



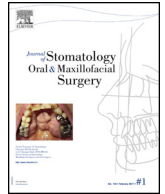
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Guidelines

Practitioners specialized in oral health and coronavirus disease 2019: Professional guidelines from the French society of stomatology, maxillofacial surgery and oral surgery, to form a common front against the infectious risk



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ABSTRACT

Medical as well as non-medical practitioners specialized in oral health are at high risk of infection with the Coronavirus-19 (Covid-19) because of the proximity with potentially infected biological fluids. This risk is permanent, especially during examination, care and transfer of patients. Regarding the pandemic progression of Covid-19, efficient protocols of prevention are urgently needed. Based on our experience and on the recently reported guidelines from the French National Agency for Public Health (ARS, March 5, 2020), the French Society of Hospital Hygiene (SFHH, March 4, 2020) and the Department of Infectious Risk Prevention of the Hospitals of Paris-Public Assistance (APHP, March 6, 2020), we provide several recommendations for practitioners specialized in oral health, to protect themselves from nosocomial infections, especially Covid-19.

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1. Origin of the coronavirus disease 2019 (Covid-19)

The Covid-19 is a novel enveloped RNA betacoronavirus which belongs to the important family of “coronaviruses” [1]. While usually infecting animals [2,3], some coronaviruses cause infections in humans [4]. The most commonly associated symptoms are fever, cough, asthenia realizing a flu-like syndrome [5,6]. However, two coronaviruses have led to serious epidemics in humans: the severe acute respiratory syndrome (SARS) coronavirus (SARS-CoV) that emerged in China 2002–2003 [7,8] and the Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) that emerged in Saudi Arabia in 2012 [9]. Similarly to these two coronavirus, the Covid-19 also called the SARS-CoV-2 has probably animal origin [10].

2. Transmission of Covid-19

Covid-19 mainly spreads through the respiratory tract, into a dynamic human-to-human transmission [11,12]. Whether the carrier of the virus is symptomatic or not (asymptomatic “healthy carrier”), the transmission is possible through either droplets of

saliva expelled during speech, sneezing or coughing fits (Pflügge droplets) or by direct contact with an area soiled with salivary secretions (handshakes, kisses...) [13].

In the external environment such as dry inert surfaces, Covid-19 seems to survive only few hours [14]. In aqueous environments, this virus may survive several days [15].

Covid-19 enters in the body through the mucous membranes (oral, nasal or even conjunctival ocular) or the skin (through a wound). The incubation period is estimated at 5 days. The onset of the first symptoms (fever, asthenia, dry cough, chest tightness, dyspnea) may occur up to 14 days after contact. The majority of Covid-19 infections are mild clinical symptomatic or even asymptomatic. People at risk of fatal complications (especially acute respiratory failure) are the elderly patients with chronic conditions (hypertension, coronary heart disease) and/or immune disorders (diabetes) [16–23].

3. General guidelines and recommendations for practitioners specialized in oral health

Given the high risk of transmission of Covid-19 between oral healthcare practitioners and patients, recommendations and guidelines should be emitted to protect both practitioners and patients [24–26].

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Healthcare practitioners, classified as Covid-19 contact subjects, should contact their managers and their hospital's operational hygiene team (HOE team): they generally can continue their activity if they are asymptomatic. Furthermore, healthcare practitioners should wear a surgical mask at all times, change it every four hours and monitor themselves by taking their temperature twice a day and identifying any symptoms.

In case of symptoms, even of low intensity, professional eviction is immediate, and a sample should be realized quickly and of high priority (results in 4–6 hours) to establish a diagnostic.

Many medical (Maxillofacial surgeons, Stomatologists, Oral surgeons, Ear-Nose-Throat surgeons, Ophthalmologists, Anesthetists, Radiologists) and non-medical (Dentists, Dental assistants, Orthodontists, oral surgeons, nurse anesthetists, dental technicians, orofacial Kinesitherapists and Osteopaths) health care practitioners examine and work in the mouths of their patients. More than other specialties, they are at daily risk of exposure to Covid-19 whether in hospitals, clinics or private practice [27–30].

For all these health care professionals, risk is real when realizing:

- endobuccal examination with the aid of a tongue depressor, examination mirror, forceps or probe;
- anterior rhinoscopies;
- nasal fibroscopies and endoscopies of the upper aerodigestive tract;
- oral and nasal intubations;
- dental and prosthetic care;
- dental extractions;
- surgical procedures of the oral cavity (teeth, jaws, face).

3.1. Indication of the mask wearing

These advices are based on the recommendations of the French Society of Hospital Hygiene (SFHH, March 4, 2020) and the guidelines of the Department of Infectious Risk Prevention of the Hospitals of Paris-Public Assistance (APHP, March 6, 2020) [27,29].

3.1.1. Wearing a surgical mask

To be effective, the usual protective masks, known as “surgical anti-projection masks”, must in France comply with the European safety norm “NF EN 14683”. They limit the aerial diffusion of potentially infectious particles, but should imperatively be renewed every 4 hours, to guarantee their effectiveness. It should be noted that the presence of a beard reduces the effectiveness of any mask [31].

The surgical mask should be reserved to:

- individuals (healthcare professional or patient) with signs of respiratory infection, whether or not related to the Covid-19. Healthcare professional must therefore remain vigilant and ensure that any patient with signs of respiratory infection is wearing a surgical mask;
- people with symptoms consistent with a Covid-19 infection (cough, dyspnea, fever...);
- members of the reception staff in direct and close contact with patients (hospital entrance, emergency services...);
- people with a medical history of chronic pathology (cardiac/lung transplant, immunodeficiency...) especially during consultation, hospitalization, during transfers in the hospital or in the waiting rooms;
- medical and non-medical healthcare professionals, during consultations and cares for patients including fragile people.

3.1.2. Wearing an FFP2 filter mask

FFP2 filter masks allow for a better protection of caregivers from contamination by airborne spread of very small infectious agents. The correct positioning of the FFP2 filter mask and its correct use require some precautions (<https://www.youtube.com/watch?v=zl2-ChcyRaM>) and it is more difficult to tolerate for several hours compared to surgical mask.

FFP2 masks are mandatory for:

- medical and non-medical oral healthcare professionals, giving oral cavity cares (minor surgery in their care room, clinics, hospitals or operating room);
- medical and non-medical oral healthcare professionals, working in contact with a contagious patient (tuberculosis, measles, chicken pox...) as part of the “air precaution”;
- medical and non-medical oral healthcare professionals giving cares to confirmed Covid-19 patients or highly symptomatic suspected cases (unexplained acute respiratory distress).

In all other cases, wearing a mask is not recommended [32].

In stage 3 epidemic phase, any practitioner specialized in oral health (naturally exposed to the risk contamination) must be equipped with a FFP2 filter mask.

3.2. Protective safety glasses

Protective glasses or large face shields protect against projections of the virus on the ocular conjunctiva [30]. Their use is systematically recommended for any procedure at risk of ocular projection of biological liquid, regardless of the patient's status [33].

This concerns all practitioners working in the oral cavity, and all procedures ranging from a simple examination of a tooth, to that of the oral cavity, the oropharynx, the larynx, the eye, considering the risks of coughing and nauseous reflex at the time of examination.

3.3. Hand washing

Hand cleaning should include all fingers, digital spaces, palms, backs of hands and clipped nails. It is essential to remember the evident effectiveness of “basic” and “regular” hand washing with soap and water (for one minute): well-conducted hand washing with liquid soap from a clean dispenser for one minute. Drying will be done with a clean paper towel (cloth towels are generally prohibited) [34,35].

Hydroalcoholic solutions (HAS) are aseptic skin solutions. They have bactericidal, virucidal and fungicidal properties, but no cleaning effect. Therefore, it is good to remember that they should be applied to the entire skin covering of dry and clean hands. Friction with SHA should not be exclusive but should be regularly combined with the “basic” and “regular” hand washing during the day. Their composition must comply with current regulations, i.e. no endocrine disruptors such as bisphenol, triclosan or triclocarban [36].

Hand washing (soap and/or SHA) is indicated systematically between the examination of two patients, after removing gloves, after going to the bathroom, after blowing one's nose or sneezing, after opening or closing a door, before the meals and after leaving public transport (bicycles, bus, subways, metro, taxis, planes, boats).

3.4. Wearing gloves

The gloves protect the practitioner in case of contact with potentially contaminated organic secretions, even more so if his hands have skin lesions that could become over-infected

[30]. Finger pads are considered insufficient. Wearing gloves is recommended if there is a risk of contact with contaminated body fluids and in case of skin lesions on the hands.

3.5. Other recommendations

Other recommendations, mainly based on common sense, could help prevent transmission of the virus and improve patient management [37,38]:

- secure mask and SHA stocks to prevent them from being stolen;
- regularly aerate enclosed spaces frequented by the public (reception, waiting room, consulting room, bedroom);
- keep a safety distance of 1 to 2 meters between 2 people;
- avoid delays in his consultations so as to not increase the number of patients in the waiting room;
- leave bottles of SHA available in the waiting rooms of offices or hospitals, and in all places where there are patients;
- avoid any contact with patients or colleagues (handshakes, hugs...);
- prefer single-use disposable cups and cutlery sets at coffee breaks and lunches;
- prohibit patients visits by minors;
- avoid the presence of any person who is not part of the care team and whose presence is not essential to the patient's care (visitor, accompanying an autonomous adult patient, etc.);
- do not put your hands to your face during the examination;
- remember to clean multimedia screens and keyboards;
- between two patients and at the end of the consultation, systematically bio-clean the equipment and objects entering into contact with the patient (chin, hands, etc.), using a usual disinfectant detergent containing at least one quaternary ammonium (support and handles of X-ray equipment, chair arms, door handles, etc.);
- if the examination or the surgery of a patient, infected with or suspected of being infected with Covid-19 (cough, dyspnea, fever...), is not urgently required, this should be postponed. If it is only a suspicion, the practitioner should take advices from an infectious disease specialist near to its place of exercise. Indeed, the surgical masks available in the operating rooms do not sufficiently protect surgeons from these virulent microorganisms. The risk of contamination would be increased by the projections of motor sprays, turbines drills and bone burs, piezoelectric scalpel, fluid leaking from intubation probes...

4. Management of an asymptomatic patient or with few symptoms carrying the Covid-19

If possible, the procedure should be postponed for 14 days and ambulatory care should be privileged [39].

4.1. Precautions during patient transfer

- The corridors and elevators should be kept free of people during the transfer.
- The patient must wear a surgical mask during transfer to the operating room.
- Transfer and operating room staff members should be equipped with a surgical mask.

4.2. Precautions in the operating room

- Limitation of the number of people involved in the patient care, ideally without leaving the room or exchanging personnel during the entire procedure.

- Respect of hygiene rules: mask, hand hygiene (with the use of hydro-alcoholic solutions), protective glasses for the surgical teams (including the anesthetic team) and surface hygiene between operations.
- Ventilation of the room should be ideally under negative pressure or interrupted. A room should be isolated and reserved if possible. Otherwise, the operation should be cancelled.
- Disposal of contaminated waste at the end of the procedure according to the Covid-19 rules established by the hygiene teams and the establishment's infectiology team.

4.3. Precautions in Hospitalization Units

- SHA dispensers available in all hospital reception areas (entrance hall, rooms...).
- Limitation of visits to one person, with surgical mask to be worn as soon as entering the hospital.

5. Management of patients with Covid-19, hospitalized because of their own pathology in adult medical or surgical intensive care units

Several guidelines have been reported by the French National Agency Public Health [19,40]:

- **postpone the procedure** until the patient is completely healed, if possible;
- **prefer ambulatory procedures** (return to the initial service if possible);
- **during patient transfer:** in addition to the precautions cited in section "4", the staff members in charge of patient transfer and reception in the operating room should be equipped with an FFP2 filter mask;
- **in the Operating Room:** in addition to the precautions cited in section "4", respect of the rules of hygiene: hand hygiene (with recourse to hydro-alcoholic solutions), protective glasses and FFP2 filter mask for the surgical teams (including the anesthetic team) and bio-cleaning of equipment and objects;
- **in the hospital units,** in addition to the precautions cited in section "4", limitation of visits to one person who will have to wear an FFP2 type mask. Preparing the return home with 14 days of isolation;
- some recent observations are interesting and promising. For example, Hollander and Carr have reported the benefits of telemedicine in the management of the Covid-19 crisis [41]. Combining antiviral and anti-inflammatory treatments has been recently proposed [42] but serious adverse events related to the use of non-steroidal anti-inflammatory drugs have been reported in both young patients with possible and confirmed Covid-19, which has conducted the French Ministry of Health and Research to contra-indicate the use of non-steroidal anti-inflammatory drugs in this pathology [43].

For practitioners working in a private structure, with less space to control and fewer patients, the implementation of these recommendations seems easier.

For practitioners working in a hospital structure, specific protocols may have been put in place by the local operational hygiene teams. These will need to be approximated where appropriate.

Finally, the precautionary principles mentioned above will remain valid for future microbial agents to which practitioners specialized in oral health will, probably more than others, always be exposed [44].

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The authors have not supplied their declaration of competing interest.

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