

ADAPTING YOUR DENTAL PRACTICE FOR COVID 19 PANDEMIC

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ABSTRACT

The outbreak and diffusion of SARS-CoV-2, responsible for the coronavirus disease (COVID-19), has caused an emergency in the health system worldwide. After a first development in Wuhan, China, the virus spread in other countries, with Italy registering the second highest number of cases in Europe on the 7th of April 2020 (135,586 in total). The World Health Organization declared the pandemic diffusion of COVID-19, and restrictive measures to limit contagion have been taken in several countries. The virus has a predominantly respiratory transmission through aerosol and droplets. The importance of infection control is therefore crucial in limiting the effects of virus diffusion. We aim to discuss the risks related to dental practice and current recommendations for dental practitioners. A literature search was performed to retrieve articles on the management of COVID-19 diffusion in dental practice. COVID-19 is a major emergency worldwide, which should not be underestimated. Due to the rapidly evolving situation, further assessment of the implications of COVID-19 outbreak in dental practice is needed.

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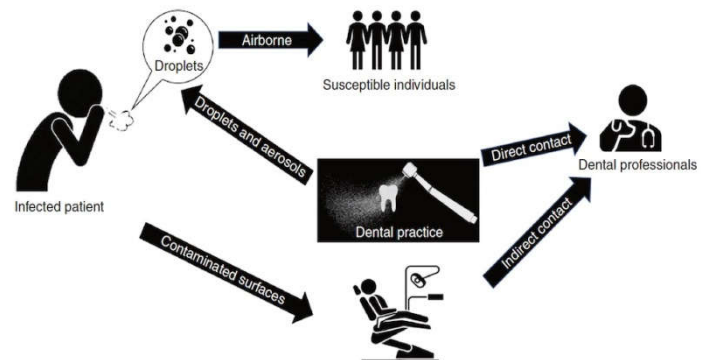
INTRODUCTION

Coronaviruses are enveloped single-stranded RNA viruses that are zoonotic in nature. Coronavirus shows a variety of symptoms ranging from those similar to the common cold to more severe respiratory, enteric, hepatic and neurological symptoms [1]. There are 6 known strains of Coronavirus in human other than SARSCoV-2. In the last two decades, Coronavirus has caused two large scale pandemics- SARS and MERS [2].

Wuhan City, Hubei Province, China, reported first 4 cases of acute respiratory syndrome of unknown etiology. It appears that most of the early cases had some sort of contact history with a seafood market[1]. Soon, a secondary route of transmission was found to be via human-to-human close contact. The World Health Organization (WHO) announced the official name of the 2019 novel coronavirus as coronavirus disease - COVID-19[3].

The current reference name for the virus is Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2). It was declared as a pandemic on 11 March 2020, with global spread affecting 5, 97,283 individuals with 27,365 deaths at the time of writing.

Virus has also been isolated from saliva of infected patients. Saliva can play a pivotal role in the human-to-human transmission. Dental Healthcare Professionals who perform aerosol generating procedures are thus at a higher risk.



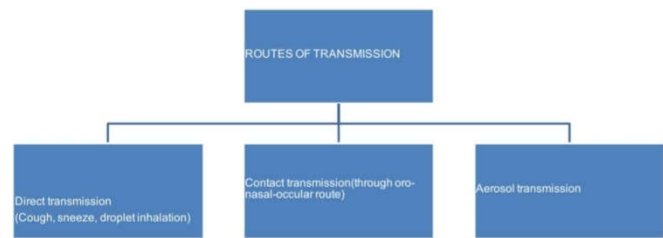
“Transmission routes of 2019-nCoV and controls in dental practice” – Peng et al. 2020

The setting of dental clinics and dental treatment are such that the risk of cross infection between patient and dental practitioners is very high. For dental practices and hospitals all over the world, strict and effective infection control protocols are urgently needed. Due to the unique characteristics of dental procedures where a large number of droplets and aerosols could be generated, the standard protective measures in daily clinical work are not effective enough to prevent the spread of COVID-19, especially when patients are in the incubation

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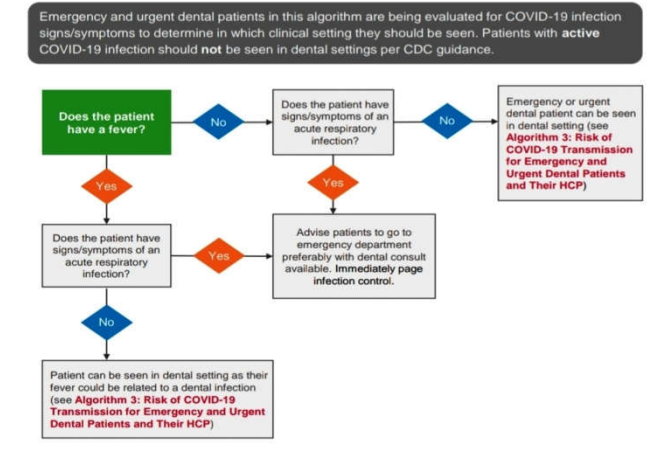
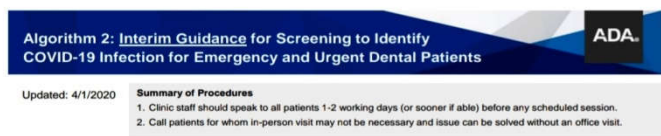
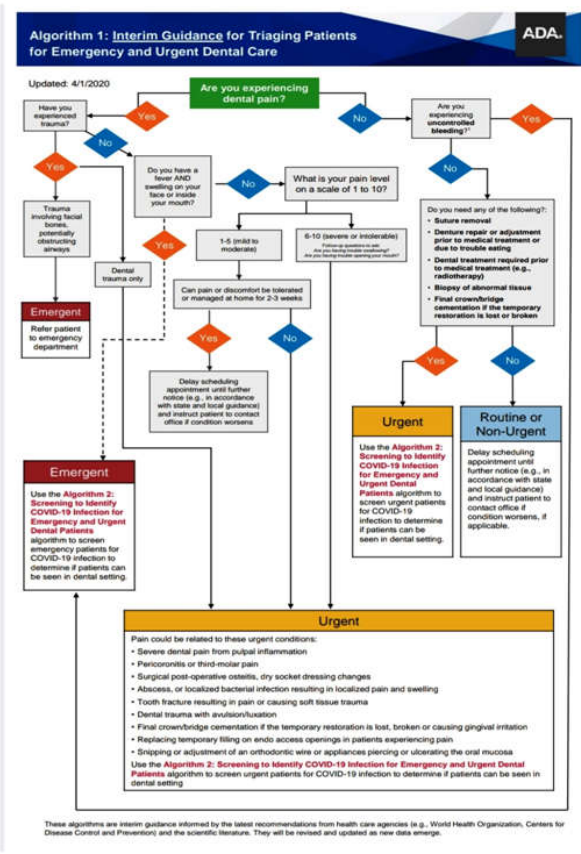
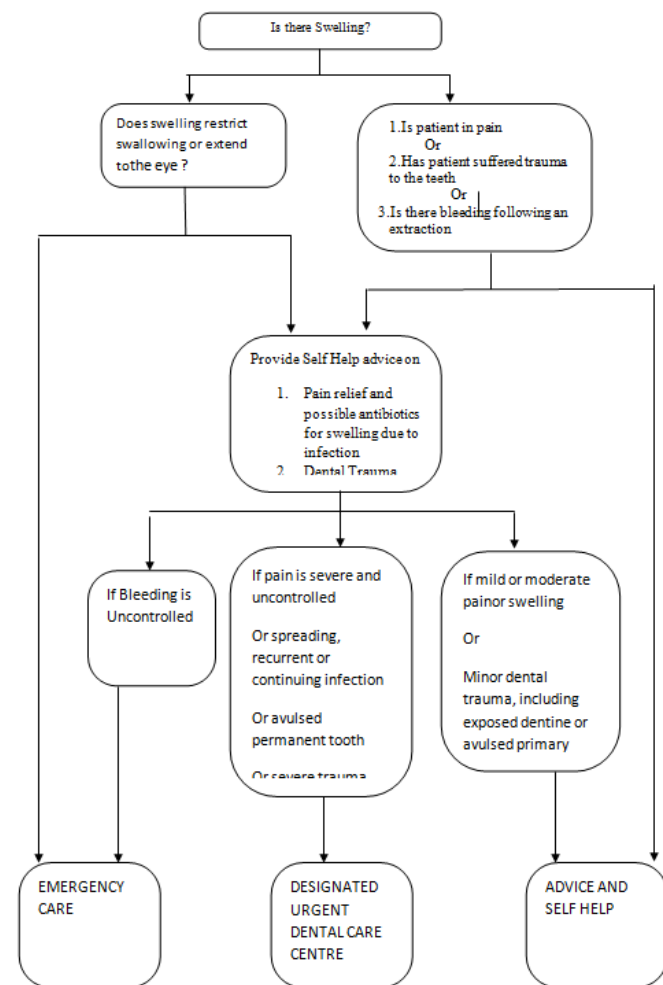
period, are unaware they are infected or choose to conceal their infection.



Triage of Commonly Presenting Dental Problems

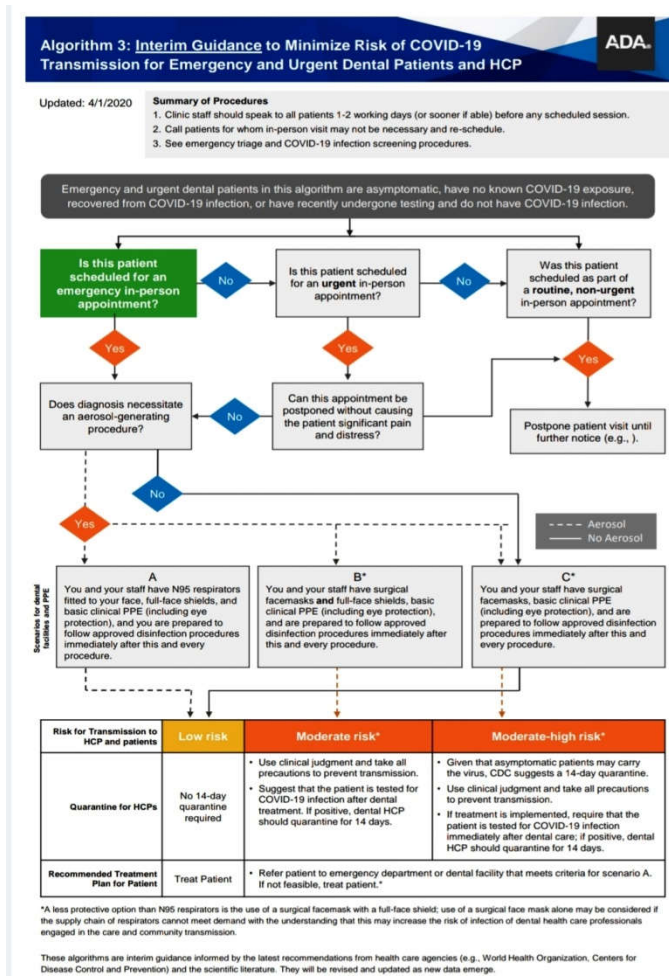
The following diagram illustrates a simple method for managing care for patients by telephone triage. Note that this is not comprehensive but deals with the most common presenting symptoms.

It is essential to establish the patient's COVID-19 status and then record this using your health board or local health system protocol.



- During screening procedure for COVID-19 infection, patients should be asked if they have tested positive for COVID-19 infection and if yes, the patient should be immediately referred to the emergency department for the management of the dental condition. If patient has previously tested positive for COVID-19 infection and 3 days have passed since symptoms have resolved, the patient can be seen in a dental setting (see Algorithm 1).
- Fever in the absence of respiratory symptoms in the context of this algorithm should be strongly associated with an emergency or urgent dental condition (e.g., dental infection) if dental settings are to be used.
- No companions should be invited inside the clinic, they should not sit in the waiting room, and patients with a fever being seen in dental setting should be given a mask if they don't have one already. As the patient's mask will not be coming off during dental treatment, it should be placed back on as soon as treatment is complete.
- If patient has had exposure to an individual with suspected or confirmed COVID-19 infection, traveled to countries currently under a travel ban, or been exposed to confirmed SARS-CoV-2 biologic material (either themselves or via another individual), consider referring patient to a hospital setting. Risk of transmission increases with these exposures.
- If the patient needs to be referred for COVID-19 testing, they should be given detailed instructions on when/where to go for testing, how to justify the need for testing to the testing facility visited, and how to contact the dental clinic to report test results. Clinic director and/or coordinators should maintain a list of patients who will not be coming in for in-person visits in charts or find another mechanism that fits into the clinic's workflow. It is critical that a list of dental patients that have been referred to other settings due to suspected COVID-19 infection be maintained.
- Information about reporting suspected cases of COVID-19 infection can be found here: <https://www.cdc.gov/coronavirus/2019-ncov/php/reporting-pui.html>

These algorithms are interim guidance informed by the latest recommendations from health care agencies (e.g., World Health Organization, Centers for Disease Control and Prevention) and the scientific literature. They will be revised and updated as new data emerge.



How to identify urgency and emergency treatment

On 1st April the ADA also published an Interim Guidance for Management of Emergency and Urgent Dental Care. Dental emergencies

1. Uncontrolled bleeding
2. Cellulitis or a diffuse soft-tissue bacterial infection with intra-oral or extra-oral swelling that potentially compromises the patient’s airway
3. Trauma involving facial bones, potentially compromising the patient’s airway
4. Dental urgencies
5. Severe dental pain from pulpal inflammation
6. Pericoronitis or third-molar pain
7. Surgical post-operative osteitis, dry socket dressing changes
8. Abscess, or localized bacterial infection resulting in localized pain and swelling
9. Tooth fracture resulting in pain or causing soft tissue trauma
10. Dental trauma with avulsion/luxation
11. Dental treatment required prior to critical medical procedures
12. Final crown/bridge cementation if the temporary restoration is lost, broken or causing gingival irritation
13. Biopsy of abnormal tissue
14. Non-urgent dental treatments that can be postponed
15. § Initial or periodic oral examinations and recall visits, including routine radiographs
16. § Routine dental cleaning and preventive therapies
17. § Extraction of asymptomatic teeth

18. § Restorative dentistry including treatment of asymptomatic carious lesions
19. § Aesthetic dental procedure

Steps In Assessing Patients For Urgent Care Or Emergencies

Triage all patients by phone first and decide whether they can be deferred. Where prescriptions are issued to suspected or COVID-positive patients, please ask the patient not to attend the pharmacy themselves to pick it up – they should send a family member or arrange delivery by the pharmacy (delivery may incur a cost).

If the patient needs a face-to-face assessment, ask the following questions over the telephone first:

- Do you have a confirmed diagnosis of COVID-19?
- Have you or anyone coming in contact with you, had contact with someone with a confirmed diagnosis of COVID-19?
- Have you travelled internationally in the last 14 days?
- Are you aged 70 or over?
- Do have any of the following symptoms?
- sore throat
- cough
- shortness of breath
- high temperature (>38C).

Steps To Limit Transmission

For suspected or COVID-positive patients, steps should be taken to limit how infectious particles can enter the facility.

To minimize risk practitioners must

- use telemedicine when possible
- limit points of entry
- screen patients for respiratory symptoms
- encourage patient respiratory hygiene using alternatives to facemasks (e.g. tissues to cover cough)
- isolate symptomatic patients as soon as possible. Place patients with suspected or confirmed COVID-19 in private rooms with door closed and private bathroom (where possible)
- protect healthcare personnel.
- emphasize hand hygiene
- limit the numbers of staff providing their care.

➤ Use personal protective equipment appropriately to prevent unnecessary use of limited supplies of N95 masks and other PPE resources.

➤ Special care should be taken to ensure that N95 masks are reserved for situations where respiratory protection is most important, such as performance of aerosol-generating procedures on confirmed COVID-19 patients or provision of care to patients with other infections for which respiratory protection is strongly indicated (e.g., tuberculosis, measles, varicella).

Waiting areas

1. All unnecessary items should be removed from the waiting room and surfaces kept clear and clean
2. Separate waiting room chairs by 2 meters
3. Request patients to wash their hands (where facilities allow) or ‘hand sanitise’ on arrival and departure from the clinic
4. Clean surfaces and high-touch surfaces (door handles, chair arms, reception counter etc.) regularly with a neutral pH detergent.

5. Areas of known contamination should be cleaned and disinfected as described in the Dental Council’s Transmission Based Precautions – Cleaning section contained in the Infection Prevention and Control Practice Standard.

Upon arrival and during the visit

1. Limit points of entry to the facility
2. Take steps to ensure that all persons with symptoms of COVID-19 or other respiratory infection (such as fever, cough) adhere to respiratory hygiene and cough etiquette
3. Use hand hygiene, and triage procedures throughout the duration of the visit
4. Post visual alerts (e.g., signs, posters) at the entrance and in strategic places (e.g., waiting areas, elevators) to provide patients and health care practitioners with instructions (in appropriate languages) about hand hygiene, respiratory hygiene, and cough etiquette. Instructions should include how to use tissues to cover nose and mouth when coughing or sneezing, to dispose of tissues and contaminated items in waste receptacles, and how and when to perform hand hygiene
5. Provide supplies for respiratory hygiene and cough etiquette, including alcohol-based hand rub (ABHR) with 60-95% alcohol, tissues, and no-touch receptacles for disposal, at healthcare facility entrances, waiting rooms, and patient check-ins.

Hand hygiene

Oral healthcare practitioners should perform hand hygiene before and after all patient contact, contact with potentially infectious material, and before putting on and after removing PPE, including gloves. Hand hygiene after removing PPE is particularly important to remove any pathogens that might have been transferred to bare hands during the removal process.

Oral healthcare practitioners should perform hand hygiene by using ABHR with **60-95% alcohol** or washing hands with soap and water for at least 20 seconds. If hands are visibly soiled, use soap and water before returning to ABHR.

Hand hygiene supplies should be readily available to all personnel in every care location.

Personal protective equipment

- Select appropriate PPE in accordance with Dental Council’s Infection Prevention and Control Practice Standard and where necessary with Transmission Based Precautions
- Oral health care practitioners must have received training on and demonstrate an understanding of:
 - what PPE is necessary
 - how to properly don, use, and doff PPE in a manner to prevent self-
 - when to use PPE
 - contamination
 - how to properly dispose of or disinfect and maintain PPE.
- Any reusable PPE must be properly cleaned, decontaminated, and maintained after and between uses.

- The PPE recommended when caring for a patient with known or suspected COVID- 19 and whose care will generate of aerosols includes:
 - N95 or FFP2 mask
 - long sleeve impervious gown
 - eye protection
 - gloves.
 - low risk patient, yo

<p>If you are providing urgent care or emergency dental treatment to:</p> <ul style="list-style-type: none"> > No risk patients do not require special PPE and N95 masks are not required > a medium risk patient where treatment generates aerosols, additional PPE is required including N95 or FFP2 mask > a high risk patient, and treatment generates aerosols, additional PPE is required including N95 or FFP2 mask.

Cleaning and decontamination a medium risk patient who can be treated without generating an aerosol, no special PPE is required, and no N95 mask is required

1. After treating suspected or COVID-positive patient and aerosol generating procedures have occurred, the room should remain closed for a stand-down period of 20 minutes prior to cleaning.
2. Appropriate PPE should be worn for cleaning down the room.
3. Wipe down hard surfaces with detergent and water, then hospital grade disinfectant (or bleach) with activity against respiratory virus, including COVID-19.
4. Remove any linen that has been used into linen bags for hot washing.
5. Remove and discard PPE as clinical waste (taken off in the following order: gloves, hand hygiene, protective eyewear (if separate from mask), gown, hand hygiene, mask, hand hygiene). Perform hand hygiene thoroughly to elbows.²

<p>Table 1: Recommended medications for Emergency Care Patients reporting with severe dental pain during Covid-19 Pandemic²</p> <p>The most recommended drugs of choice for treating acute pulpitis are:</p> <ul style="list-style-type: none"> ✓ Acetaminophen 1000 mg (every 6 – 8 hours) OR ✓ Ketorolac Tromethamine 10mg (every 6 hours) OR ✓ Piroxicam 20 mg (every 12 hours) OR ✓ Ibuprofen 600 mg (every 6 hours) [Use with caution]* <ul style="list-style-type: none"> • The pain felt by patients diagnosed with symptomatic irreversible pulpitis may be also alleviated by administering 4 mg dexamethasone either orally Or through intraligamentary and mainly supraparosteal injections • A Cochrane Review illustrates that there is <i>not enough evidence to recommend the use of antibiotics to reduce pain in cases with irreversible pulpitis.</i> (Kindly note that if patient reports with signs and symptoms of acute apical abscess / cellulitis then appropriate antibiotic medications has to be given) • Current WHO guideline²⁹ has not contraindicated the usage of Ibuprofen during COVID -19 Pandemic as on 27th March 2020. However with conflicting research in this issue this position statement would recommend the usage of alternative medications to ibuprofen given in this table above.

Management of Acute Dental Problems During COVID-19 Pandemic³

Problem (symptoms)	Management
Acute apical abscess <ul style="list-style-type: none"> • Pain (usually localised to a single tooth) • Swelling of the gingiva, face or neck • Fever • Lethargy, loss of appetite for children younger than 16 years old 	<div style="border: 1px solid green; padding: 5px; margin-bottom: 5px;"> Advice and self help <ul style="list-style-type: none"> • Recommend optimal analgesia. • Prescribe antibiotics if you are concerned about swelling or if there are signs of systemic infection (fever, malaise) • Ask patient to call back in 48-72 hours if their symptoms have not resolved. </div> <div style="border: 1px solid orange; padding: 5px; margin-bottom: 5px;"> Urgent care <ul style="list-style-type: none"> • If patient has spreading infection without airway compromise, or if patient has continuing or recurrent symptoms, refer to designated urgent dental care centre for extraction or drainage. </div> <div style="border: 1px solid red; padding: 5px;"> Emergency care <ul style="list-style-type: none"> • If patient has spreading infection with or likely to have airway compromise and/or severe trismus refer for emergency care. </div> <p>N.B. For a chronic abscess draining through a sinus, reassure the patient and advise to continue usual oral self-care.</p>
Acute periodontal abscess/Perio-endo lesions <ul style="list-style-type: none"> • Pain and tenderness of gingival tissue • Increased tooth mobility • Fever and swollen/enlarged regional lymph nodes • Presence of swelling on gingiva • Suppuration from the gingiva 	<div style="border: 1px solid green; padding: 5px; margin-bottom: 5px;"> Advice and self help <ul style="list-style-type: none"> • Recommend optimal analgesia. • Prescribe antibiotics if you are concerned about swelling or if there are signs of systemic infection (fever, malaise) • Ask patient to call back in 48-72 hours if their symptoms have not resolved. </div> <div style="border: 1px solid orange; padding: 5px; margin-bottom: 5px;"> Urgent care <ul style="list-style-type: none"> • If patient has spreading infection without airway compromise or if patient has continuing or recurrent symptoms, refer to designated urgent dental care centre for extraction or drainage. </div> <div style="border: 1px solid red; padding: 5px;"> Emergency care <ul style="list-style-type: none"> • If patient has spreading infection with or likely to have airway compromise and/or severe trismus refer for emergency care. </div> <p>N.B. For a chronic abscess draining through a sinus, reassure the patient and advise to continue usual oral self-care.</p>
Post-extraction haemorrhage <ul style="list-style-type: none"> • Bleeding - can be immediate due to failure to secure adequate initial haemostasis, within a few hours (reactionary) or within a week of an extraction (indicative of possible infection). 	<div style="border: 1px solid green; padding: 5px; margin-bottom: 5px;"> Advice and self help <ul style="list-style-type: none"> • Advise patient not to spit or rinse. • Advise patient to: <ul style="list-style-type: none"> ◦ gently rinse the mouth once with warm (not hot) water to wash out excess blood; ◦ place a rolled-up piece of cotton or a gauze swab moistened with saline or water over the socket, bite firmly on it and maintain solid and continuous pressure for 20 minutes before checking whether the bleeding has stopped; ◦ repeat once if necessary. • After the bleeding has stopped, advise the patient to avoid drinking alcohol, smoking or exercising for 24 hours and to avoid disturbing the blood clot. </div> <div style="border: 1px solid orange; padding: 5px; margin-bottom: 5px;"> Urgent care <ul style="list-style-type: none"> • If the bleeding fails to stop, but is not brisk and persistent, refer to designated urgent dental care centre for management. </div> <div style="border: 1px solid red; padding: 5px;"> Emergency care <ul style="list-style-type: none"> • If the bleeding fails to stop and is brisk and persistent, refer for emergency care. • If the bleeding fails to stop and the patient is taking anticoagulant medication (e.g. warfarin, aspirin, clopidogrel) refer for emergency care. </div>

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