14 days;
- 2 high risk: presence of symptoms and/or contact with SARS-CoV-2-positive persons and/or stay in a high-risk area during the previous 14 days.

Confirmed COVID-19 patients should not enter the stoma centre, and the visit should be performed in a

**Table 2** Outpatient management.

Stoma care home service	Minimize stoma centre visits Reduce emergency department attendance Reduce need for hospitalization
Phone contact	Management of administrative problems (e.g. device prescription) COVID-19 risk classification before attending stoma centres Psychological support Initial triage
Telemedicine	Reduction of hospital readmission Direct visual contact between patient and nurse or doctor Direct stoma visualization and evaluation of lesions where appropriate Correction of mistakes in stoma management Alternative to in-hospital follow-up Refer to stoma centre for relevant stoma complications Maintain relationship between the healthcare team and patients/caregivers Psychosocial support
Risk stratification (to be performed the day before by phone if possible)	<b>Low-risk patients:</b> no symptoms, no positive contact, no recent travel to high-risk areas <b>High-risk patients</b> (any of the following): symptoms, SARS-CoV-2-positive patient contact, recent travel to high-risk areas
Actions	Temperature check for all patients before entering the stoma centre Separate waiting areas and consultation rooms for COVID-19-negative and COVID-19-suspected or -positive patients Facemask and hand hygiene products/gloves for everyone Dressing/undressing room for outpatients Restrictions to visiting and accompanying relatives/friends

dedicated COVID-19 room, or negative-pressure facility if available, according to the local COVID-19 infection prevention and control measures.

The patient's body temperature should be checked before entering the stoma centre in order to reclassify patients with a temperature above 37.3°C [32]. All patients entering the stoma centre should wear a surgical mask [33] and, if classified as high risk, to wear gloves as well [16,34], although there is no universal agreement on this [18,35]. Unless there is a need for specific assistance and/or translation service, caregivers and relatives should be strictly prohibited from entering. Only one surgeon or one stoma nurse should attend the visit of a stoma patient; residents and students should not be present in the consultation room. All attending personnel should wear adequate personal protective equipment (PPE). No more than one patient should attend the clinic simultaneously.

All recommended actions for outpatient management are summarized in Table 2.

### Inpatient management

Several recommendations advocate that for high-risk operations stoma formation instead of primary anastomosis should be considered to reduce the risk of complications [14,15,20–22], the need for ICU facilities, which are already overwhelmed by COVID-19 patients, and hospital stay. An effective inpatient strategy must

reduce stoma-related complications, expedite discharge and implement in-hospital stoma education pathways to decrease the need for home nursing care after discharge.

First, *stoma siting*, carried out by a specialist surgeon or a stoma nurse, represents a mandatory and essential procedure even in the COVID-19 era [25,36].

Second, *in-hospital stoma training pathways* should be implemented to allow patients to confidently manage their own stomas independently prior to discharge and reduce the need for home nursing care [37].

Several studies have demonstrated the effectiveness of *information tools* (such as brochures, also multimedia) in learning stoma care practices [25]. Therefore, the educational phase of stoma care should be implemented with multimedia and other types of information tools. The educational phase of stoma care should be the same both in COVID-19-positive and -negative patients, with the only difference relating to the use of PPE and allowing both the caregiver and stoma patient to attend face-to-face teaching sessions together for negative patients. Stoma care for COVID-19 positive patients presents a further problem due to issues arising from advanced age (the median age of SARS-CoV-2 patients in Italy is 62 years [38]). Therefore, the stoma nurse could be faced with elderly patients whose learning and adaptation skills to the newly created stoma may be suboptimal, leading to further difficulties. It is important to promptly identify a caregiver in order to

proceed with his/her education in geographical locations separate from the patient's room for COVID-19-positive patients using brochures and multimedia information tools. In the case of a COVID-19-positive stoma patient, home discharge should be allowed in recovered patients.

*The identification of a caregiver for elderly and poorly compliant patients is paramount* for remote follow-up after the discharge. Moreover, considering the social restrictions during this period, it is preferable that the caregiver is a person who lives or can live in the same home as the stoma patient for the time being. In the absence of any caregiver, the homecare outreach service should be designed in a way to guarantee proper follow-up of such patients at home if virtual assistance not feasible or practical.

All recommended actions for inpatient management are summarized in Table 3.

### Prevention and management relating to environmental disinfection of the clinic

*Every material in contact with the enteral stoma should be carefully managed and discarded.* Since the potential risk of faecal transmission of SARS-CoV-2 cannot be excluded [28,39–43], in the consultation room disposable items and accessories must be disposed of in specific infectious waste containers, according to national and local guidelines. The US Centers for Disease Control and Prevention established that medical waste generated during the treatment of COVID-19 patients, or persons under investigation must be managed in accordance with standard protocols. There are no additional packaging or transportation requirements for regulated medical waste or sharps. Coronaviruses are susceptible to the same disinfection procedures in community and healthcare settings as other viruses, so current disinfection methods and wastewater treatment are expected to be sufficient [44].

*Guarantee a good standard for indoor air quality in the outpatient clinic.* In addition to standard precautions for infection prevention and control (i.e. correct use of PPE, keeping an appropriate interpersonal distance,

proper hand washing) indoor air quality should be preserved to limit the spread of SARS-CoV-2 and to protect patients and healthcare workers. This can be obtained by:

- 1 ensuring good air ventilation in all stoma clinic environments by more frequent opening of windows and balconies, especially in buildings without specific ventilation systems;
- 2 ventilation systems should be active to ensure airflow in buildings equipped with specific engines and fans. In this emergency period to increase the level of protection, the air recirculation function must be eliminated to avoid the possible transport of pathogens. In the case of windowless rooms that are fitted with fans/extractors, these must be kept in activity for the whole of the stay to reduce concentrations of pathogens in the air.

*All rooms and areas of the outpatient stoma clinic should be cleaned daily.* Cleaning must cover the surfaces most frequently touched (i.e. doors, handles, windows, glass, tables, light switches, toilets, taps, sinks, desks, chairs, keys, keyboards, remote controls, printers). Extensive environmental contamination can occur even from patients with mild COVID-19 symptoms. Ong *et al.* detected samples positive for SARS-CoV-2 in various locations in a patient's room, including the sink, light switches and doors [45]. However, there was no contamination in the anteroom or corridor outside the room [17]. So cleaning is very important in the stoma centre where the risk of contamination is potentially increased by the presence of faecal material, as a potential alternative avenue of SARS-CoV-2 transmission [43].

*Environmental decontamination after the visit.* Decontamination should be conducted after the visit in the stoma centre, in the case of suspected or confirmed COVID-19 patients. In this context it is worth remembering that coronaviruses, such as SARS-CoV-1 virus, MERS virus and SARS-CoV-2 itself, can persist on inanimate surfaces for up to several days depending on the matrix/material, concentration, temperature and humidity, although it is not established whether they are viable [46]. If necessary, closure of the service and

**Table 3** Inpatient management.

Recommendations	<p>Stoma siting by surgeon or ostomy nurse</p> <p>Use information tools for education (e.g. brochures, multimedia materials)</p> <p>Implementation of in-hospital stoma training</p> <p>Separate teaching for caregivers in COVID-19 patients (only with information tools)</p> <p>Hospital discharge for patients recovered from COVID-19</p> <p>Preferential selection of main caregiver who is living with or can live with the patient during the pandemic with social restriction measures in force</p>
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**Table 4** Measures for environmental clinic disinfection (infection prevention and management of the indoor environment).

Material management	<ul style="list-style-type: none"> <li>Consider potential risk of faecal transmission</li> <li>Consider specific infectious waste containers for disposable items and accessories</li> <li>Routine procedures for medical waste or sharps in COVID-19 patients</li> <li>No additional packaging/transportation requirements are required</li> </ul>
Environment cleansing and disinfection	<ul style="list-style-type: none"> <li>Routine disinfection procedures are sufficient</li> <li>Daily cleaning of all rooms and areas of the outpatient stoma clinic</li> <li>Guarantee good air ventilation: <ul style="list-style-type: none"> <li>open windows and balconies more frequently (in buildings without a ventilation system)</li> <li>use specific ventilation systems throughout the day (in buildings with specific engines and fans)</li> <li>avoid air recirculation function</li> </ul> </li> <li>Room disinfection immediately after consultations with confirmed COVID-19-positive or -suspected patients</li> </ul>

postponement of all subsequent appointments may be required. In the event of urgent cases, patients must wait in a non-COVID-19 area until the environment has been completely disinfected [47].

All recommended actions for the prevention and management of the transmission of SARS-CoV-2 infection in the indoor clinic environment are summarized in Table 4.

### Personal protective equipment

Although PPE is the most visible initiative to control infection it should be thought of as only one part of an

overall prevention strategy. In the absence of effective administrative and engineering controls, PPE alone has limited benefit [48].

Surgeons or ostomy nurses in contact with a suspected or confirmed case of COVID-19 should wear a surgical mask [33] or, if available, a FFP2 respirator tested for fit, eye protection (i.e. visor or goggles), a long-sleeved gown or apron and gloves (Table 5). Putting on (donning) and safely removing (doffing) PPE procedures must be strictly followed in the correct sequence [49]. Active assistance during donning and doffing will help to minimize the risk of accidental contamination. Hands should be washed immediately after

**Table 5** Personal protective equipment (PPE).

Setting	Target	Activity	Type of PPE or procedure
Patient room/ward	Surgeon/nurse	Providing stoma care to COVID-19 patients, in the absence of aerosol-generating procedures	<ul style="list-style-type: none"> <li>Medical mask</li> <li>Gown</li> <li>Gloves</li> <li>Eye protection (or face shield)</li> <li>Perform hand hygiene</li> </ul>
		Providing stoma care to COVID-19 patients, in setting where aerosol-generating procedures are frequently conducted	<ul style="list-style-type: none"> <li>Respirator (FFP2 or FFP3)</li> <li>Gown</li> <li>Gloves</li> <li>Eye protection (or face shield)</li> <li>Apron</li> <li>Perform hand hygiene</li> </ul>
Consultation room	Surgeon/nurse	Providing stoma care for patients with or without symptoms suggestive of COVID-19	<ul style="list-style-type: none"> <li>Medical mask</li> <li>Gown</li> <li>Gloves</li> <li>Eye protection (or face shield)</li> <li>Perform hand hygiene</li> </ul>
Any	Any patient		<ul style="list-style-type: none"> <li>Provide medical mask</li> <li>Provide gloves</li> <li>Perform hand hygiene</li> </ul>
Any	Caregiver	Providing direct care or when handling stool, urine or waste from COVID-19 positive or -suspected patients	<ul style="list-style-type: none"> <li>Medical mask</li> <li>Gown</li> <li>Gloves</li> <li>Eye protection (or face shield)</li> <li>Perform hand hygiene</li> </ul>

the removal of PPE. It is essential to ensure that all staff assigned to treat COVID-19 patients are trained in the proper use of PPE.

However, due to the rapidly evolving scenario and different availability of PPE across countries, local guidelines and international updated recommendations, such as those released by the WHO [50], must be consulted periodically by stoma care providers.

## Conclusions

The COVID-19 outbreak represents a great challenge to the global healthcare system. We are nowhere near the end of this crisis and the situation on the ground requires periodic evaluation to avoid service disruption that may cause harm to patients. Stoma patients represent an at-risk and frail population, both due to their underlying comorbidities (such as cancer and inflammatory bowel disease) and logistic reasons. Pragmatic and clear plans for COVID-19 patients need to be established locally and on a national level without compromising the care of patients suffering from other diseases. Telemedicine and homecare visits must be encouraged wherever possible, but an effective and easily accessible stoma care service is still necessary to provide timely care for highly selected cases. Even in this difficult period, healthcare organizations should guarantee the provision of an efficient stoma service for optimal patient care and caregiver education. In the near future, measures implemented during this pandemic may potentially lead to an overhaul of existing stoma services and fundamentally change the relationship between patients, caregivers and healthcare staff.

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## Conflicts of interest

Nothing to declare.

## Author contributions

All authors made substantial contributions to the conception and design, acquisition, analysis and interpretation of data. All authors participated in drafting the article and revising it critically for important intellectual content. All authors translated the article from Italian and gave final approval of the version to be published. International contributors translated the manuscript and tables into Chinese and Spanish, revised and approved the final version to be published.

## Ethics approval, patient consent, permission to reproduce material from other sources and clinical trial

Not applicable.

**Francesco Pata\***<sup>†</sup>, **Andrea Bondurri**<sup>‡</sup>, **Francesco Ferrara**<sup>§</sup>, **Dario Parini**<sup>¶</sup>, **Gianluca Rizzo\*\*** and the **Multidisciplinary Italian Study group for STomas (MISSTO)**<sup>1</sup>

\*General Surgery Unit, Nicola Giannettasio Hospital, Corigliano-Rossano, Rossano, Italy; †La Sapienza University, Rome, Italy; ‡Department of General Surgery, Luigi Sacco University Hospital, ASST FBF-Sacco, Milan, Italy; §Department of Surgery, San Carlo Borromeo Hospital, ASST Santi Paolo e Carlo, Milan, Italy; ¶General Surgery Unit, Santa Maria della Misericordia Hospital, Rovigo, Italy, and \*\*Department of Surgery, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy E-mail: [fr:fra@gmail.com](mailto:fr:fra@gmail.com)

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FP and AB are joint first authors.

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**International contributors:** Yuqi Qiao (Division of Gastroenterology and Hepatology, Renji Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai, China); Rashid Lui (Institute of Digestive Disease, The Chinese University of Hong Kong, Hong Kong, China); Alvaro Garcia Granero, Juan Jose Segura Sampedro (Hospital Universitario Son Espases, Palma de Mallorca, Spain).

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## Supporting Information

Additional Supporting Information may be found in the online version of this article:

**Appendix S1.** Attached translations in 3 languages [Italian, Chinese (traditional and simplified), Spanish].