

[Go to second part of initial decision trunk](#)

[ICOP1.1.1 Pulpal pain](#)

[ICOP1.1.2 Periodontal pain](#)

[ICOP1.1.3 Gingival pain](#)

¹ Red flags:

- Spontaneously occurring focal neuropathy with pain and or altered sensation confirmed by physical examination may indicate tumor invasion of nerve
- Pain at the angle of the mandible, brought on by exertion, relieved by rest may indicate cardiac ischemia
- patient over 50 years with known history of carcinoma localized progressive headache, or superficial temporal artery swelling, or lack of pulse
- Jaw claudication, visual symptoms, palpably tender superficial temporal arteries – Temporal arteries may indicate arteriitis temporalis
- Systemic symptoms of fever, weight loss, anorexia, malaise, myalgia, chills, sweating - unlikely to be associated with OFP
- New onset headache in adult life of increasing severity with: nausea and vomiting without evidence of migraine or systemic illness; nocturnal occurrence; precipitation or exacerbation through changes in posture; confusion, seizures, or weakness; any abnormal neurologic sign – suggests a mass effect in cranial cavity (through intracranial tumor).
- Earache, trismus, altered sensation in the mandibular branch distribution – suggests infratemporal fossa or acoustic nerve impingement eg by tumor.
- Trigeminal neuralgia in a person less than 50 years of age may be suggestive of multiple sclerosis

²Evidence of causation demonstrated by both of the following:

1. location of the pain corresponds to the site(s) of the lesion, disease or trauma (pain may also refer and/or radiate to other ipsilateral orofacial locations)
2. either or both of:
 - a) pain developed in temporal relation to the appearance of the lesion or onset of the disease or trauma, or led to its discovery
 - b) pain is exacerbated by physical stimulus applied to the affected tooth. The stimulus may be mechanical, thermal or chemical, as specified in some subforms

³ Evidence of causation demonstrated by both of the following:

1. location of the pain corresponds to the site of the lesion, disease or trauma (pain may also refer and/or radiate to other ipsilateral orofacial locations)
2. pain is exacerbated by physical stimulus (mechanical, thermal or chemical) applied to the affected tooth (horizontally or vertically) or to the tissue overlying the root

⁴Evidence of causation demonstrated by at least two of the following:

1. location of the pain corresponds to the site(s) of the lesion or disorder (pain may also refer and/or radiate to other ipsilateral orofacial locations)
2. pain developed in temporal relation to the appearance or onset of the lesion or disorder
3. pain is exacerbated by manipulation of the affected gingival tissue

Second part of initial decision trunk

Is there pain in the oral mucosa⁵

yes

Is there clinical, laboratory, imaging and/or anamnestic evidence of a lesion or disorder of the oral mucosal tissues known to be able to cause pain

yes

All three of: 1. Pain localized to the site(s) of the lesion or disorder
2. pain and appearance or onset of the lesion or disorder are temporally related
3. pain exacerbation by manipulation of the affected oral mucosa⁶

yes

Not better accounted for by another ICOP diagnosis.

[ICOP1.2.1 Oral mucosal pain⁶](#)

no

no

no

Is there pain in salivary glands

yes

Is there clinical, laboratory, imaging and/or anamnestic evidence of a lesion or disorder of the salivary glands known to be able to cause pain

yes

1. Pain localized to the site(s) of the lesion or disorder
2. ≥ 1 off:
a) pain and appearance or onset of the lesion or disorder are temporally related
b) pain exacerbation by pressure applied to the affected salivary gland⁷

yes

Not better accounted for by another ICOP diagnosis.

[ICOP1.2.2 Salivary gland pain](#)

no

no

no

Is there pain in the jaw⁵

yes

Is there clinical, laboratory, imaging and/or anamnestic evidence of a lesion or disorder of the jaw bone known to be able to cause pain

yes

1. pain localized to the site of the jaw bone lesion
2. ≥ 1 of:
a) pain and appearance or onset of the jaw bone lesion or disorder are temporally related
b) pain exacerbation by pressure applied to the jaw bone lesion⁹

yes

Not better accounted for by another ICOP diagnosis.

[ICOP1.2.3 Jaw bone pain](#)

no

no

no

[Go to third part of initial decision trunk](#)

⁵ The pain may also refer and/or radiate to other ipsilateral orofacial locations.

⁶ Evidence of causation demonstrated by all the following:

1. location of the pain corresponds to the site(s) of the lesion or disorder
2. pain developed in temporal relation to the appearance or onset of the lesion or disorder
3. pain is exacerbated by manipulation of the affected oral mucosa

⁷ Pain involving the oral mucosa may have local or distant causes. Oral mucosal pain is often characterized by a burning, stinging or sore sensation. Various mucosal lesions such as ulcers, erosions and vesicles are common causes of oral mucosal pain.

The terms stomatitis and oral mucositis are often used as synonyms, but they do not reflect identical processes. Stomatitis refers to any inflammatory condition of oral mucosa occurring because of local infections or injuries or underlying systemic diseases. Mucositis occurs due to radiation or chemotherapeutic agents.

A large variety of local mucosal and systemic diseases are associated with pain due to formation of ulcers or erosions. These lesions differ regarding their extension into the oral mucosa.

A mucosal ulcer is defined as a loss of surface tissue with disintegration and necrosis of epithelial tissue. It involves damage to both epithelium and lamina propria. It penetrates the epithelial–connective tissue border, and has its base at a deep level in the submucosa, and in some cases even within the muscle or periosteum. .

A mucosal erosion is defined as a superficial break on the mucous membrane with loss of the superficial epithelial cells and minor damage to the underlying lamina propria.

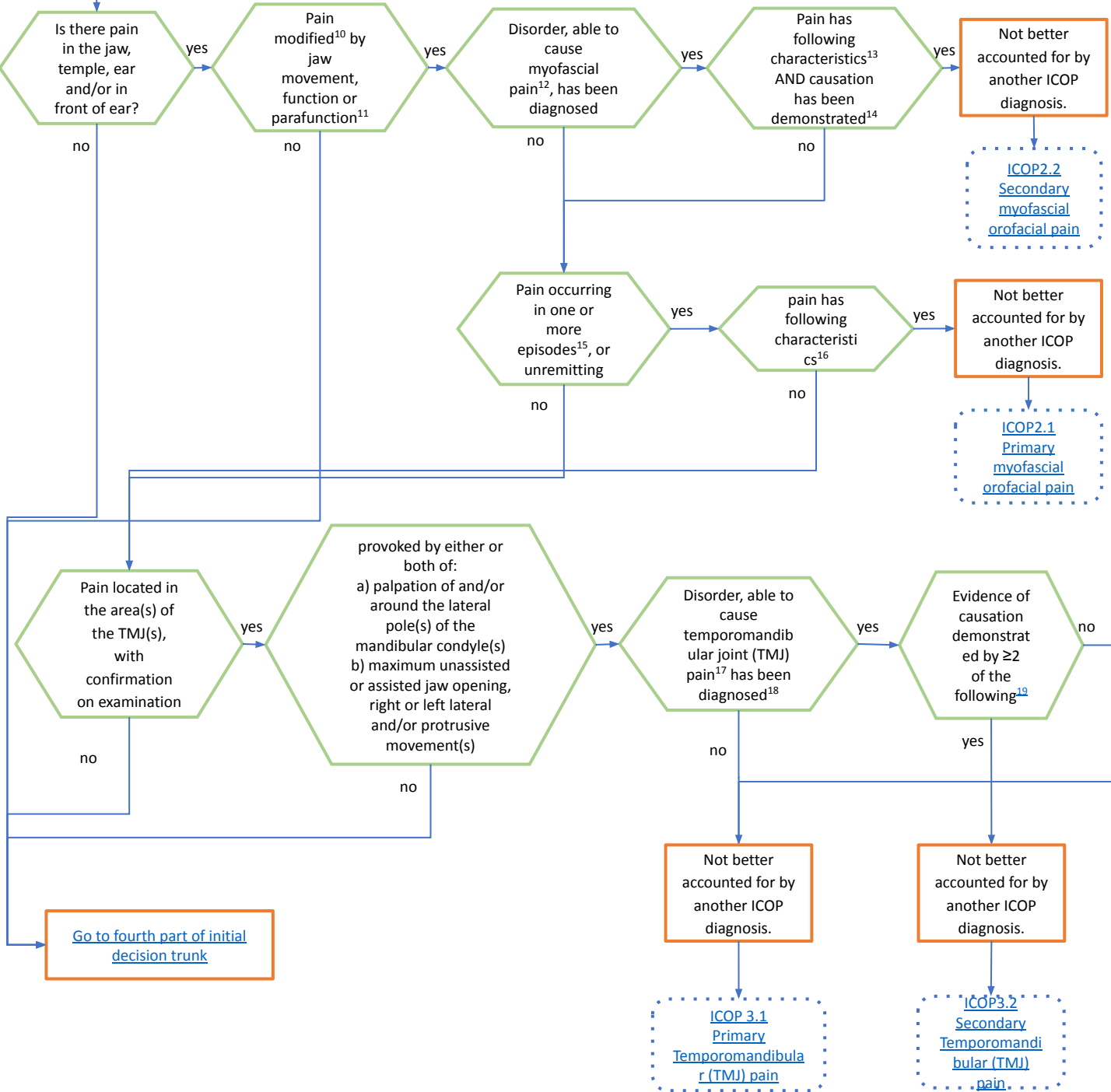
⁸ Evidence of causation demonstrated by both of the following:

1. location of the pain corresponds to the site(s) of the lesion or disorder
2. either or both of the following:
 - a) pain developed in temporal relation to the appearance or onset of the lesion or disorder
 - b) pain is exacerbated by pressure applied to the affected salivary gland

⁹ Evidence of causation demonstrated by both of the following:

1. pain is localized to the site of the jaw bone lesion
2. either or both of the following:
 - a) pain developed in temporal relation to the appearance or onset of the jaw bone lesion or disorder
 - b) pain is exacerbated by pressure applied to the jaw bone lesion

Third part of initial decision trunk



¹⁰ Pain may be increased or decreased.

¹¹ e.g. tooth grinding or clenching

¹² The disorder is specified in each subform

¹³ Pain is characterized by both of the following:

- a) confirmation on examination of location(s) in the affected muscle(s) or tendon(s)
- b) provoked by palpation of the affected tendon(s) and/or maximum unassisted or assisted jaw opening movement(s)

¹⁴ The necessary evidence is specified in each subform.

¹⁵ Episodes may be single or recurrent within any day, each lasting at least 30 minutes and with a total duration within the day of at least 2 hours.

¹⁶ If the pain is characterized by both of the following:

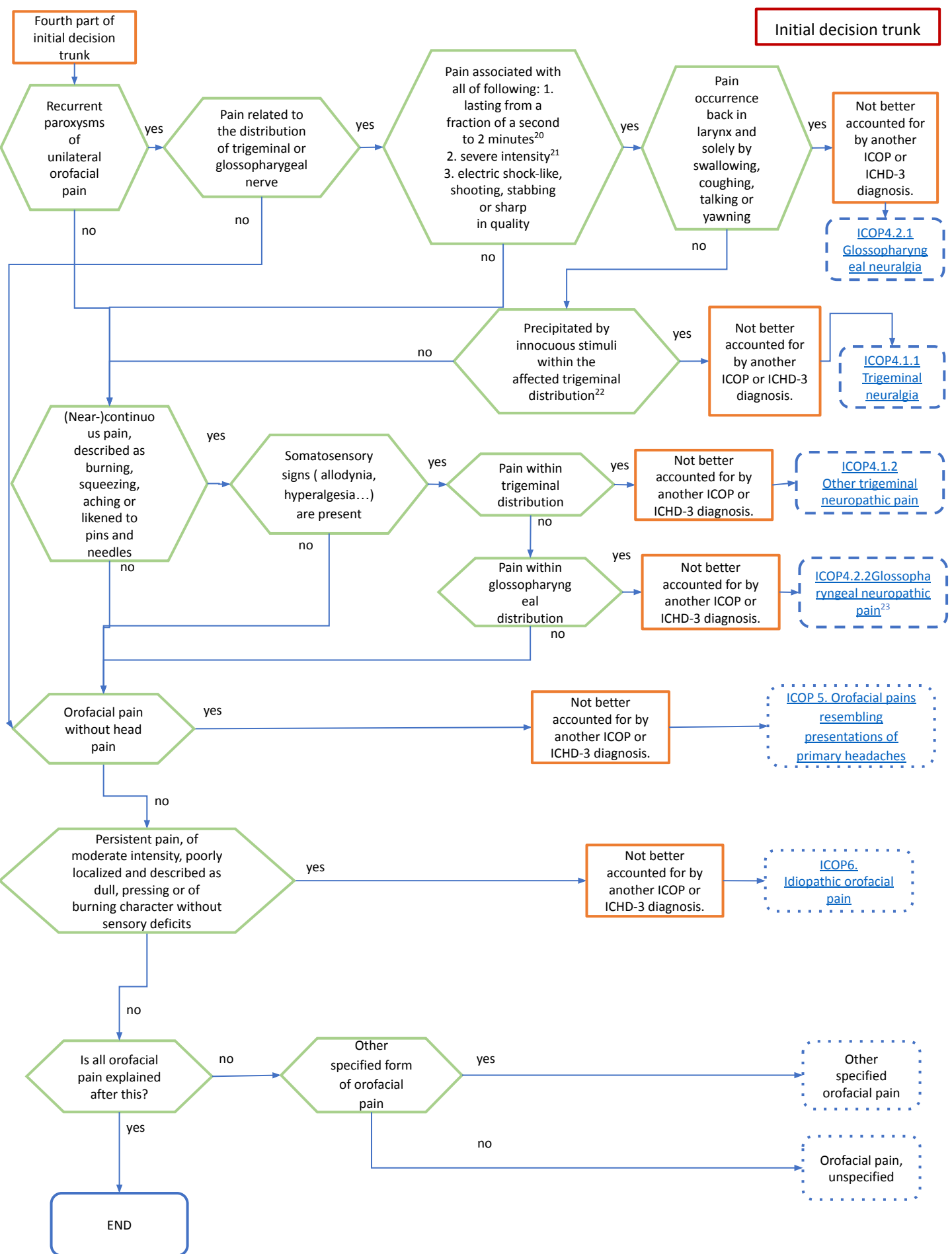
1. confirmation on examination of location(s) in the temporalis and/or masseter muscle(s)
2. provoked by either or both of:
 - a) palpation of the temporalis and/or masseter muscle(s)
 - b) maximum unassisted or assisted jaw opening movement(s)

¹⁷ The disorder is specified in each subform.

¹⁸ Diagnosis is according to the Expanded DC/TMD Taxonomy definition

¹⁹ Evidence of causation demonstrated by at least two of the following:

1. the pain has developed in temporal relation to onset or substantial worsening of the presumed causative disorder, or has led to its discovery
2. the pain has significantly (such that the patient describes a step-change in intensity) worsened in parallel with progression of the presumed causative disorder
3. the pain has significantly (such that the patient describes a step-change in intensity) improved or resolved in parallel with improvement in or resolution (spontaneously or through treatment) of the presumed causative disorder



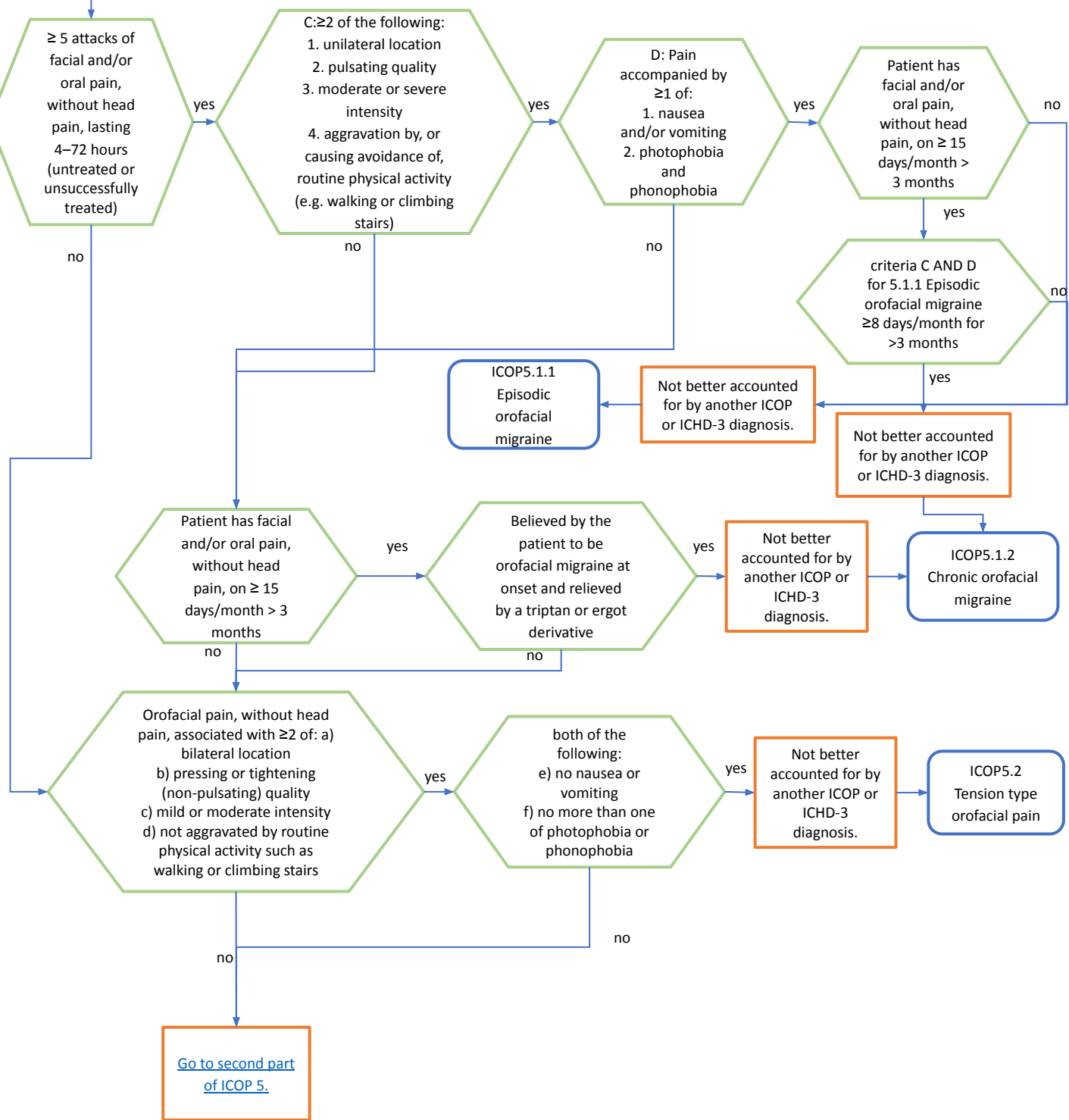
²⁰ Duration can change over time, with paroxysms becoming more prolonged. A minority of patients will report attacks predominantly lasting for >2 minutes.

²¹ Pain may become more severe over time.

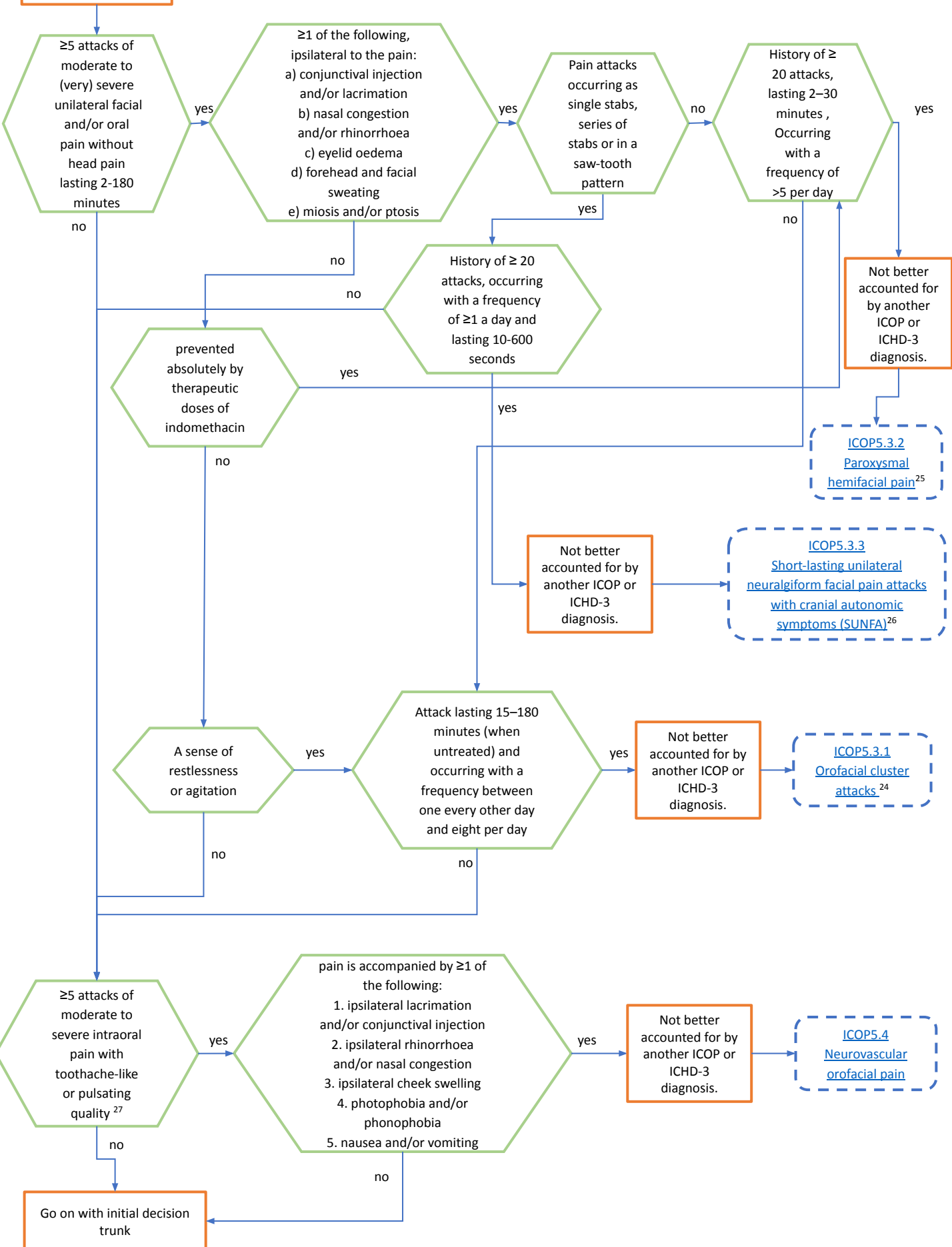
²² Some attacks may be, or appear to be, spontaneous, but there must be a history or finding of pain provoked by innocuous stimuli to meet this criterion. Ideally, the examining clinician should attempt to confirm the history by replicating the triggering phenomenon. However, this may not always be possible because of the patient's refusal, the awkward anatomical location of the trigger and/or other factors.

²³ Description: Pain within the distribution of the glossopharyngeal nerve (posterior part of the tongue, tonsillar fossa, pharynx or beneath the angle of the lower jaw). In addition, pain is commonly perceived in the ipsilateral ear. Brief paroxysms may be superimposed but they are not the predominant pain type. This combination distinguishes 4.2.2 Glossopharyngeal neuropathic pain from 4.2.1 Glossopharyngeal neuralgia. Sensory deficits may be present in the ipsilateral posterior part of the tongue and tonsillar fossa, and the gag reflex may be weak or missing.

ICOP 5. Orofacial pains resembling presentations of primary headaches



Second part of ICOP 5.



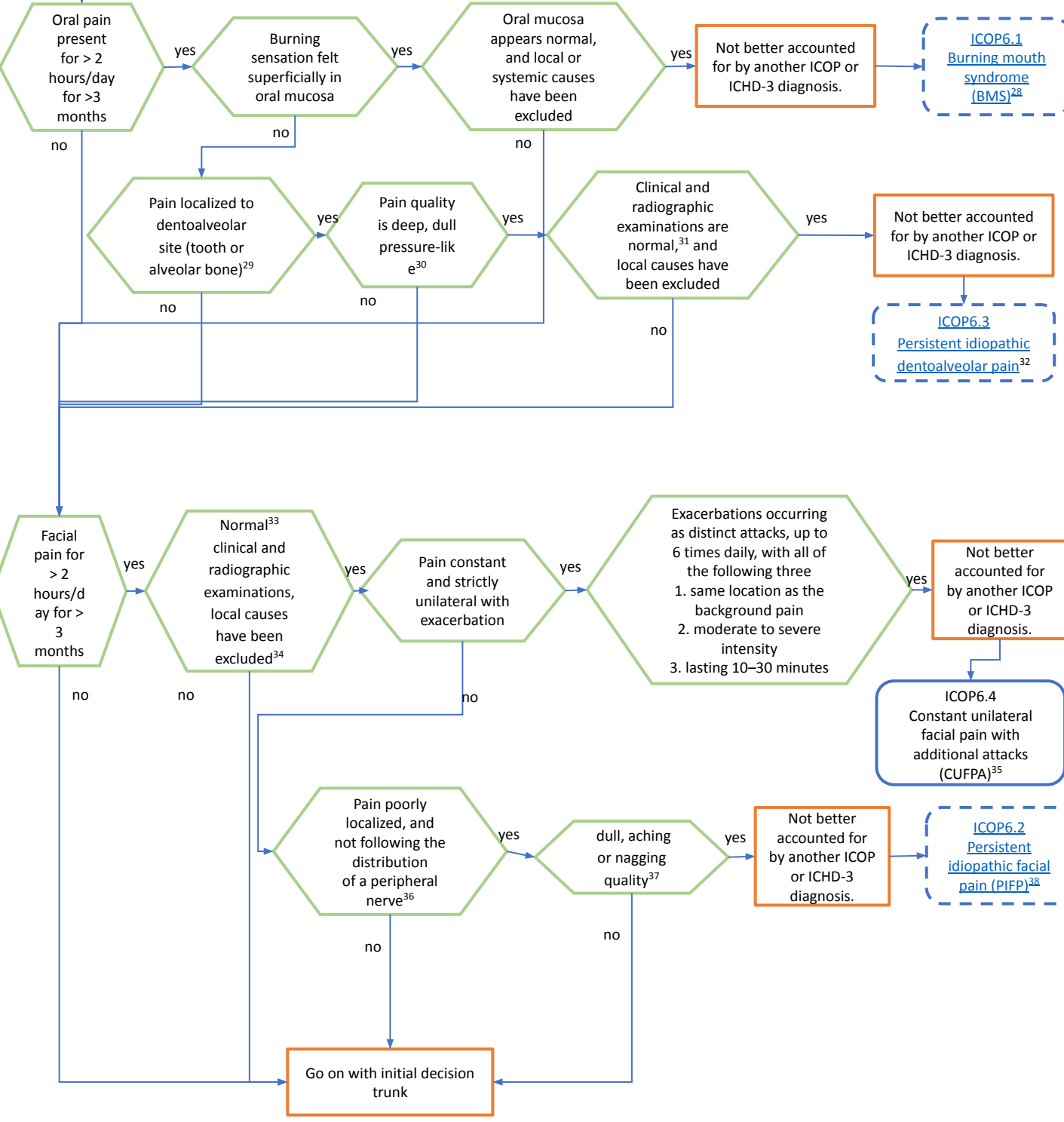
²⁴ During part, but less than half, of the active timecourse of 5.3.1 Orofacial cluster attacks, attacks may be less severe, less frequent and/or of shorter or longer duration.

²⁵ During part, but less than half of the active timecourse of 5.3.2 Paroxysmal hemifacial pain, attacks may be less frequent.

²⁶ During part, but less than half of the active time-course of 5.3.3 Short-lasting unilateral neuralgiform facial pain attacks with cranial autonomic symptoms, attacks may be less frequent.

²⁷ Although essentially an intraoral pain, there may be referral and/or radiation to adjacent sites, particularly when pain is severe. This phenomenon needs to be carefully followed and documented

ICOP6.
Idiopathic
orofacial pain



²⁸A diagnosis of 6.1 Burning mouth syndrome implies that quantitative sensory testing has not been performed. Once it has, either of the two subtypes 6.1.1 Burning mouth syndrome without somatosensory changes or 6.1.2 Burning mouth syndrome with somatosensory changes should be diagnosed.

²⁹Pain is rarely in multiple sites. With time, it may spread to a wider area of the craniocervical region.

³⁰A wide variety of words are used to describe the character and quality of the pain. It may be described as either deep or superficial, and adjunctive symptom description may be employed to explain the complexity of sensations associated with this disorder. Furthermore, the pain can have exacerbations and be aggravated by stress.

³¹Clinical somatosensory assessment with pinprick or light touch perception only very rarely reveals sensory abnormalities. Nociceptive pain reflecting altered processing in the somatosensory system may be present, and related to alteration in the modulatory pain inhibitory system.

³²Quantitative sensory testing differentiates the two subtypes. A diagnosis of 6.3 Persistent idiopathic dentoalveolar pain implies that quantitative sensory testing has not been performed. Once it has, either of the two subtypes 6.3.1 Persistent idiopathic dentoalveolar pain without somatosensory changes or 6.3.2 Persistent idiopathic dentoalveolar pain with somatosensory changes should be diagnosed.

³³In case of PIFP: Clinical somatosensory assessment with pinprick or light touch perception may very rarely reveal slight somatosensory changes. Nociceptive pain reflecting altered processing in the somatosensory system may be present, and related to alteration in the modulatory pain inhibitory system.

³⁴In case of PIFP: patients may report a minor operation or injury to the face, maxilla(e), teeth or gingiva(e), but upon clinical and radiographic examinations there is no demonstrable local cause.

³⁵The exacerbations must occur as attacks clearly distinct from the background pain, with patients describing pain having these two sets of features; otherwise the diagnoses of 5.3.2 Paroxysmal hemifacial pain or 6.2 Persistent idiopathic facial pain should be considered. A response to indomethacin should rather lead to the diagnosis of 5.3.2 Paroxysmal hemifacial pain.

³⁶The pain may be described as either deep or superficial, and may radiate from face to mouth or vice versa. With time, it may spread to a wider area of the craniocervical region.

³⁷A wide variety of words are used to describe the character, and the pain can have exacerbations and may be aggravated by stress.

³⁸Quantitative sensory testing differentiates the two subtypes. A diagnosis of 6.2 Persistent idiopathic facial pain implies that quantitative sensory testing has not been performed. Once it has, either of the two subtypes 6.2.1 Persistent idiopathic facial pain without somatosensory changes or 6.2.2 Persistent idiopathic facial pain with somatosensory changes should be diagnosed.

ICOP1.1.1
Pulpal pain

Pain has all the following characteristics: 1. evoked by external stimuli³⁹ 2. subsiding within a few seconds 3. either or both of: a) a sharp, deep sensation b) poorly localized⁴⁰

yes

Causation is plausible based on anatomical, functional and/or temporal association⁴¹

yes

Not better accounted for by another ICOP diagnosis.

[ICOP1.1.1.1 Pulpal pain attributed to hypersensitivity](#)

no

no

Dental trauma has caused any of the following, exposing vital pulp tissue in the affected tooth:
1. fracture involving enamel, dentin and pulp (complicated crown fracture)
2. fracture involving root cementum, dentin and pulp (complicated root fracture)
3. fracture involving enamel, root cementum, dentin and pulp (complicated crown-root fracture)

yes

Pain developed within minutes to hours after the trauma

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.1.2 Pulpal pain attributed to pulp exposure due to dental trauma⁴²

no

no

Pulpitis in affected tooth has been diagnosed⁴³

yes

Causation is plausible on the basis of anatomical, functional and/or temporal association⁴¹

yes

Not better accounted for by another ICOP diagnosis.

[ICOP1.1.1.3 Pulpal pain attributed to pulpitis \(pulpal inflammation\)⁴⁴](#)

no

no

A systemic disorder or disease known to be able to cause pulpal pain has been diagnosed. E.g. sickle cell anemia

yes

Causation of the pain is clinically plausible

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.1.4 Pulpal pain attributed to systemic cause⁴⁵

³⁹ Hot, cold and sweet are among the external stimuli that may produce pain.

⁴⁰ Often only to an approximate area within two or three teeth adjacent to the affected tooth; occasionally the patient is unable to distinguish whether the pain originates from the mandible or the maxilla.

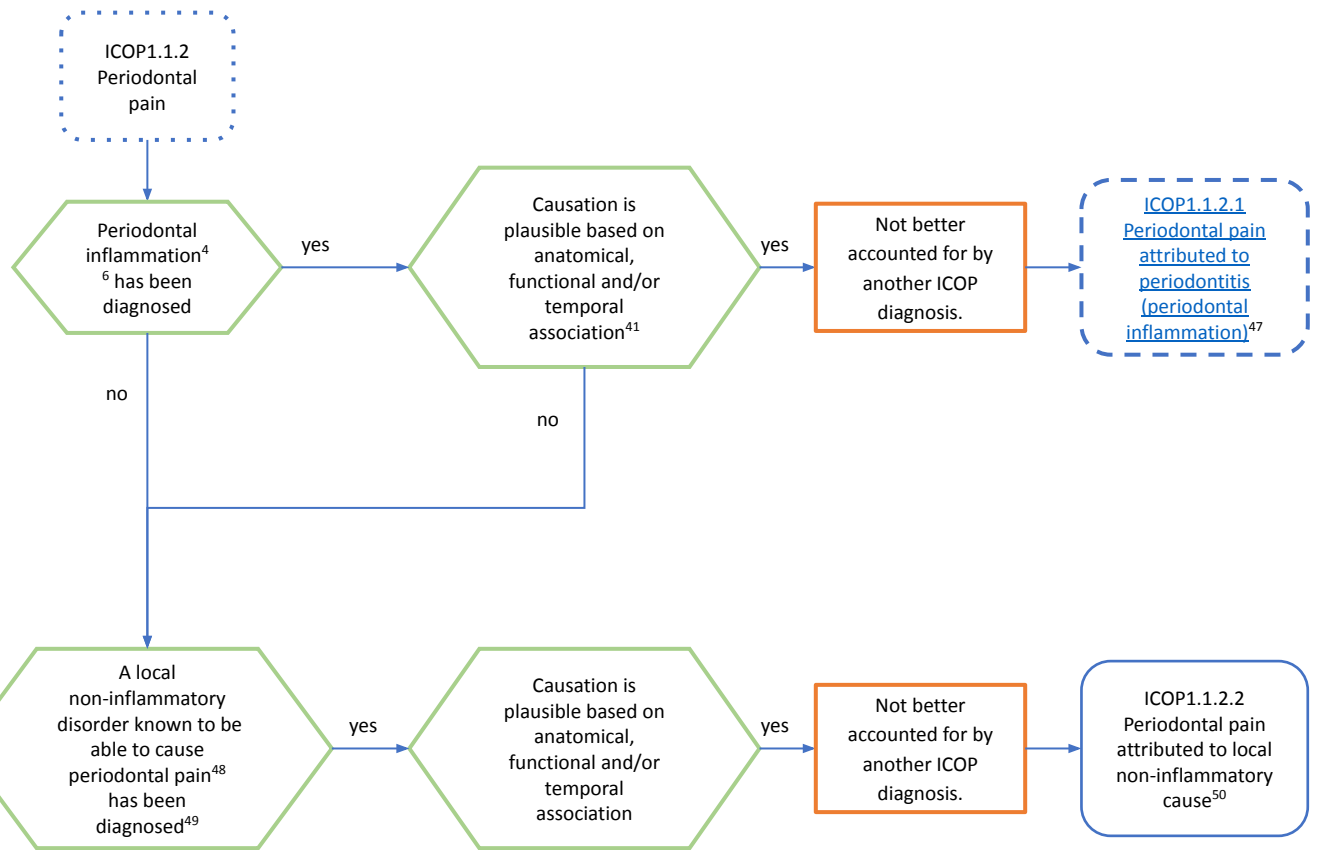
⁴¹ This criterion cascades down to all subforms.

⁴² 1.1.1.2 Pulpal pain attributed to pulp exposure due to dental trauma is mild to moderate. It is typically exacerbated by air, liquids or pressure on the exposed pulp tissue, but subsides when the stimulus ceases. However, in the immediate post-trauma period, there is a lack of temperature sensitivity, spontaneous pain or radiating pain, as these symptoms typically occur later and are associated with inflammation.

⁴³ Pulpitis may be due to trauma or infection, as specified in each subform.

⁴⁴ 1.1.1.3 Pulpal pain attributed to pulpitis can vary from mild to severe and can be related to the severity of the inflammation. However, severe pulpal inflammation can also be asymptomatic. The suggested diagnostic criteria for reversible or irreversible pulpitis presented in the subforms below have not been scientifically validated, and the presence and characteristics of symptoms appear poorly related to the condition of the pulp. When the pulp has been directly exposed to the oral microbiota for a period, it lacks the ability to heal and pulpitis is considered to be irreversible. Therefore, when associated with caries, pulpitis is considered potentially reversible as long as a zone of functionally intact dentin separates the bacterial front from the vital pulp tissue, and potentially irreversible when no such zone exists.

⁴⁵ Pulpal pain can be the result of a systemic disease causing a change in the pulp condition. For example, sickle cell anaemia crises might result in dental pain. Pulpal necrosis, presumed secondary to vaso-occlusive infarcts, has been reported in patients with sickle cell anaemia. The phenomenon of 'sickle cell toothache' may occur if sickle cells become trapped in the pulpal vascular supply and impede blood flow to the pulpal tissue. This leads to hypoxia, symptoms of pulpitis, cell death and ultimately loss of tooth vitality. When a systemic disease leads to pulpal pain, it is not uncommon for several teeth to be affected



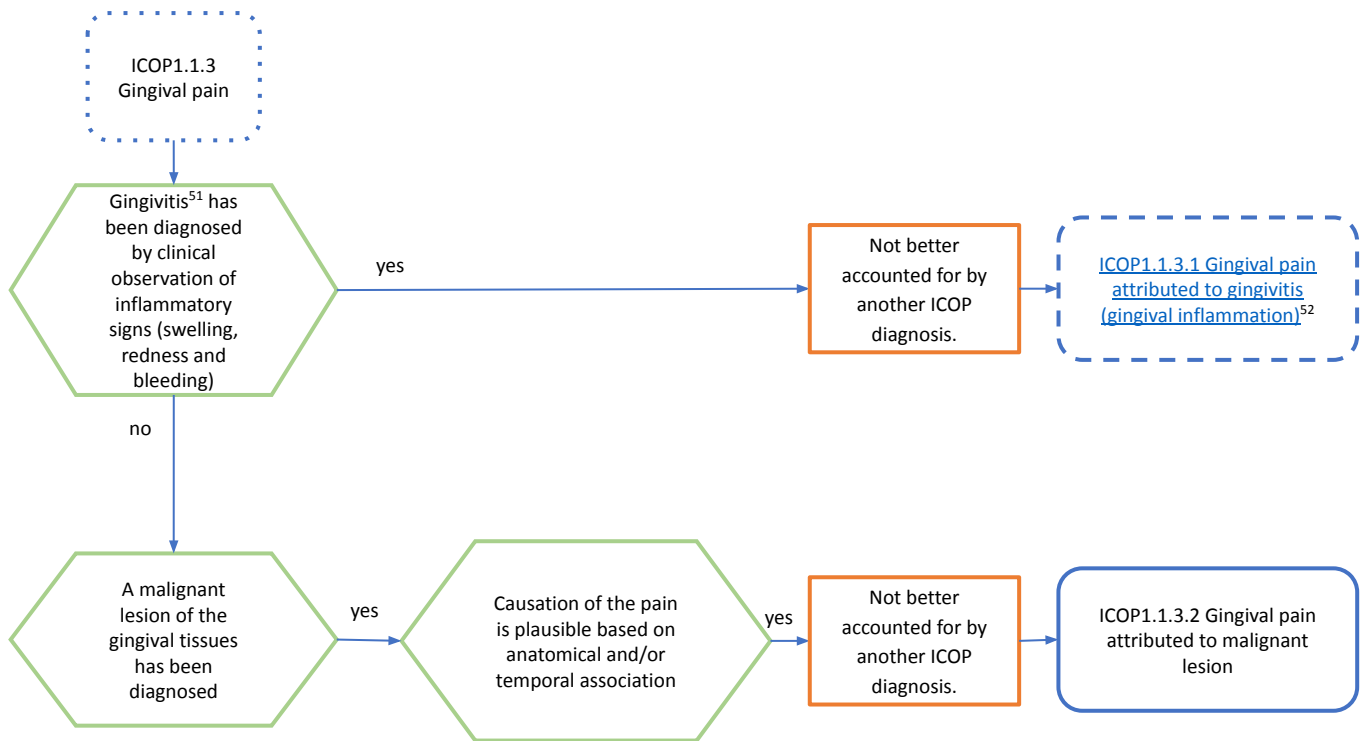
⁴⁶Inflammation may be due to trauma or infection and is specified in each subform.

⁴⁷1.1.2.1 Periodontal pain attributed to periodontitis is subcategorized according to cause of inflammation. Periodontitis (marginal as well as apical) is most frequently asymptomatic but can also present with pain and sometimes observable swelling. In such cases, pain is evoked by mechanical stimulation such as biting or chewing and is typically easy for the patient to localize. There may also be spontaneous pain, which is typically ongoing for hours. The intensity may be mild to severe. The pain can be reproduced by percussion or by applying pressure to the tooth. In association with this type of pain, gingival pain may also occur.

⁴⁸Examples of such disorders are periodontal cyst or tumor.

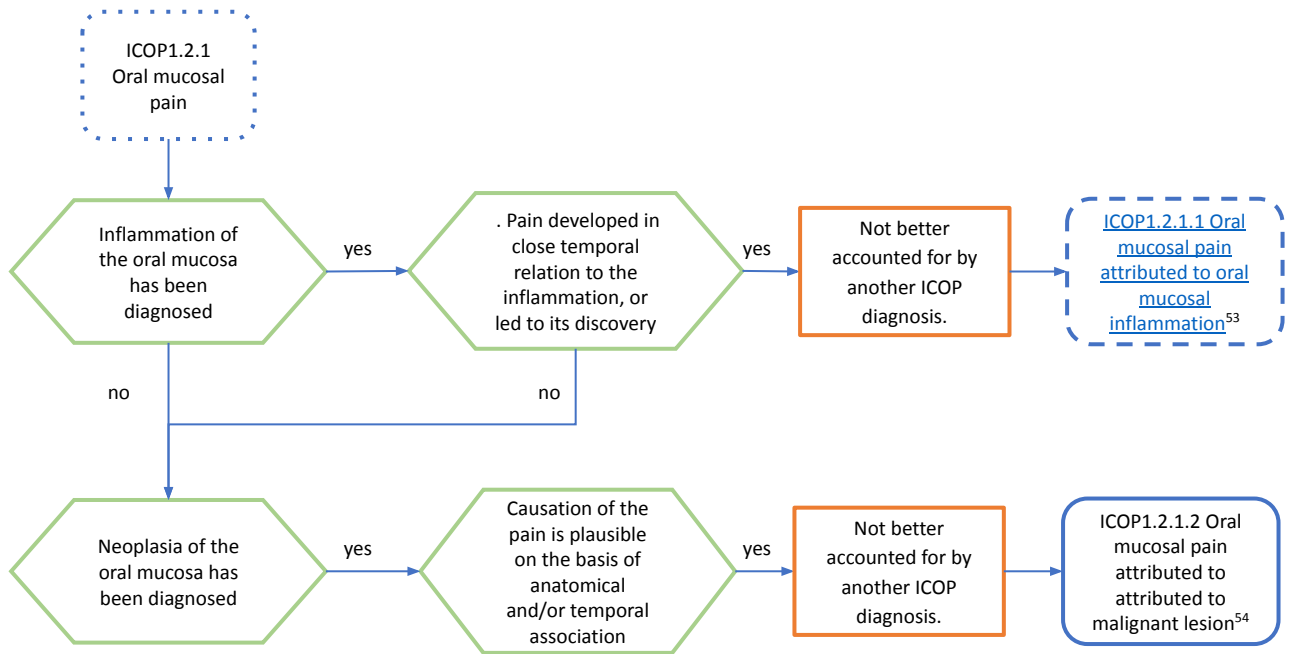
⁴⁹Diagnosis is by clinical, imaging and/or histological examination

⁵⁰1.1.2.2 Periodontal pain attributed to a local non-inflammatory cause is usually mild to moderate. Periodontal cysts, radicular cysts and tumors are frequently asymptomatic but, following expansion, symptoms such as pain, localized swelling and displacement of one or more teeth may occur. In such cases, pain is occasionally evoked by external mechanical stimulation, such as biting or chewing, and is typically easy for the patient to localize. There may also be spontaneous pain, which is seldom severe.



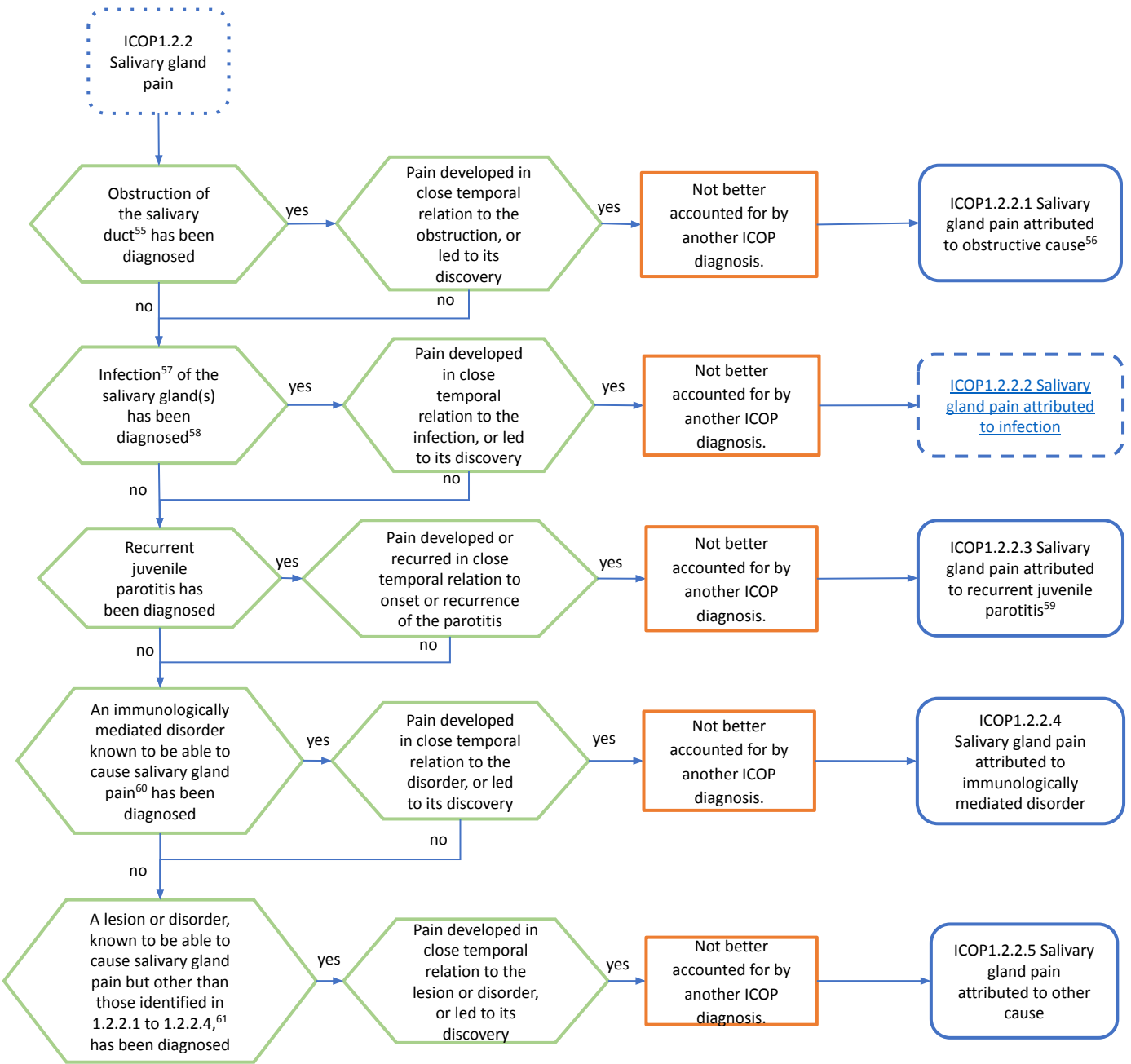
⁵¹Gingivitis due to trauma, infection or systemic disorder is specified in each subform

⁵²Gingivitis may be caused by infection due to specific or non-specific microbial organisms, trauma (physical, thermal, radiation or chemical), autoimmunity or allergic reaction



⁵³Mucosal pain associated with ulcers or other lesions is often associated with high levels of pain-related unpleasantness. The burning pain is often severe, and oral function (eating, talking), quality of life and sleep are frequently impaired.

⁵⁴1.2.1.2 Oral mucosal pain attributed to malignant lesion may be mild to severe and is exacerbated by mechanical provocation of the oral mucosa. Spontaneous pain can occur. The oral mucosa may be affected by an array of both primary and metastatic malignancies, which may all present as non-specific ulcers. Oral squamous cell carcinoma (OSCC) is the most common, frequently presenting as ulceration with clinical induration, fixation to the underlying tissues, rolled exophytic margins, pain and/or numbness.



ICOP1.2.2
Salivary gland
pain

Obstruction of
the salivary
duct⁵⁵ has been
diagnosed

yes

Pain developed in
close temporal
relation to the
obstruction, or
led to its
discovery

yes

Not better
accounted for by
another ICOP
diagnosis.

ICOP1.2.2.1 Salivary
gland pain attributed
to obstructive cause⁵⁶

no

no

Infection⁵⁷ of the
salivary gland(s)
has been
diagnosed⁵⁸

yes

Pain developed
in close
temporal
relation to the
infection, or led
to its discovery

yes

Not better
accounted for by
another ICOP
diagnosis.

[ICOP1.2.2.2 Salivary
gland pain attributed
to infection](#)

no

no

Recurrent
juvenile
parotitis has
been diagnosed

yes

Pain developed or
recurred in close
temporal relation
to onset or recurrence
of the parotitis

yes

Not better
accounted for by
another ICOP
diagnosis.

ICOP1.2.2.3 Salivary
gland pain attributed
to recurrent juvenile
parotitis⁵⁹

no

no

An immunologically
mediated disorder
known to be able
to cause salivary
gland
pain⁶⁰ has been
diagnosed

yes

Pain developed
in close temporal
relation to the
disorder, or led
to its discovery

yes

Not better
accounted for by
another ICOP
diagnosis.

ICOP1.2.2.4
Salivary gland pain
attributed to
immunologically
mediated disorder

no

no

A lesion or disorder,
known to be able
to cause salivary
gland
pain but other than
those identified in
1.2.2.1 to 1.2.2.4,⁶¹
has been diagnosed

yes

Pain developed in
close temporal
relation to the
lesion or disorder,
or led to its
discovery

yes

Not better
accounted for by
another ICOP
diagnosis.

ICOP1.2.2.5 Salivary
gland pain
attributed to other
cause

no

no

⁵⁵Obstruction may be due to sialolithiasis, mucus plug, space-occupying lesion or traumatic or iatrogenic injury of the salivary gland or salivary duct

⁵⁶Patients with obstruction of the salivary duct most commonly present with a history of acute intermittent pain and swelling of the affected major salivary gland. The degree of pain and swelling is dependent on the extent of salivary duct obstruction and the presence of secondary infection.

Infrequent causes for salivary gland pain include benign and malignant tumors of the salivary glands. These are usually not directly associated with pain but may cause pain related to obstruction of the gland or duct.

Iatrogenic causes include therapy-related injury, for example I¹³¹-mediated: salivary gland function is affected after high-activity radioiodine ablation therapy in patients with differentiated thyroid cancer. Radioactive iodine is actively accumulated in salivary gland tissue, and sialadenitis is a common sequela along with decreased saliva secretion and xerostomia leading to salivary gland infection and pain.

⁵⁷The infection may be bacterial or viral, and is specified in each subform

⁵⁸Diagnosis is based on anamnestic information, clinical observations and/or microbiological analysis.

⁵⁹Juvenile recurrent parotitis is a common condition of the salivary glands in children, characterized by intermittent swelling of the parotid glands on one or both sides, with or without pain, and is generally associated with non-obstructive sialectasis of the parotid gland as well as salivary gland hypofunction. It has a biphasic age distribution, with peaks at 2–5 and 10 years of age. The most common symptoms are swelling, pain and fever. Symptoms are limited to about 3 days and may recur frequently, with about eight episodes per year.

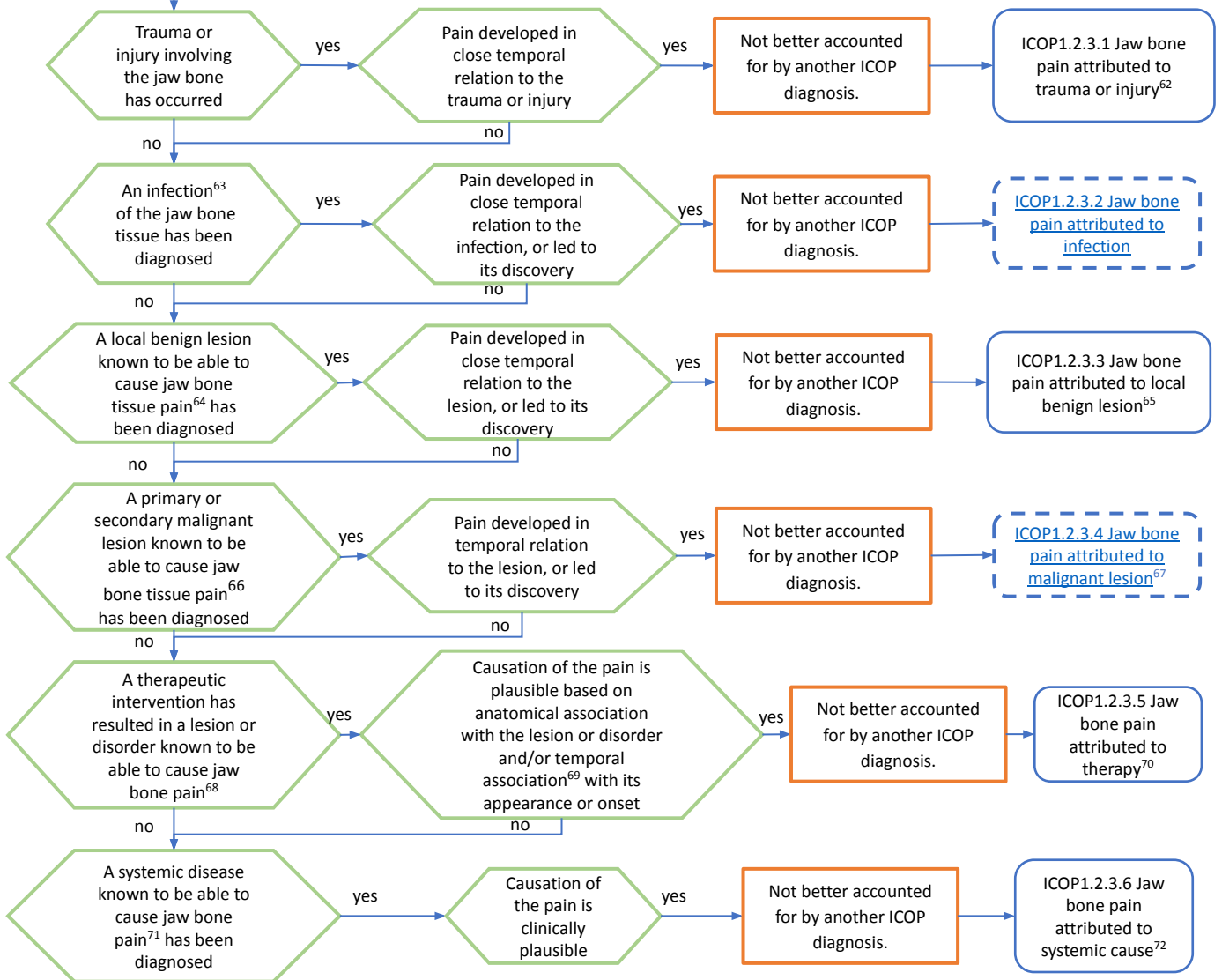
It is diagnosed from the medical history and confirmed by sialography or ultrasonography. The aetiology is unclear but, in most patients, recurrent juvenile parotitis resolves during adulthood.

⁶⁰The most important of these is Sjögren's syndrome.

Sjögren's syndrome is an autoimmune disease that results in salivary gland dysfunction. Symptoms include recurrent or persistent swelling of the salivary glands, dryness of the mouth, difficulty chewing, pain and a burning sensation of oral mucosa, chronic sore throat and pain with swallowing.

⁶¹Another cause of salivary gland pain may be allogeneic transplantation with a graft versus host disease (GVHD). Salivary glands are a major target of GVHD and manifest as hyposalivation and xerostomia, infection and subsequent pain.

ICOP1.2.3 Jaw bone pain



⁶²Jaw bone injury includes jaw fracture. Sports such as football, baseball and hockey, and motor vehicle collisions, account for a high percentage of facial injuries among young adults. Chin lacerations in particular are associated with mandibular fractures. A mandible fracture may be present when the patient experiences restricted or abnormal mouth-opening; malocclusion also suggests the presence of a mandibular fracture. So does numbness of the chin present immediately following trauma

⁶³The infection may be bacterial, viral or fungal, and is specified in each subform.

⁶⁴Local benign lesions include giant cell tumor, osteoid osteoma and osteoblastoma.

⁶⁵Benign bone tumors are often asymptomatic and discovered incidentally during evaluation for trauma or another condition. When they are symptomatic, benign bone tumors may present with localized pain, swelling, deformity or pathologic fracture. Most benign bone tumors have characteristic radiographic features. Advanced imaging techniques (e.g. computed tomography (CT), magnetic resonance imaging (MRI)) may be necessary to characterize bone tumors fully. Giant cell tumor of bone (GCTB) is a relatively rare, benign osteolytic skeletal neoplasm of young adults. The most common presentation is pain and swelling. Skull and craniofacial bones are less commonly involved sites. Patients with osteoid osteoma typically complain of progressively increasing pain that is worse at night and unrelated to activity. The pain is relieved by aspirin or other NSAIDs, usually within 20–25 minutes. Lack of relief by agents should prompt consideration of other diagnoses. Patients with osteoblastoma typically complain of chronic, continuous pain. The radiographic findings of osteoblastoma are variable, and advanced imaging (e.g. CT or MRI) is often required for identification. Pain is not relieved by aspirin or other NSAIDs.

⁶⁶Jaw bone pain may be due to the direct mass effect of primary or metastatic tumors, or to the paraneoplastic effect of metastatic tumors.

⁶⁷Jaw bone pain attributed to malignant lesions, whether primary or metastatic, may present with localized pain that may increase and wane over weeks or months

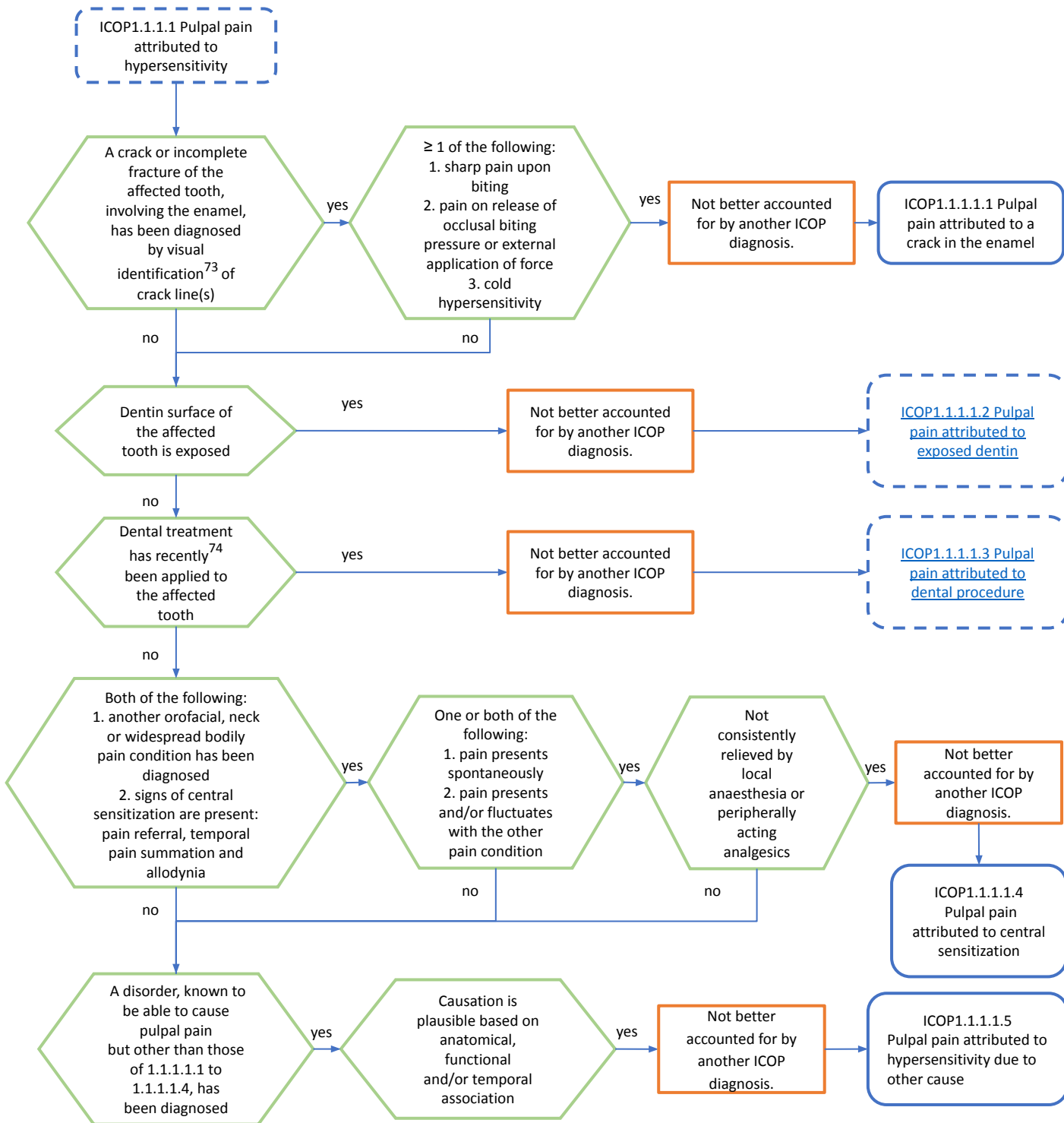
⁶⁸Such lesions or disorders include medication related osteonecrosis of the jaws (MRONJ), osteoradionecrosis and post-extraction alveolar osteitis (dry socket).

⁶⁹The pain usually develops within hours to days of the appearance of the lesion causing it. However, the time to appearance of the lesion is therapy-specific: it may occur directly from an intervention such as surgery, but up to months or years after initiation of medication or radiation.

⁷⁰Medication-related osteonecrosis of the jaw (MRONJ) is defined by the presence of necrotic bone (that is exposed or can be probed through a sinus tract) for more than 8 weeks in the maxillofacial region of an individual treated with bisphosphonate or other antiresorptive (e.g. denosumab) or anti-angiogenic (e.g. bevacizumab) medications. MRONJ typically presents as pain, infection and necrotic bone in the mandible or maxilla in patients receiving these agents. Dentoalveolar surgery is a major risk factor. Osteoradionecrosis is a complication of radiation therapy (RT), due to vascular obliteration and decreased vascular supply of the irradiated tissues. Symptoms of osteoradionecrosis can include pain, bad breath, dysgeusia, dysaesthesia or anaesthesia, trismus, difficulty with chewing and swallowing, speech difficulties, fistula formation, pathologic fracture and infection. The time to onset of osteoradionecrosis is quite variable. In some cases, it may be diagnosed shortly after completion of RT, while in other patients it may not be diagnosed for years after the original cancer treatment. The mandible is the most frequently affected bone while maxillary osteoradionecrosis is rare. Alveolar osteitis (dry socket) is a complication of dental extractions and occurs more commonly in extractions involving mandibular molar teeth. It is associated with severe pain developing 2–3 days postoperatively. A socket that may be partially or totally devoid of blood clot is often found and some patients experience halitosis

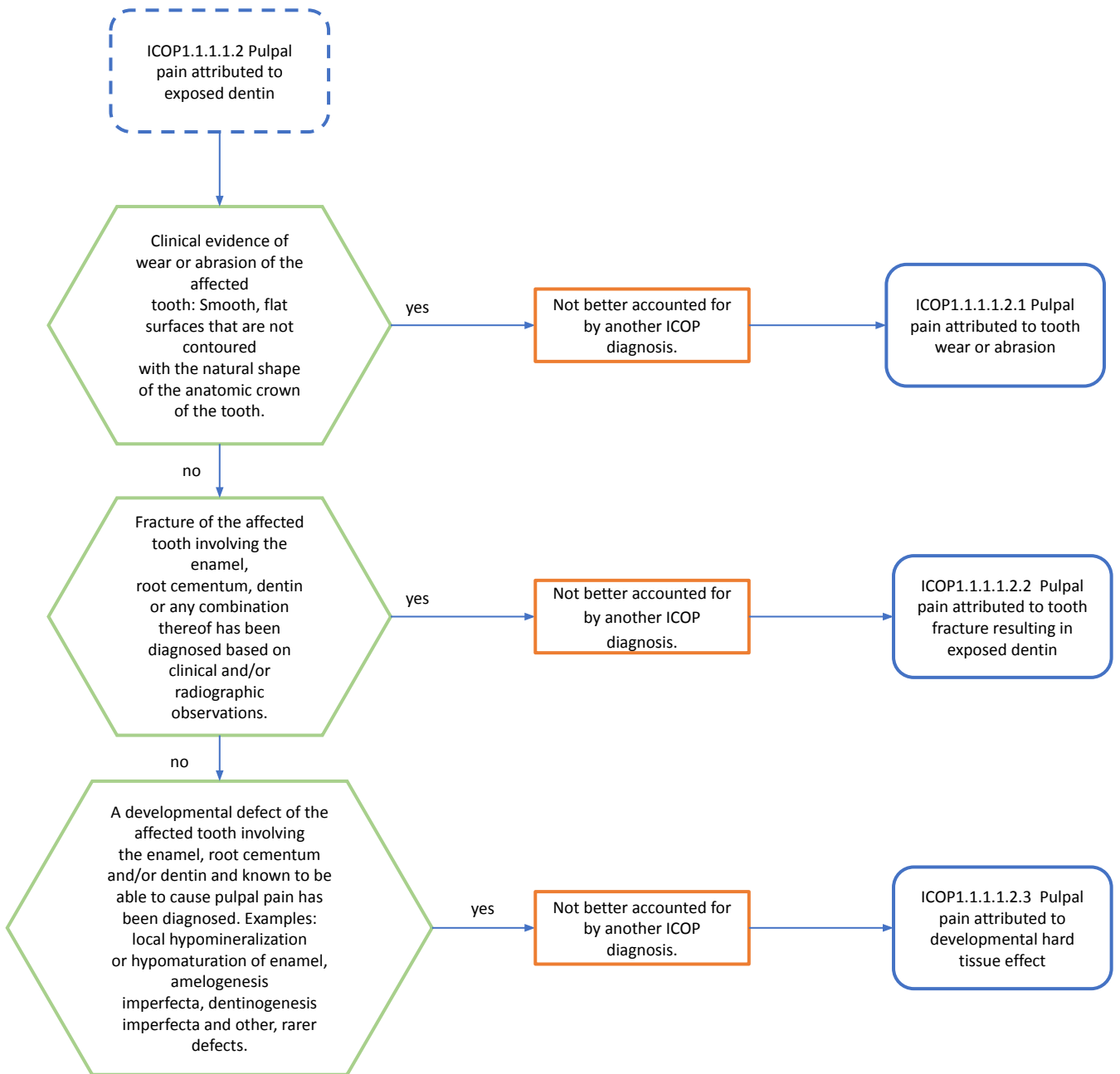
⁷¹Such diseases include sickle cell disease, Gaucher's disease and Paget's disease.

⁷²Some systemic diseases present with repeated vasoocclusive pain episodes, characterized by diffuse bone pain, punctuated by painful crises that often result in osteonecrosis (avascular necrosis). Sickle cell disease (SCD) is characterized by a marked heterogeneity in clinical and haematological severity, with repeated vaso-occlusive pain episodes as the hallmark. These may occur as often as every week, or long stretches of time may pass with none. Pain episodes can lead to bone infarcts, necrosis and, over time, degenerative changes in marrow-containing bone, leading to a chronic state of pain in addition to the more acute painful episodes. Gaucher's disease (GD) is an inborn error of metabolism that affects the recycling of cellular glycolipids, and is one of the most common lysosomal storage diseases. Skeletal disease is characterized by diffuse bone pain, punctuated by painful crises that often result in osteonecrosis (avascular necrosis). Paget's disease of bone (PDB) is also known historically as osteitis deformans. PDB is a focal disorder of bone metabolism, characterized by an accelerated rate of bone remodelling, resulting in overgrowth of bone at single (monostotic PDB) or multiple (polyostotic PDB) sites. Commonly affected areas include the skull, spine, pelvis and long bones of the lower extremity. Similarly to osteosarcomas, these may present with localized pain and swelling and typically occur in patients with polyostotic disease.



⁷³When necessary, visual identification can be aided by magnification, light enhancement and/or visualization with dye.

⁷⁴Pain onset is typically hours to days after the dental procedure.



ICOP1.1.1.1.3 Pulpal pain attributed to dental procedure

Recent removal of dentin has occurred in the affected tooth, which was either or both of the following:
1. deep (i.e. in close proximity to the pulp)
2. wide (i.e. opening up dentinal tubules in a large area)

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.1.1.3.1 Pulpal pain attributed to extensive removal of dentin

no

Recent placement of a direct or indirect dental restoration in the affected tooth

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.1.1.3.2 Pulpal pain attributed to placement of a restoration

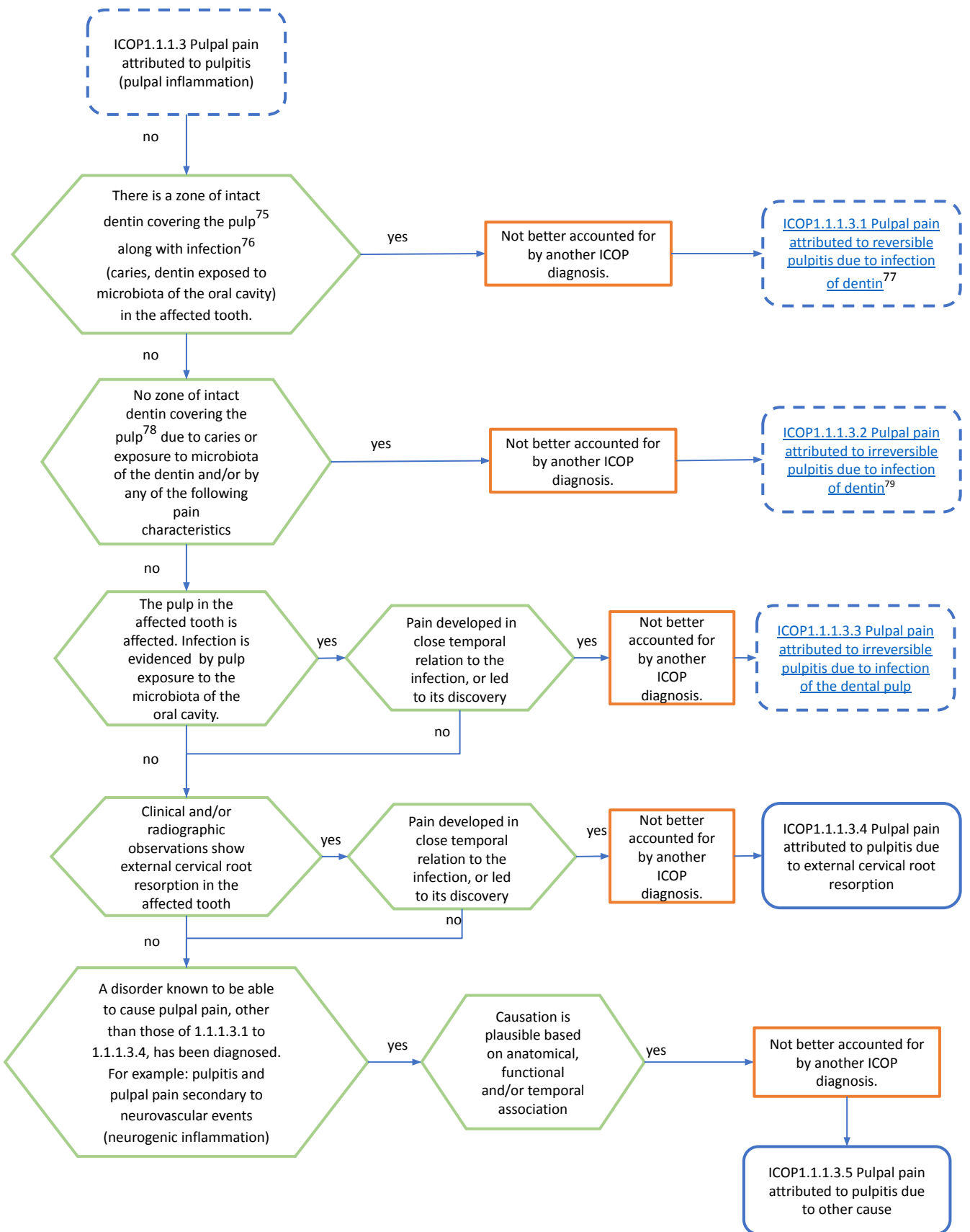
no

A restorative procedure has caused the affected tooth to be in hyperocclusion and/or hyperarticulation. Such procedures include temeporization, dental restoration and prosthodontic replacement.

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.1.1.3.3 Pulpal pain attributed to hyperocclusion or hyperarticulation following dental restorative procedure



⁷⁵Reversibility is diagnosed on the basis of clinical and/or radiographic evidence of a zone of intact dentin covering the pulp

⁷⁶Infection is evidenced by the presence of caries, or dentin exposed to the microbiota of the oral cavity for a period.

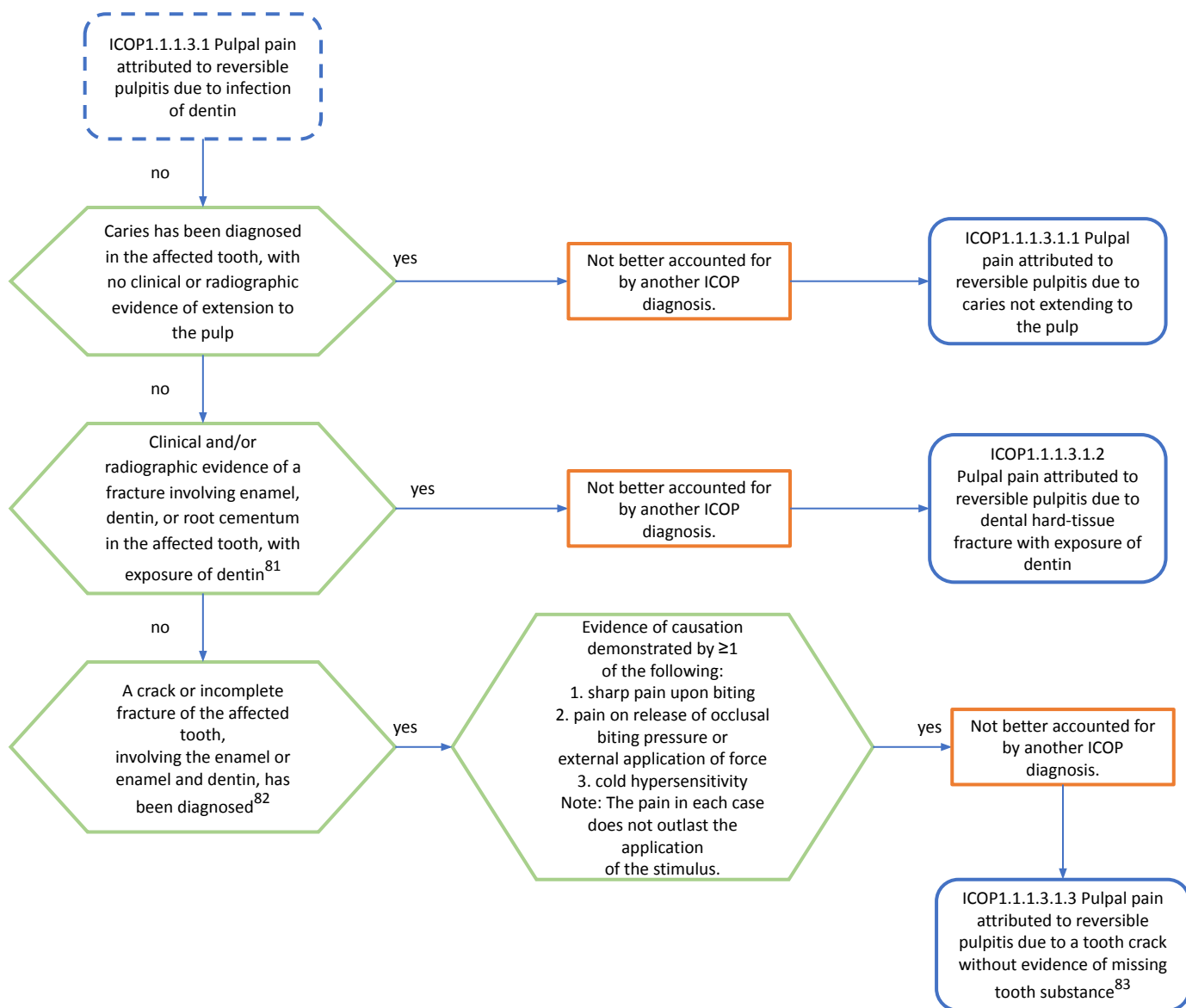
⁷⁷Pain attributed to reversible pulpitis has been described as typically mild, not spontaneous, and provoked by changes in temperature. When evoked by thermal (cold or heat) or mechanical stimulus (probing, drilling), pain is typically short-lasting and does not outlast the stimulus. It responds to peripherally acting analgesics (nonsteroidal anti-inflammatory drugs; NSAIDs).

⁷⁸ Irreversibility is diagnosed by clinical and/or radiographic evidence that no zone of intact dentin covers the pulp, and/or by any of the following pain characteristics:

- a) occurs spontaneously
- b) is continuous
- c) outlasts stimulation (thermal: cold or heat; or mechanical – probing or drilling) of the pulp by more than a few seconds
- d) is of severe intensity
- e) is poorly responsive to NSAIDs

⁷⁹Pain attributed to irreversible pulpitis can be exacerbated by changes in temperature and may also be associated with biting or percussion sensitivity. When evoked, it outlasts the duration of the stimulus. However, the presence of pain is poorly correlated with the status of the pulp. The value of symptoms to determine the condition of the pulp (reversibly or irreversibly inflamed) is debated and controversial, with scientific evidence scarce. Severe continuous pain that does not respond to analgesics (NSAIDs) may indicate irreversible inflammation and need for invasive treatment.

⁸⁰Pain symptoms may range from dentinal hypersensitivity to lingering pain, indicative of pulpitis, and are often accompanied by autonomic signs (see 5.1 Orofacial migraine).

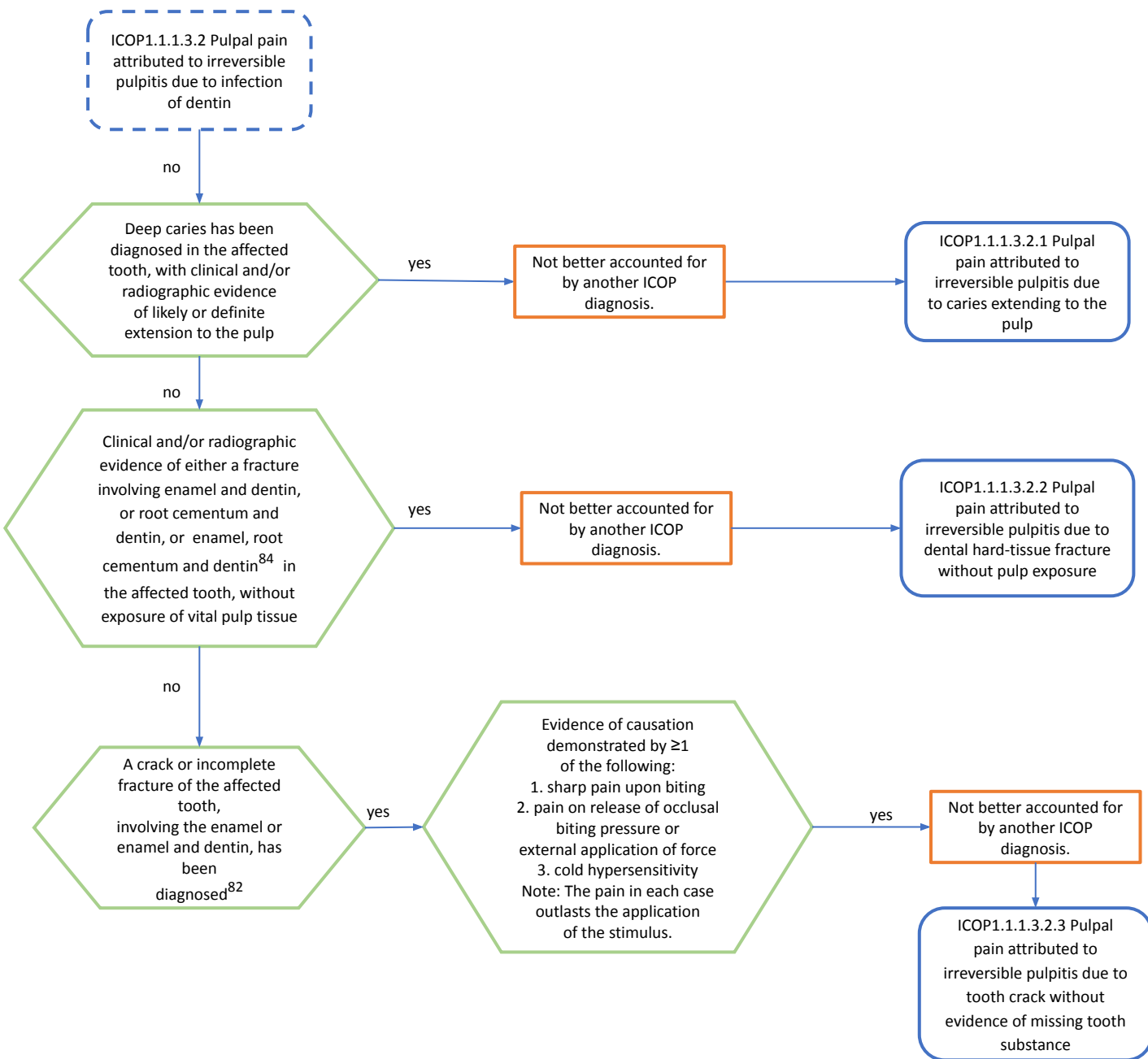


⁸¹Clinical and/or radiographic evidence of any of the following in the affected tooth, with exposure of dentin:

1. fracture involving enamel alone
2. fracture involving enamel and dentin
3. fracture involving root cementum alone
4. fracture involving root cementum and dentin
5. fracture involving enamel, root cementum and dentin

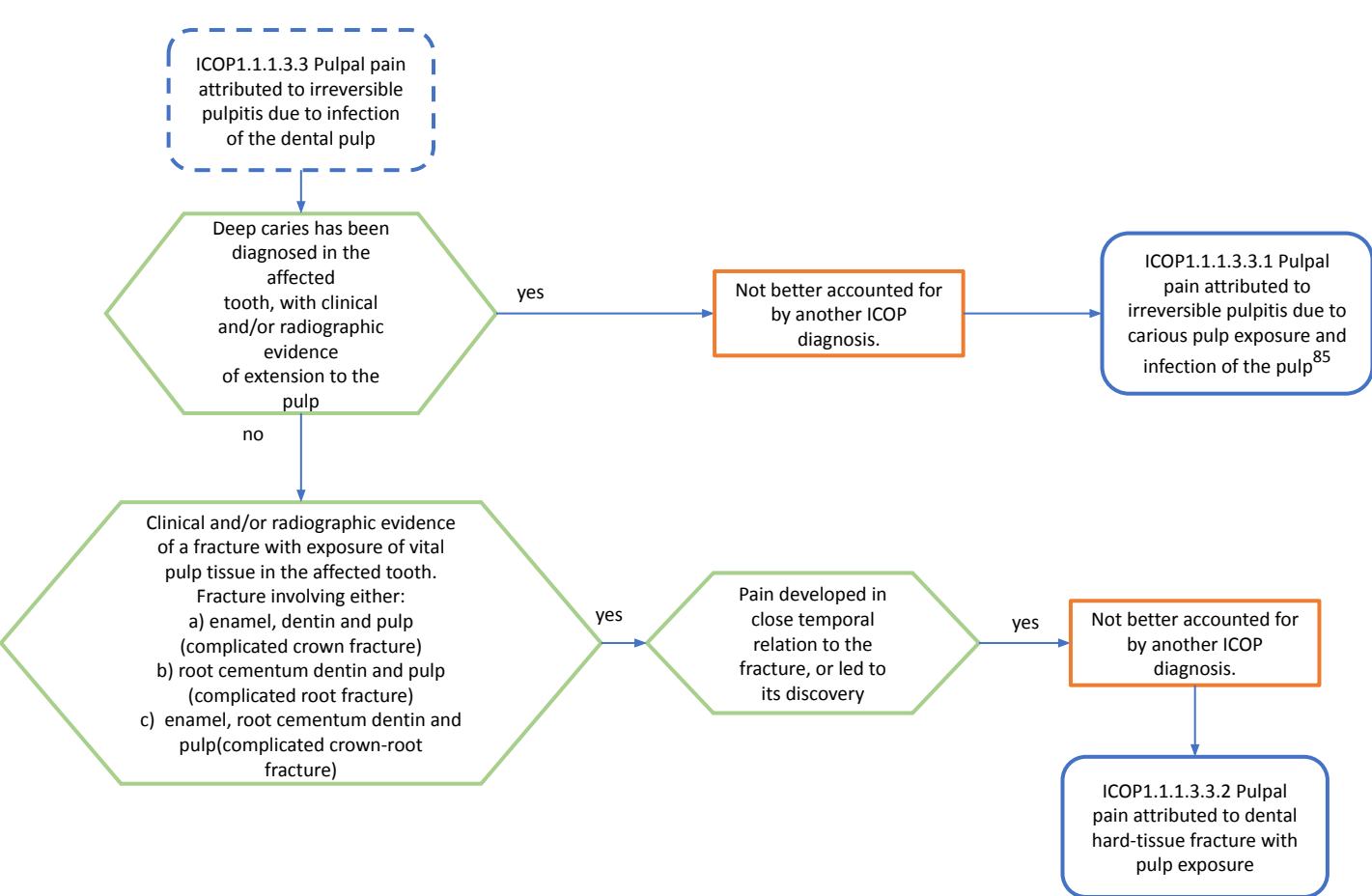
⁸²Diagnosis may be by visual identification of crack line(s), aided by magnification, light enhancement or visualization with dye, and/or by radiographic or other imaging.

⁸³Cracked teeth sometimes have deep probing depths associated with the crack.

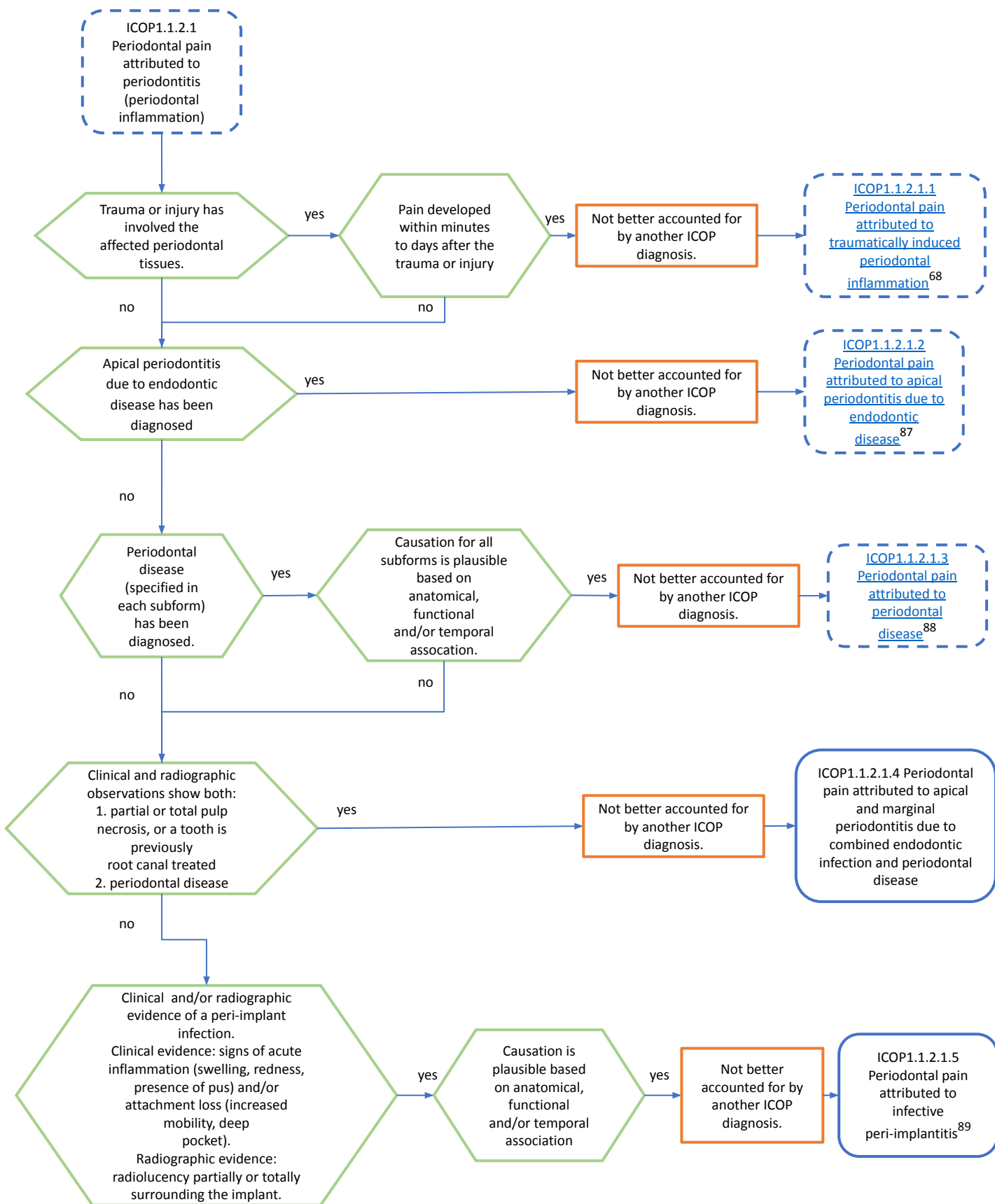


⁸⁴Clinical and/or radiographic evidence of any of the following in the affected tooth, without exposure of vital pulp tissue:

1. fracture involving enamel and dentin (uncomplicated crown fracture)
2. fracture involving root cementum and dentin (uncomplicated root fracture)
3. fracture involving enamel, root cementum and dentin (uncomplicated crown-root fracture)



⁸⁵Histological studies indicate that when the carious lesion (bacterial front) reaches the pulp, inflammation is likely to be irreversible. The assessment is based on clinical and radiographic appearances. If a zone of intact, functional dentin is not seen between the carious dentin and the pulp, it can be concluded that the microbes are in direct contact with and have infected the pulp tissue, resulting in severe inflammation. It should be noted that, in many cases, this condition may be symptom free.



⁶⁸Traumatic injury to periodontal tissues causes acute inflammation of the periodontium and can be painful to a varying degree (from mild to severe); it is exacerbated by mechanical provocation of the tooth.

Spontaneous pain can occur.

Accidental dental trauma or injury affects 10–30% of the population, and almost exclusively occurs in incisors (maxilla 75–80% and mandible 20–25%). The incidence has been reported as two to three injured teeth/100 school children/year, and the prevalence of traumatized permanent teeth in children and adolescents is reported as 6–34%. Epidemiological data suggest that, while mild trauma is most prevalent, approximately 3% of permanent incisors in a population aged 6–50 years have been afflicted with a traumatic injury severe enough to be painful. Iatrogenic causes include accidental dental injuries, but also micro-trauma caused for example by changes in occlusion or articulation following dental treatment, and periodontal damage from interventions such as periodontal surgery. 1.1.2.1.1 Periodontal pain attributed to traumatically induced periodontal inflammation is therefore subcategorized according to type of trauma or injury.

⁸⁷Endodontic disease (i.e. pulpal and periapical disease) is frequently associated with pain that may be mild to severe. Periodontal pain due to endodontic disease is associated with pulpal, periapical, juxtaradicular and/ or periradicular inflammation. A broken barrier against the oral cavity, most often caused by caries, and subsequent bacterial invasion of the pulp and root canal system, are the main causes of inflammation of the pulp and periapical tissues. This type of pain may also affect the gingivae. Endodontic disease, including periapical, juxtaradicular or periradicular inflammation, may also be present without any clinical symptoms.

⁸⁸A combined endodontic and periodontal lesion may be symptom free. If pain is present, it is typically moderate to severe, and other clinical findings may include signs of acute inflammation (swelling, redness, presence of pus), plaque and/or calculus deposit on the root surface, increased tooth mobility and deep periodontal pocket(s). If not previously root canal treated, the tooth shows no or inconclusive evidence of pulp vitality. Imaging shows evidence of marginal and periradicular bone resorption that includes the periapical region. Although localized, the pain frequently refers and/or radiates to other orofacial sites on the same side, especially if the pain is severe. The pain can be reproduced by percussion or by applying pressure on the tooth and/ or the adjacent periapical vestibular region.

⁸⁹Inflammation surrounding a dental implant is most frequently painless but, when pain occurs, it is typically moderate to severe. Other clinical findings may include plaque and/or calculus deposit on the implant surface. Imaging shows poor bony integration of the implant and evidence of horizontal marginal bone loss or localized peri-implant bone resorption. Patients with 1.1.2.1.5 Periodontal pain attributed to infective peri-implantitis are also likely to be affected by 1.1.3 Gingival pain.

ICOP1.1.2.1.1
Periodontal pain
attributed to
traumatically
induced
periodontal
inflammation

A change in occlusal conditions has occurred, with resultant hyperocclusion or hyperarticulation identified by ≥ 1 of the following:
1. primary contact affecting a tooth in occlusion or articulation
2. hypermobility of a tooth

yes

Pain developed within hours to days after the change in occlusal conditions

yes

Mechanical provocation (pressure, percussion of affected tooth) reproduces the pain

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.2.1.1.1
Periodontal pain attributed to hyperocclusion or hyperarticulation⁹⁰

no

no

no

A surgical intervention has involved the periodontium

yes

Pain developed within hours to days after the surgical intervention

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.2.1.1.2
Postoperative periodontal pain⁹¹

no

no

Accidental trauma has affected a tooth, with clinical and/or radiographic evidence of one or more of the following:
1. concussion
2. subluxation
3. lateral luxation
4. intrusion
5. extrusion
6. avulsion
7. root fracture (horizontal or vertical)

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.2.1.1.3
Periodontal pain attributed to accidental dental trauma⁹²

no

Non-accidental or non-violent trauma⁹³ has involved the affected tooth or teeth

yes

Pain developed in close temporal relation to the trauma, or led to its discovery

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.2.1.1.4
Periodontal pain attributed to other trauma or injury

⁹⁰Periodontal pain attributed to occlusal factors involves sensitization of periodontal nociceptors and an inflammatory response due to the excessive loading of the tooth. The history involves recent dental restoration, tooth extraction or other change in occlusion or articulation. The patient may report that the tooth feels elevated. Clinically, a primary contact in occlusion or articulation is observed. The pain can be reproduced by percussion or by applying pressure to the tooth. The tooth may have increased mobility and, if so, radiographic examination may show widening of the periodontal space.

⁹¹Postoperative periodontal pain is iatrogenic, caused by surgically induced tissue damage and subsequent inflammation. The pain is typically mild to moderate and may be accompanied by clinically observable swelling and, occasionally, pus formation. If normal physiological (primary) healing occurs, the pain duration is typically short (1–2 weeks). Prolonged pain, due to secondary healing and/or postoperative infection, is occasionally observed but usually does not exceed 3 months.

⁹²Accidental dental trauma or injury affects 10–30% of the population, and almost exclusively occurs in incisors (maxilla 75–80% and mandible 20–25%). The incidence has been reported as two–three injured teeth/100 school children/year, and the prevalence of traumatized permanent teeth in children and adolescents is reported as 6–34%. Epidemiological data suggest that, while mild trauma is most prevalent, approximately 3% of permanent incisors in a population aged 6–50 years have been afflicted with a traumatic injury severe enough to be painful. Concussion, subluxation and extrusion trauma may also include pulpal injury, and periodontal pain may occur together with pulpal pain (see 1.1.1 Pulpal pain). Lateral luxation and intrusion trauma also induce pulpal and alveolar bone injuries, and periodontal pain may occur together with pulpal pain and jaw bone pain (see 1.1.1 Pulpal pain and 1.2.3 Jaw bone pain). Avulsion trauma may also include alveolar bone injury, and periodontal pain may occur together with 1.2.3 Jaw bone pain. A root fracture is a hard-tissue injury which may or may not reach the pulp space. If the pulp is involved, it is directly exposed to bacterial assault from the oral cavity and quickly becomes inflamed. If the pulp is vital, the pain may coincide with 1.1.1.3.3.2 Pulpal pain attributed to irreversible pulpitis due to dental hard-tissue fracture with pulp exposure. In addition to accidental trauma, other common reasons for root fracture include excessive loading of a root canal-treated tooth, typically with a post-and-core. Dental trauma frequently causes periodontal pain. The clinical and radiographic presentation, and the characteristics and severity of pain, depend on the nature and severity of the traumatic injury. Below follows a brief description of the trauma diagnoses used in dental practice (from the Dental Trauma Guide; <https://dentaltraumaguide.org> (accessed January 2020)).

Periodontal pain due to concussion is caused by accidental injury to the periodontium and subsequent inflammation. The tooth displays normal mobility and is not displaced from its alveolar socket. Unless previously root canal treated, the tooth typically shows evidence of a vital pulp. Imaging shows normal periradicular conditions.

Periodontal pain due to subluxation is caused by accidental injury to the periodontium and subsequent inflammation. The tooth displays increased mobility but is not displaced from its alveolar socket. Clinical findings include bleeding from the gingival sulcus. The tooth responds to pulp vitality testing in about 50% of cases. Radiographic examination may show a widening of the periodontal space.

Periodontal pain due to lateral luxation is caused by accidental injury to the periodontium and subsequent inflammation. The tooth is laterally displaced from its alveolar socket in combination with comminution or fracture of the buccal or lingual/palatal alveolar bone. The periodontal ligament is partially or totally separated, and bleeding is seen from the sulcus. The tooth usually displays decreased mobility and may interfere with the occlusion and/or articulation. The tooth usually does not respond to pulp vitality testing. Radiographic examination shows variation in periodontal space width depending on the projection.

Periodontal pain due to intrusion is caused by accidental injury to the periodontium and subsequent inflammation. The tooth is axially displaced into the alveolar bone, and thus appears shorter than the adjacent teeth. The injury is accompanied by comminution or fracture of the alveolus. Other clinical findings may include decreased mobility and high percussion sound. The tooth usually does not respond to pulp vitality testing. Radiographic examination shows absence of (or decreased width of) the periodontal ligament space in all or part of the tooth.

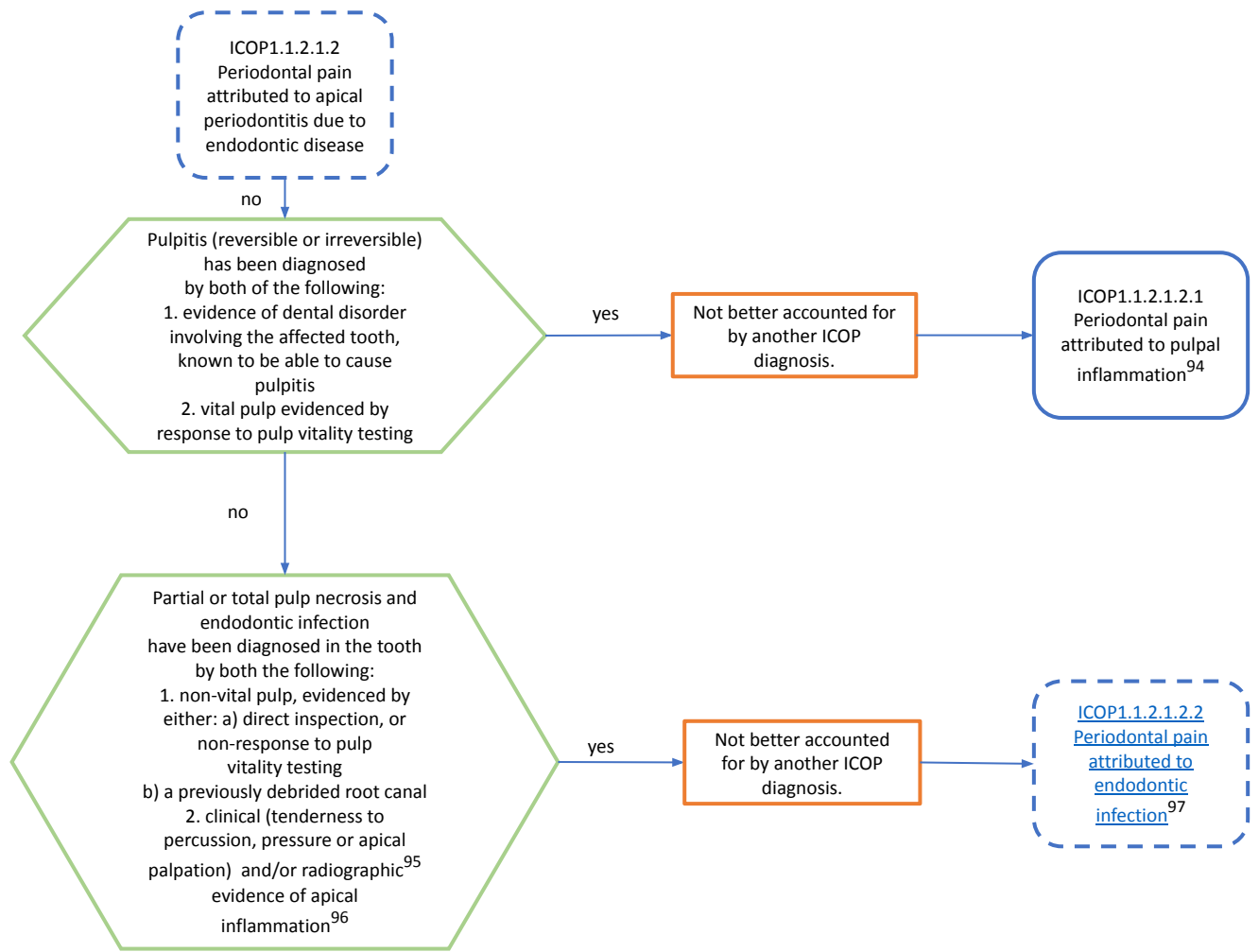
Periodontal pain due to intrusion is caused by accidental injury to the periodontium and subsequent inflammation. The tooth is axially displaced into the alveolar bone, and thus appears shorter than the adjacent teeth. The injury is accompanied by comminution or fracture of the alveolus. Other clinical findings may include decreased mobility and high percussion sound. The tooth usually does not respond to pulp vitality testing. Radiographic examination shows absence of (or decreased width of) the periodontal ligament space in all or part of the tooth.

Periodontal pain due to extrusion is caused by accidental injury to the periodontium and subsequent inflammation. The tooth is axially displaced and partially out of its socket, and thus appears elongated. The periodontal ligament is partially or totally separated and there is bleeding from the sulcus, but the alveolar socket bone is intact. The tooth has increased mobility and may interfere with occlusion/articulation. The tooth usually does not respond to pulp vitality testing. Radiographic examination shows increased width of the periodontal ligament space.

Periodontal pain due to avulsion is caused by accidental injury to the periodontium and subsequent inflammation. The tooth is completely displaced out of its socket, which is found empty or filled with a coagulum. The surrounding alveolar bone may be fractured.

Periodontal pain due to root fracture is caused by dislocation or fragments and/or subsequent infection causing periodontal inflammation. The history may or may not reveal an accidental traumatic event. The coronal fragment may be displaced, and the tooth may appear longer than the adjacent teeth, may display increased mobility and may interfere with occlusion/ articulation. A local deep periodontal pocket may be present. Imaging shows a vertical or horizontal fracture confined to the root. If not previously root-filled, the tooth may or may not respond to pulp vitality testing.

⁹³By anamnestic, clinical or radiographic or other imaging findings, a trauma known to be able to cause periodontal inflammation can be identified, such as insufficient cooling during dental restorative procedures, interdental foreign body impaction (including food impaction), defective dental restoration, or apically extruded endodontic material. Clinical findings may include signs of acute inflammation (swelling, redness, presence of pus), increased tooth mobility and/or local deep periodontal pocket. Unless root canal treated, the tooth typically shows evidence of a vital pulp. Imaging may display local marginal bone loss, which may or may not include the periapical region.



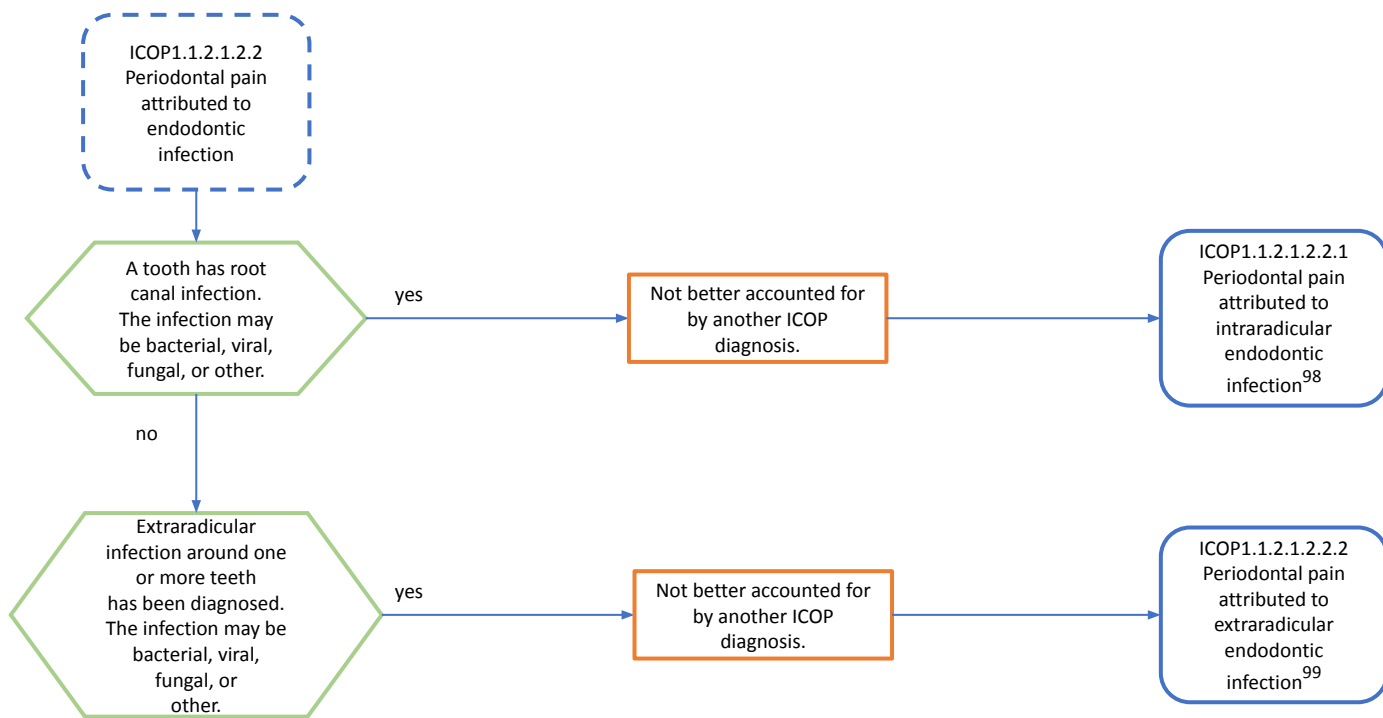
⁹⁴Periodontal pain secondary to pulpal inflammation is associated with symptomatic pulpitis. The periodontal inflammation is centred on the periapical region. The pulp is vital and thus the tooth typically responds to pulp vitality testing. The tooth is often tender to percussion. Clinical findings may include deep caries, deep/defective restoration, or external cervical root resorption. Imaging may or may not show evidence of diffuse local periapical bone resorption or sclerosis. According to the literature, the association is weak

between the actual state of the pulp and the periodontium (histology) and diagnostic findings, including present and historical symptoms such as characteristics of tooth pain, clinical observations and test results. Current diagnostics are largely based on expert opinion and a few studies with quality deficits. 1.1.2.1.2.1 Periodontal pain attributed to pulpal inflammation frequently also fulfils the criteria for 1.1.1.3 Pulpal pain attributed to pulpitis. Both diagnoses should then be made.

⁹⁵Radiographic evidence includes apical or juxtaradicular radiolucency or sclerosis.

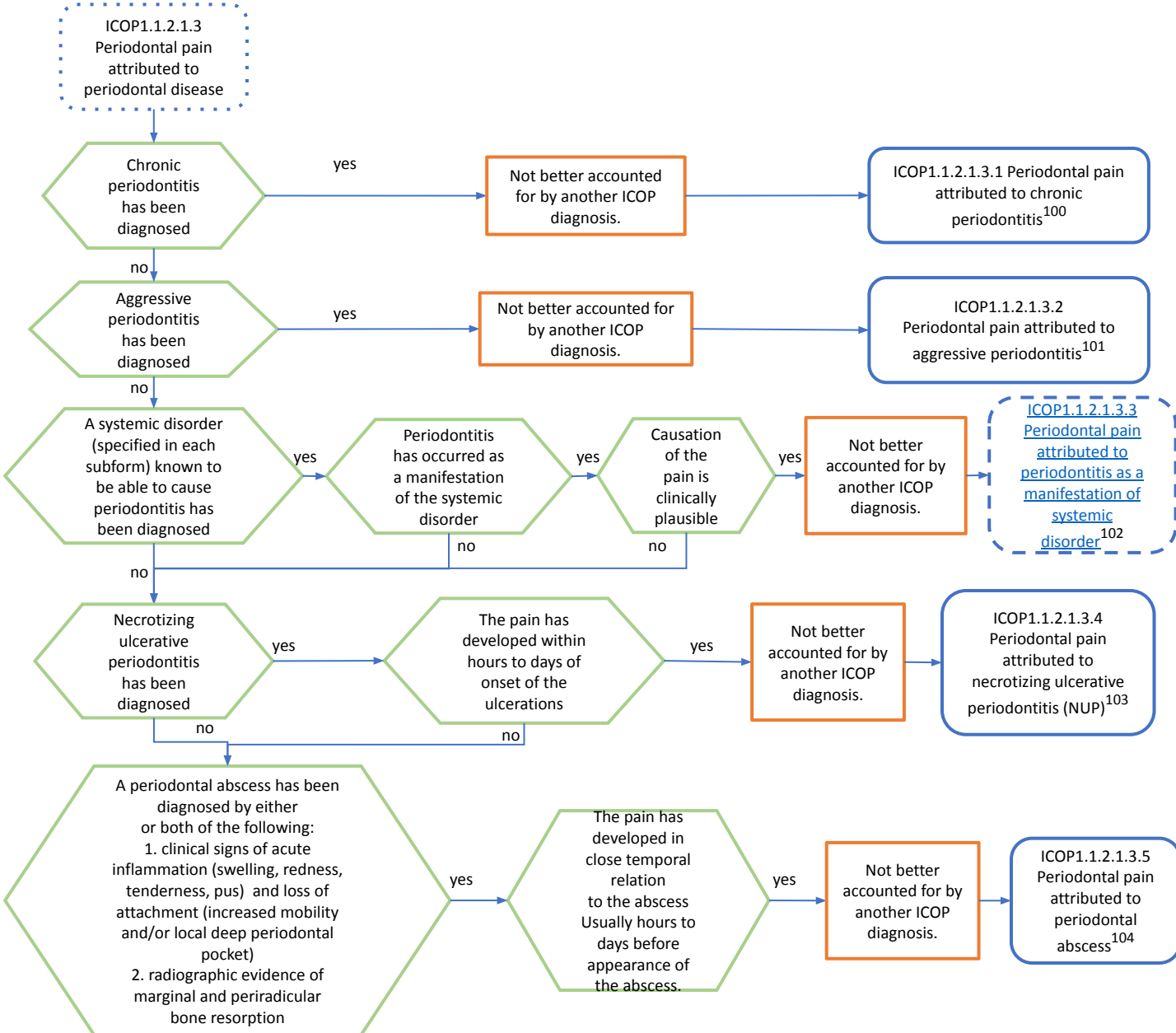
⁹⁶Apical inflammation includes symptomatic apical periodontitis or acute apical abscess.

⁹⁷Periodontal pain due to endodontic infection is associated with non-vital pulp (or a previously root-filled tooth) and infection of the pulp space. The pulp is totally or partially necrotic (unless the tooth is previously root canal treated), and the tooth typically does not respond to pulp vitality testing. Although localized, the pain frequently refers and/or radiates to other orofacial sites on the same side, especially if the pain is severe. The pain can be reproduced by percussion or by applying pressure on the tooth and/or the adjacent periapical vestibular region. Imaging typically shows evidence of local periapical bone resorption. The inflammatory response in the periapical tissues is caused by root canal infection with a mixed flora. An increased incidence of pain and swelling in apical periodontitis is associated with presence of specific anaerobes: Porphyromonas, Peptostreptococcus and Prevotella species. Upon local infection spread, a periapical abscess



⁹⁸In most teeth with infected necrotic pulp, the infection is confined to the root canal system. Successful infection treatment usually results in pain resolution.

⁹⁹In 1.1.2.1.2.2.2 Periodontal pain attributed to extraradicular endodontic infection, the infectious agent causing the periodontal inflammation resides on the external root surface, apically or in association with accessory canal orifices, or in the periapical tissues. Extraradicular endodontic infection may occur with or without intraradicular infection. In either case, the microbes colonize the external apical foramen and root surface, forming a biofilm. Anaerobic species such as Actinomyces and Propionibacterium also have the ability to form colonies in the periapical tissues at some distance from the root, and this has been associated with remaining symptoms, including pain, after root canal treatment. The pain typically does not resolve after successful disinfection of the root canal system. Imaging occasionally reveals signs of external apical root resorption.



¹⁰⁰1.1.2.1.3.1 Periodontal pain attributed to chronic periodontitis may present in association with increased tooth mobility and poor oral hygiene routines and is typically mild. The pain typically appears only on provocation and does not linger. Most cases of chronic periodontitis are not painful but may become painful on inflammatory exacerbation (see 1.1.2.1.3.5 Periodontal pain attributed to periodontal abscess). Chronic periodontitis is characterized by slowly progressing attachment loss, sometimes with periods of more rapid progression. The absence or low level of pain has been attributed to the mainly chronic inflammatory cell infiltrates surrounding the infectious source, and functional drainage.

¹⁰¹1.1.2.1.3.2 Periodontal pain attributed to aggressive periodontitis may present in association with increased tooth mobility and poor oral hygiene routines and is typically mild to moderate. The pain usually appears only on provocation and does not linger. Aggressive periodontitis is characterized by rapidly progressing attachment loss and, sometimes, onset at a young age.

¹⁰²In addition to the more common plaque-induced periodontal disease, a number of systemic disorders manifest as periodontitis. The disorders listed below are considered causative factors for periodontitis. They may also alter the course of plaque-induced periodontitis from chronic to aggressive. 1.1.2.1.3.3 Periodontal pain attributed to periodontitis as a manifestation of systemic disorder may present in association with increased tooth mobility and poor oral hygiene routines. The pain is typically mild to moderate, appears only on provocation and does not linger. However, reports on the degree to which periodontitis as a manifestation of a systemic disorder is associated with pain are essentially lacking in the literature.

ICOP1.1.2.1.3.3
Periodontal pain
attributed to
periodontitis as a
manifestation of
systemic disorder

The systemic disorder is one of the following:
1. acquired neutropenia
2. leukaemia
3. other haematological disorder known to be able to cause periodontitis.

yes

ICOP1.1.2.1.3.3.1
Periodontal pain
attributed to
haematological
disorder

no

The systemic disorder is one of the following:
1. familial and cyclic neutropenia
2. Down syndrome
3. leukocyte adhesion deficiency syndromes
4. Papillon–Lefèvre syndrome
5. Chediak–Higashi syndrome
6. histiocytosis syndromes
7. glycogen storage disease
8. infantile genetic agranulocytosis
9. Cohen syndrome
10. Ehler–Danlos syndrome (types IV and VIII)
11. hypophosphatasia
12. other genetic disorder known to be able to cause periodontitis.

yes

ICOP1.1.2.1.3.3.2
Periodontal pain
attributed to
genetic disorder

no

The systemic disorder is known to be able to cause periodontitis but is neither haematological nor genetic.

yes

ICOP1.1.2.1.3.3.3
Periodontal pain
attributed to
unspecified
systemic disorder

¹⁰³Necrotizing ulcerative periodontitis (NUP) is a rare oral infection, a more severe form of necrotizing (ulcerative) gingivitis which, besides causing soft tissue destruction, also includes loss of attachment and alveolar bone. The two conditions are often conflated into necrotizing periodontal diseases (NPD), and are associated with diminished systemic resistance and immune dysfunction. The predisposing factors include severe stress, sleep deprivation, alcohol, smoking and HIV infection. 1.1.2.1.3.4 Periodontal pain attributed to necrotizing ulcerative periodontitis (NUP) is typically severe. Pain is provoked by physical stimuli applied to the affected tooth or surrounding tissue. Pain also occurs spontaneously. Clinically, necrotic soft tissue lesions and loss of attachment can be observed.

¹⁰⁴A periodontal abscess is an exacerbation of chronic periodontitis or aggressive periodontitis, and pain due to this is usually severe. In addition to swelling, other clinical findings include plaque and/or calculus deposit on the root surface, usually with increased tooth mobility and a local deep periodontal pocket. Unless previously root canal treated, the tooth typically shows evidence of a vital pulp. Imaging shows evidence of marginal and periradicular bone resorption, which may or may not include the periapical region. Although localized, the pain frequently refers and/ or radiates to other orofacial sites on the same side, especially if the pain is severe. The pain can be reproduced by percussion or by applying pressure on the tooth and/or the adjacent periapical vestibular region.

ICOP1.1.3.1 Gingival pain attributed to gingivitis (gingival inflammation)

mechanical, thermal or chemical trauma or injury involving the gingival tissues has occurred

yes

Both of the following:
1. pain is localized to the traumatized or injured tissues
2. pain developed within minutes to days after the trauma or injury

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.3.1.1 Gingival pain attributed to trauma¹⁰⁵

no

no

Infection of the gingival tissues has been diagnosed based on anamnestic information, clinical observations and/or microbiological analysis.

yes

Pain developed in close temporal relation to the infection, or led to its discovery

yes

Not better accounted for by another ICOP diagnosis.

[ICOP1.1.3.1.2 Gingival pain attributed to infection](#)¹⁰⁶

no

no

An autoimmune disease or disorder known to be able to cause gingival pain has been diagnosed. E.g. mucous membrane pemphigoid, Sjögren's syndrome and pemphigus

yes

Causation of the pain is clinically plausible

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.3.1.3 Gingival pain attributed to autoimmunity¹⁰⁷

no

no

A hypersensitivity or allergic reaction in the gingival tissues¹⁰⁸ has occurred

yes

Pain developed in temporal relation to the hypersensitivity or allergic reaction, or led to its discovery

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.3.1.4 Gingival pain attributed to hypersensitivity or allergic reaction¹⁰⁹

no

no

A disorder, known to be able to cause gingivitis but other than those in 1.1.3.1.1 to 1.1.3.1.4,¹¹⁰ has been diagnosed

yes

Pain developed in close temporal relation to the disorder, or led to its discovery

yes

Not better accounted for by another ICOP diagnosis.

ICOP1.1.3.1.5 Gingival pain attributed to gingival inflammation due to other cause¹¹¹

¹⁰⁵Traumatic injury of gingival tissues causes acute inflammation and can be painful to a varying degree. Traumatic ulceration of the gingiva may be acute or chronic in nature with the latter diagnostically more challenging due to underlying fibrosis and clinical appearance of neoplastic induration. 1.1.3.1.1 Gingival pain attributed to trauma may be mild to severe and is exacerbated by mechanical provocation of the gingivae. Spontaneous pain can occur. Causes of 1.1.3.1.1 Gingival pain attributed to trauma include accidental dental injuries, but also microtrauma caused, for example, during eating or drinking overly hot foods or drinks, following dental treatment, or by trauma due to tooth brushing or flossing or other interdental instruments. A thorough clinical history will often alert the clinician to a traumatic aetiology or burns caused by warm food or chemicals. Examination may reveal the causative factor, such as a sharp broken tooth or restoration or an ill-fitting denture.

Ulceration due to local anaesthetic injection most often occurs in the hard palate, the combined result of pressure and ischaemic necrosis. Poorly fitting dentures may cause painful ulcerations. Over-erupted dentition or parafunctional habits may also cause local occlusal gingival trauma with resultant inflammation and pain. Iatrogenic gingival damage occurs during most dental surgery; for example, dental extraction, gingival or periodontal surgery, or dental restorative therapy. Chemical burns may be related to misuse of anti-inflammatory tablets or occur due to dental treatment. Selfharm may be a rare cause of gingival trauma. Dental trauma may also cause gingival inflammatory pain (see 1.1.2.1.1 Periodontal pain attributed to traumatically induced periodontal inflammation).

¹⁰⁶Infection of the gingival tissues causes acute inflammation and can be painful to a varying degree: the pain may be mild to severe and is exacerbated by mechanical provocation of the gingivae. Spontaneous pain can occur. Acquired or congenital immunosuppression may lead to increased risk of gingival infection. Patients on immunosuppressive therapy may develop a variety of opportunistic infections including pseudomembranous candidiasis and other fungal and viral infections.

tumor necrosis factor (TNF)- α therapy increases the risk of tuberculosis (TB). Patients on infliximab and adalimumab with combined immunomodulatory therapy may be at increased risk of TB, histoplasmosis and/or coccidiomycosis infections. Antirheumatic drugs including methotrexate, abatacept and alefacept have increased the risks of herpes simplex and herpes zoster infections and TB. 1.1.3.1.2 Gingival pain attributed to infection is subcategorized according to the causative microorganism.

¹⁰⁷1.1.3.1.3 Gingival pain attributed to autoimmunity may be mild to severe and is exacerbated by mechanical provocation of the gingivae. Spontaneous pain can occur. Several dermatological immune-mediated vesiculoulcerative lesion conditions may present with oral mucosal involvement, either concurrently with the skin pathology, as the initial presentation, or sometimes as the only clinical presentation. Mucous membrane pemphigoid (MMP) is a common systemic autoimmune blistering disease with preferential involvement of mucosal membranes. The antibodies are directed at the proteins of keratinocyte to connective tissue matrix adhesion or hemi-desmosomes (BP180 and laminin-332) causing the epithelium to split away from its underlying connective tissue bed. The subepithelial nature of the split results in thick-roofed vesicles, which may still be intact on examination. Rupture of the vesicles leaves ulcerative lesions devoid of any epithelium, covered by yellow-white slough. Desquamative gingivitis (erythematous and friable gingiva with epithelial destruction) is a frequent finding. Sjögren's syndrome is a systemic autoimmune disease that frequently presents concomitantly with other systemic connective tissue or organ-specific autoimmune diseases. The association is well described for systemic lupus erythematosus and rheumatoid arthritis. The gingival tissues can become abraded and even cut with dry foods, and sore. The presence of Sjögren's syndrome influences the expression of the other autoimmune disease to some degree, for instance by increasing fatigue and lymphoma risk.

Pemphigus, a group of immune-mediated subepithelial bullous dermatoses, is mediated by autoantibodies directed at the proteins of keratinocyte adhesion (desmosomes) causing acantholysis. Pemphigus vulgaris most commonly affects the oral cavity, with autoantibodies mainly directed against desmoglein-1 and 3 (mucocutaneous forms) or only 3 (mucosal forms). Gingival pain due to pemphigus is infrequent, since the disease mostly affects oral mucosa.

¹⁰⁸The hypersensitivity or allergic reaction may be in association with dental material (such as temporary or permanent restorative or impression material), an oral hygiene product, a topical drug, a systemic drug, a food or food additive, or another factor.

¹⁰⁹1.1.3.1.4 Gingival pain attributed to hypersensitivity or allergic reaction may be mild to severe and is exacerbated by mechanical provocation of the gingivae. Spontaneous pain can occur. Allergic reactions and oral mucosal hypersensitivity reactions are less common than cutaneous ones, probably because of allergen dilution and the continuous rinsing effects of normal saliva flow. Lesions may present with non-specific tissue oedema, erythema, cracking, ulceration, hyperkeratotic white plaques or mucosal desquamation.

A temporal or spatial association with an offending agent can usually be identified. However, in the case of drug-related hypersensitivity, lesions may start long after the introduction of the drug and may remain for months after cessation thereof, complicating diagnosis and management.

A hypersensitivity reaction to either a systemic drug or an offending agent in direct contact may result in clinical and histological features reminiscent of lichen planus. The terms oral lichenoid drug reaction (OLDR) and oral lichenoid contact lesion (OLCL) are used respectively, and both may present with significant ulceration, usually with erythema and white striations at the periphery of the ulceration. Amalgam is often implicated in OLCL, confirmed by patch testing for mercury or amalgam sensitivity. OLDR is encountered with some frequency in patients treated with angiotensin- converting enzyme (ACE) inhibitors, NSAIDs and oral hypoglycaemic drugs. Potential drug reactions causing oral mucogingival reactions have been well summarized. Fixed drug eruption (FDE) is a form of hypersensitivity remarkable for its fixed anatomical nature and has been described with NSAIDs and other oxicam drugs, gabapentin, fluconazole and systemic antibacterial and antifungal drugs. FDE should be suspected in cases with a temporal association with drug ingestion, may be confirmed through patch testing or oral provocation tests, and managed through drug avoidance or substitution, while the acute lesions can be treated with topical or systemic steroids. Allergic contact stomatitis, although rare, is a form of mucositis reported in association with dental impression materials, dental restorative materials, topical benzocaine application and, more commonly, cinnamon in toothpastes, mouth rinses and chewing gum. Lesions may appear as mixed red and white patches with ulceration, swelling of the cheeks and desquamation appearing on the lips, cheeks, tongue and gingivae as localized or widely distributed lesions.

Drug-induced fibrosis with epithelial hyperplasia or fibrovascular hyperplasia may occasionally be associated with painful presentation, probably due to underlying periodontal infection caused by difficulty with oral hygiene in these conditions.

¹¹⁰ Such disorders include endocrine disorders or alterations, dietary deficiency, haematological diseases, gastrointestinal diseases and dermatological diseases, drug-induced disorders (not attributable to hypersensitivity or allergy) and genetic disorders.

¹¹¹1.1.3.1.5 Gingival pain attributed to gingival inflammation due to other cause may be mild to severe, and is exacerbated by mechanical provocation of the gingivae. Spontaneous pain can occur. Inflammation of the gingival tissues may occur associated with a systemic disease, disorder or condition, or with the treatment of such diseases or disorders. Alteration of the physiological state, such as pregnancy and menopause, may cause endocrine changes that manifest as gingival discomfort and pain.

Systemic disorders that can cause gingivitis include endocrine disease (hypothyroidism, diabetes mellitus); dietary deficiencies (iron, vitamin B complex, zinc); anaemia; gastrointestinal disorders (gastro-oesophageal reflux disease); and drug-induced and genetic disorders.

Epulis is a hyperplastic, non-neoplastic lesion which originates mainly from gingival tissues. Several histologic types occur, of which the prevalent type during pregnancy is the granulomatous type, a form of pyogenic granuloma. The growth is composed mainly of capillary vessels and endothelial proliferation and appears usually on the frontal part of the maxilla during the third trimester (sometimes referred to as 'pregnancy tumor'). The lesion usually causes no symptoms apart from its very presence, but may become painful because of interference with occlusion or denture wear. Aetiologic factors are improper maintenance of oral hygiene, which leads to chronic gingivitis, and high gingival levels of active progesterone, which acts by a yet undefined mechanism.

Antineoplastic therapy-induced mucositis associated with chemotherapy and radiation mainly affects oral mucosa (see 1.2.1.1.1.3 Oral mucosal pain attributed to radiation or chemotherapy) but can also affect the gingivae and cause gingival pain.

Benign hyperplastic lesions or tumors involving gingivae are usually not directly associated with pain but may become painful if traumatized and/or infected due to interference with occlusion or dentures (see 1.1.3.1.1 Gingival pain attributed to trauma and 1.1.3.1.2 Gingival pain attributed to infection).

ICOP1.1.3.1.2 Gingival pain attributed to infection

The infection is bacterial.

yes

ICOP1.1.3.1.2.1 Gingival pain attributed to bacterial infection¹¹²

no

The infection is viral.

yes

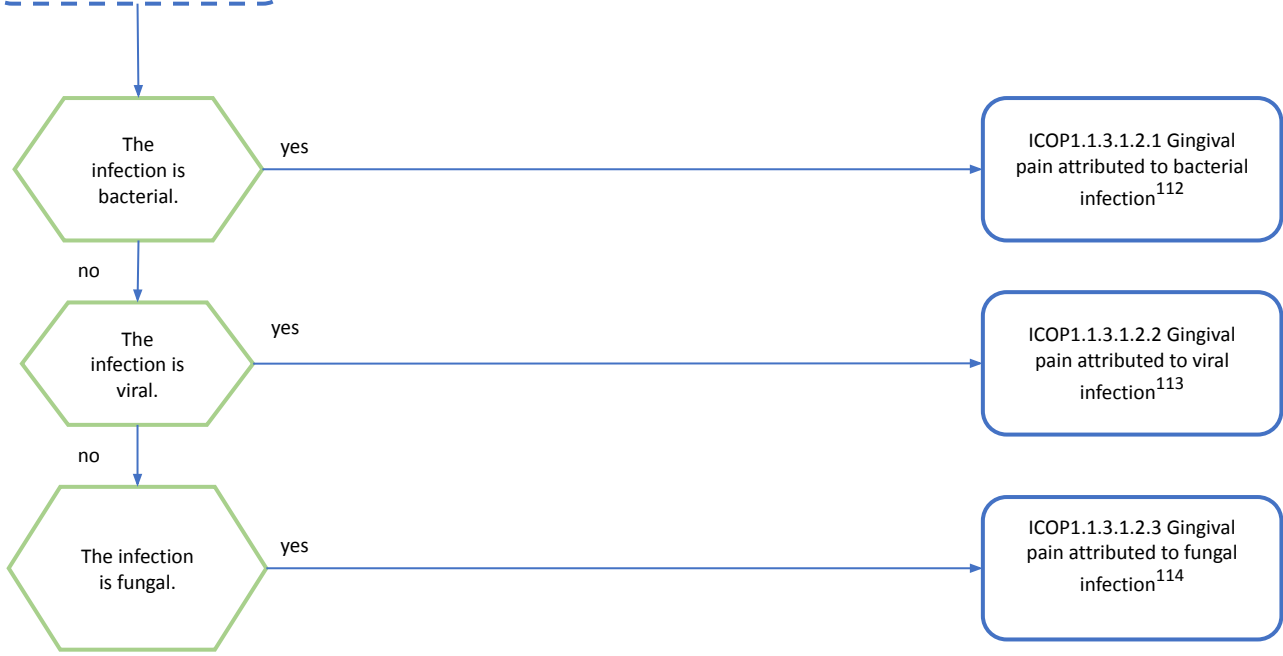
ICOP1.1.3.1.2.2 Gingival pain attributed to viral infection¹¹³

no

The infection is fungal.

yes

ICOP1.1.3.1.2.3 Gingival pain attributed to fungal infection¹¹⁴



¹¹²Bacterial infections are the most common oral infections and gingival pain may be associated with underlying dental pathology, such as periodontal infection or endodontic infections that may present as swelling, inflammation and pain of the overlying gingivae.

Acute necrotizing ulcerative gingivitis (ANUG) (or necrotizing ulcerative gingivitis (NUG), necrotizing ulcerative periodontitis (NUP) or necrotizing ulcerative stomatitis (NUS)) is an opportunistic gingival infection caused by an array of bacteria in malnourished children, young adults and immune deficient patients. NUG is often the initial presentation, proceeding into NUP, NUS and ultimately noma (a form of gangrene affecting the face).

Necrosis and ulceration of the interdental gingival papilla, excruciating pain, severe halitosis, regional lymphadenopathy, malaise and fever differentiate this form of ulceration from others.

Pericoronitis (inflammation around a tooth crown) causing pain is most often associated with partially erupted third molars. Other dentition, both permanent and deciduous, may have mild pericoronitis during eruption. If the tooth is impacted and unable to fully erupt, continued or recurrent infection may ensue. Pain results from the individual's immune inflammatory response to anaerobic bacteria colonized in biofilm that cannot be shed from third molars partially covered by soft tissue.

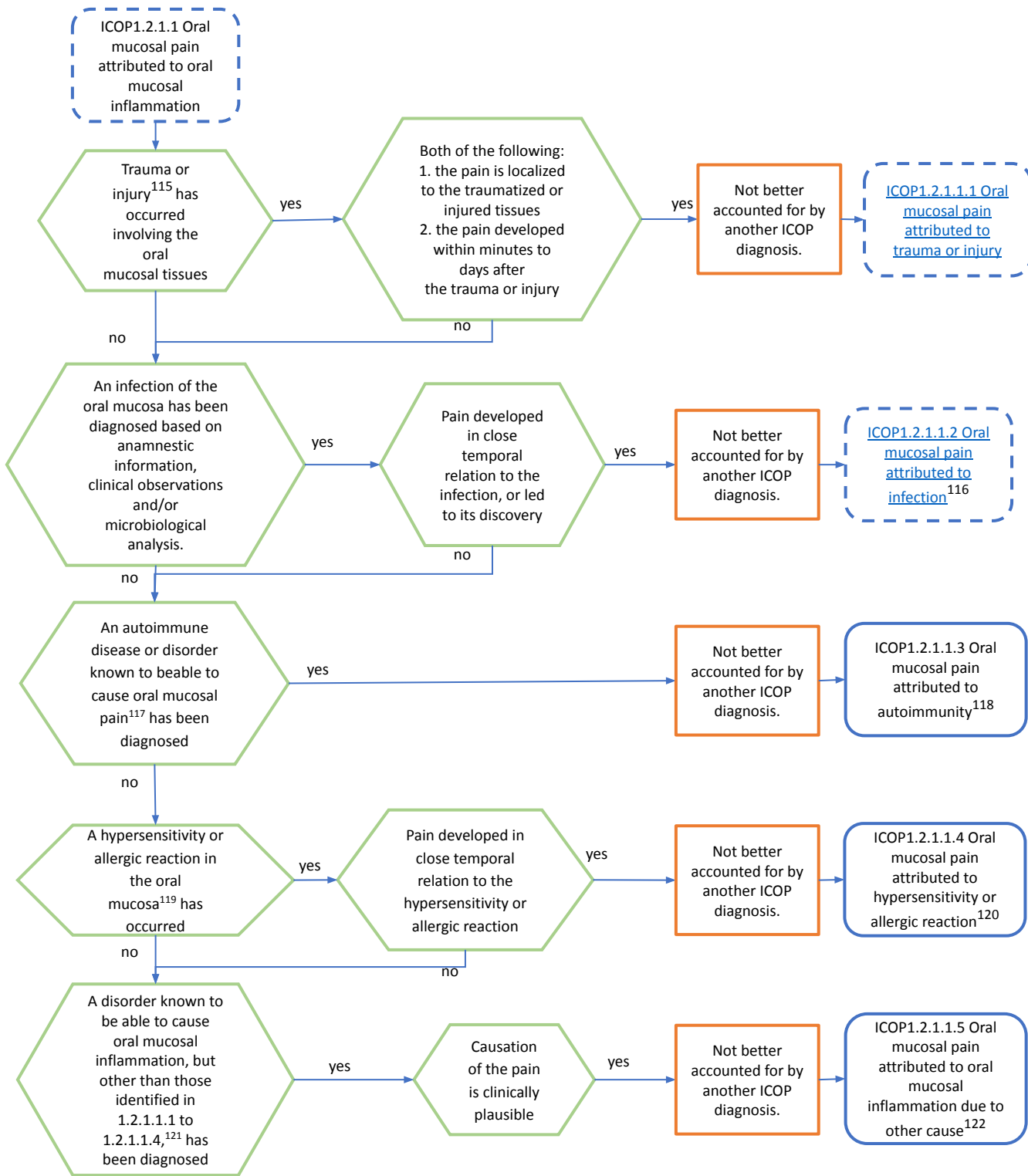
¹¹³The infected gingival tissues may often be ulcerated and painful to touch. Severe local pain is often associated with eating or drinking acidic or hot or cold foods or drinks, which may cause the individual to be unable to eat or drink and become dehydrated.

Herpes simplex virus (HSV) is the most common virus to affect the oral mucosa. Herpetic gingivostomatitis, the primary HSV-1 infection, mostly affects children and presents either as asymptomatic infection or with mucosal vesicles followed by painful ulceration affecting both keratinized and non-keratinized mucosa and gingivae.

Adults with primary infection suffer symptomatic herpetic pharyngotonsillitis initiated as vesicles that rapidly break down into painful shallow ulcerations.

Other viral infections of the gingival tissues include varicella-zoster virus (VZV), human papilloma virus (HPV), cytomegalovirus (CMV), coxsackieviruses and HIV infections.

¹¹⁴Gingival pain associated with fungal infection is probably rare, and reports in the literature are essentially lacking. The painful manifestations of oral fungal infection usually affect oral mucosa.



¹¹⁵Trauma or injury may be accidental or non-accidental, inflicted by others or self-inflicted, or iatrogenic, and is partially specified in the subforms.

¹¹⁶Infection of the oral mucosal tissues causes acute inflammation. 1.2.1.1.2 Oral mucosal pain attributed to infection may be mild to severe and is exacerbated by mechanical provocation of the oral mucosa. Spontaneous pain can occur. The condition is subcategorized according to the causative microorganism.

¹¹⁷These include pemphigus, mucus membrane pemphigoid, recurrent aphthous stomatitis, oral lichen planus, erythema multiforme, Sjögren's syndrome, Behçets disease, graft versus host disease, lupus erythematosus (systemic or discoid type), erythema migrans, Crohn's disease, ulcerative colitis and coeliac disease.

¹¹⁸ 1.2.1.1.3 Oral mucosal pain attributed to autoimmunity may be mild to severe and is exacerbated by mechanical provocation of the oral mucosa. Both elicited and spontaneous pain may occur. The prognosis for the pain depends on the outcome of treatment of the underlying autoimmune disorder.

Several dermatological immune-mediated vesiculoulcerative conditions may present with oral mucosal involvement, either concurrently with the skin pathology, as the initial presentation, or sometimes as the only clinical presentation.

Pemphigus, a group of immune-mediated subepithelial bullous dermatoses, is mediated by autoantibodies directed at the proteins of keratinocyte adhesion (desmosomes), causing acantholysis. Pemphigus vulgaris (PV) most commonly affects the oral cavity, its autoantibodies mainly directed against desmoglein-1 and 3 (mucocutaneous forms) or only 3 (mucosal forms).

Patients, typically 40–60 years of age, present with thin-roofed, flaccid intra-epithelial bullae, which rupture promptly after development, resulting in large irregular areas of painful mucosal ulceration.

Mucous membrane pemphigoid (MMP) is a common systemic autoimmune blistering disease with preferential involvement of mucosal membranes. The antibodies are directed at the proteins of keratinocyte to connective tissue matrix adhesion or hemi-desmosomes (BP180 and laminin-332), causing the epithelium to split away from its underlying connective tissue bed. The subepithelial nature of the split results in thickroofed vesicles, which may still be intact on examination. Rupture of the vesicles leaves ulcerative lesions devoid of any epithelium, covered by yellow-white slough.

Recurrent aphthous stomatitis (RAS) represents the most common form of oral mucosal ulceration encountered in otherwise healthy individuals. The term should be reserved for recurrent ulcers of the oral mucosa, not associated with any systemic disease and which typically commence in childhood or adolescence. Non-keratinized mucosa of the buccal cavity, lips and soft palate is most commonly affected. A variety of local and systemic factors, including immunologic, allergic, nutritional, microbial organisms and psychosocial stress, as well as immunosuppressive drugs, have been proposed as possible aetiological factors. Increased prevalence in close family members also indicates a possible genetic background. RAS has an atypical clinical presentation in HIV-infected patients and should always be considered in the differential diagnosis of oral mucosal ulceration in such patients. When RAS starts later in life, additional mucosal surfaces may be affected, and comprehensive medical history and physical examination should be considered to rule out inflammatory gastrointestinal disease such as Crohn's disease, coeliac disease, Behç. et's disease, Sweet's syndrome, cyclic neutropenia, HIV infection and drug reactions, which may all present with aphthous-like ulcers. Clinically, RAS is subclassified into RAS minor, the most common variant, which typically presents with one to five ulcers less than 10 mm in diameter and surrounded by a bright red inflammatory halo, which heal spontaneously within 10–14 days, and RAS major (Sutton disease), which presents as deeper, larger (usually >10 mm in diameter), persistent ulcerations with irregular borders, typically taking weeks or months to heal.

Oral lichen planus (OLP) is a rather common, chronic inflammatory disorder affecting mainly middle-aged females. The pathogenesis remains uncertain, but various subsets of T-lymphocytes and mast cells play a role in the basal membrane damage. The disease may present with a diverse clinical spectrum, which includes the atrophic, erosive, ulcerative and, less commonly, bullous variants. The lesions typically affect the oral mucosa bilaterally, and are fairly symmetrical – presenting either solely as an oral mucosal disease or accompanied by desquamative gingivitis and/or cutaneous manifestations. In the case of the erosive and ulcerative types, painful pseudomembrane-covered ulcerations bordered by faint white striae are seen in a multifocal distribution. Recent meta-analyses determined the overall malignant transformation rate of OLP to be around 1%, most commonly affecting the tongue of older females, but this issue remains contentious.

Erythema multiforme (EM) is a T-cell-mediated type IV cytotoxic immune reaction to a variety of antigens (viral, bacterial, pharmacological or chemical) that results in apoptosis-mediated epithelial cell death.

Anti-desmoplakin I and II antibodies were recently demonstrated as a possible instigator of the cytotoxic reaction. EM mostly affects young, otherwise healthy individuals, and is often recurrent and temporal with recurrent HSV infections. Oral lesions may either represent the start of further mucocutaneous involvement or appear in isolation, classically with swollen, cracked, haemorrhagic and crusted lips with or without mucosal blisters and ulcerations.

Sjögren's syndrome is a systemic autoimmune disease that frequently presents concomitantly with other systemic connective tissue or organ-specific autoimmune diseases. This association is well described for systemic lupus erythematosus and rheumatoid arthritis.

The oral mucosal tissues can become abraded and even cut with dry foods, and sore. The presence of Sjögren's syndrome influences the expression of the other autoimmune disease to some degree, for instance by increasing fatigue and lymphoma risk.

Behçet's disease is an autoimmune multisystem disease of unknown aetiology. It is characterized by oral ulcers, genital ulcers and eye inflammation. There may be dermatological symptoms along with neurological and vascular involvement. The oral lesion ulcers are painful and characterized by cyclic presentation affecting the lips, buccal mucosa, soft palate and tongue, with an appearance resembling aphthous lesions, a few millimeters to centimeters in diameter. The incidence of the disease is higher in Mediterranean and Asian populations, especially in Turkey.

Graft versus host disease is characterized by lichenoid, papular and erythematous lesions, and occasionally ulcerations and desquamation on the buccal and labial mucosa, the palate and dorsal part of the tongue. The oral lesions are often accompanied by fever, malaise, nausea and xerostomia. The oral findings may be caused by a combination of radiotherapy, chemotherapy, immunosuppressive medications, and secondary infections.

More than half of patients with systemic lupus erythematosus (SLE) may present with oral lesions, most frequently ulceration and pain of the buccal mucosa and lips during the early, active disease phase. Ulcerative lesions and erythematous lesions with or without radiating white striae may also be seen as part of the clinical spectrum of discoid lupus erythematosus (DLE). DLE is considered a potentially malignant disorder of the oral mucosa due to the increased prevalence of oral squamous cell carcinoma among this population, especially involving the lower lip.

Erythema migrans (geographic tongue, benign migratory glossitis) is a common oral inflammatory condition of unknown aetiology, with an estimated prevalence of 1–3%. About 30% of patients have oral discomfort, a burning and stinging sensation. It usually affects the tongue, although other oral sites may be involved. Presentation may include circular erythematous areas, often sharply defined by elevated, whitish border zones, located on the lateral, dorsal, anterior and/or ventral parts of the tongue. The erythematous appearance is due to atrophy and loss of filiform papillae lesions. The most commonly suggested associations are atopy and psoriasis. The disorder should not be confused with the characteristic rash of early Lyme disease.

Crohn's disease presents with multifocal, linear, nodular or diffuse mucosal thickenings in the labial and buccal mucosa and the mucobuccal folds. They may be associated with painful, persistent aphthouslike ulcerations and atrophic glossitis.

Ulcerative colitis presents with scattered, clumped or linearly oriented pustules on an erythematous mucosa at multiple oral sites. Some patients exhibit painful oral aphthous-like lesions in addition to the pustular lesions.

Celiac disease may present with mucosal pain, commonly associated with aphthous-like ulcers.

Malabsorption of iron and vitamin B may lead to burning, stinging sensations in the tongue.

Other rare autoimmune or idiopathic causes of oral mucosal ulceration causing pain and sensitivity include eosinophilic ulcer, giant cell arteritis hypereosinophilic syndrome, necrotizing sialometaplasia, polyarteritis nodosa, reactive arthritis (Reiter's syndrome), acute febrile neutrophilic dermatosis (Sweet's syndrome) and Wegener's granulomatosis.

¹¹⁹The hypersensitivity or allergic reaction may be in association with dental material (such as temporary or permanent restorative or impression material), an oral hygiene product, a topical drug, a systemic drug, a food or food additive or another factor.

¹²⁰1.2.1.1.4 Oral mucosal pain attributed to hypersensitivity or allergic reaction may be mild to severe and is exacerbated by mechanical provocation of the oral mucosae. Both elicited and spontaneous pain may occur. Oral allergy syndrome (OAS) usually occurs in individuals who are allergic to pollen from trees, grasses or weeds. Fresh fruit, raw vegetables and raw nuts are common causes of OAS. The symptoms include an itching sensation and/or swelling of all or part of the lips, tongue, mouth and/or throat, but these can on occasion be severe and also include nausea and vomiting.

Dental materials, oral hygiene products and food additives may cause contact allergic reactions in the mouth with varied clinical presentation including stomatitis, lichenoid lesions, erosions, blisters and ulcerations. Allergic reactions and oral mucosal hypersensitivity reactions are less common than cutaneous ones, probably because of allergen dilution and the continuous rinsing effects of normal saliva flow. Lesions may present with non-specific tissue oedema, erythema, cracking, ulceration, hyperkeratotic white plaques and/ or mucosal desquamation.

Allergic contact stomatitis, although rare, has been reported in association with dental impression materials, dental restorative materials, topical benzocaine application and, more commonly, cinnamon in toothpastes, mouth rinses and chewing gum. Lesions, localized or widely distributed, may appear as mixed red and white patches with ulceration, swelling of the cheeks and desquamation appearing on the lips, cheeks, tongue and gingivae.

A hypersensitivity reaction to either a systemic drug or direct contact with an offending agent may result in clinical and histological features reminiscent of lichen planus. The terms oral lichenoid drug reaction (OLDR) and oral lichenoid contact lesion (OLCL) are used respectively, and both may present with significant ulceration, usually with erythema and white striations at the periphery of the ulceration. A temporal or spatial association with an offending agent can usually be identified.

Amalgam is often implicated in OLCL, confirmed by patch testing for mercury or amalgam sensitivity. OLDR is encountered with some frequency in patients treated with angiotensin-converting enzyme (ACE) inhibitors, NSAIDs and oral hypoglycaemic drugs.

In the case of drug-related hypersensitivity, lesions may start long after the introduction of the drug, and may remain for months after cessation thereof, complicating diagnosis and management.

Fixed drug eruption (FDE) is a form of hypersensitivity remarkable for its fixed anatomical nature and has been described with NSAIDs and other oxicam drugs, gabapentin, fluconazole and systemic antibacterial and antifungal drugs. FDE should be suspected in cases with a temporal association with drug ingestion, may be confirmed through patch testing or oral provocation tests, and managed through drug avoidance or substitution, while the acute lesions can be treated with topical or systemic steroids.

Drug-induced fibrosis epithelial hyperplasia or fibrovascular hyperplasia may occasionally be associated with painful presentation, probably due to underlying periodontal infection caused by difficulty with oral hygiene in these conditions.

¹²¹Such disorders include endocrine disorders or alterations, dietary deficiency, haematological diseases, gastrointestinal diseases and dermatological diseases, and drug-induced disorders (not attributable to hypersensitivity or allergy).

¹²²1.2.1.1.5 Oral mucosal pain attributed to oral mucosal inflammation due to other cause may be mild to severe and is exacerbated by mechanical provocation of the oral mucosa. Spontaneous pain can occur.

Alteration of the physiological state, such as in pregnancy and menopause, may cause endocrine changes that manifest as oral mucosal discomfort and pain. Systemic disorders that can cause oral mucosal inflammation and pain include endocrine disease (hypothyroidism, diabetes mellitus), dietary deficiencies (iron, vitamin B complex, zinc), gastrointestinal disorders and drug-induced disorders (not attributable to hypersensitivity or allergy).

Iron, vitamin B12 and folate deficiency can cause atrophic glossitis, in which the filiform papillae of the dorsum of the tongue undergo atrophy, leaving a smooth, erythematous tongue. Other parts of the oral mucosa may also appear atrophic and red. Aphthouslike ulcers are common in severe cases. Burning or stinging sensations may precede clinically detectable oral lesions. Severe cases of vitamin B12 deficiency may also be associated with paraesthesia. Patients may have a predisposition to develop angular cheilitis.

Haematological disorders such as anaemia, gammopathies, haematinic deficiencies, leukaemia, myelodysplastic syndrome, neutropenia and other white cell dyscrasias may result in friable oral mucosa with resultant ulceration and pain.

Gastrointestinal disorders such as gastro-oesophageal reflux disorder and peptic ulceration may lead to malabsorption and related dietary deficiencies and, subsequently, to related oral mucosal pain.

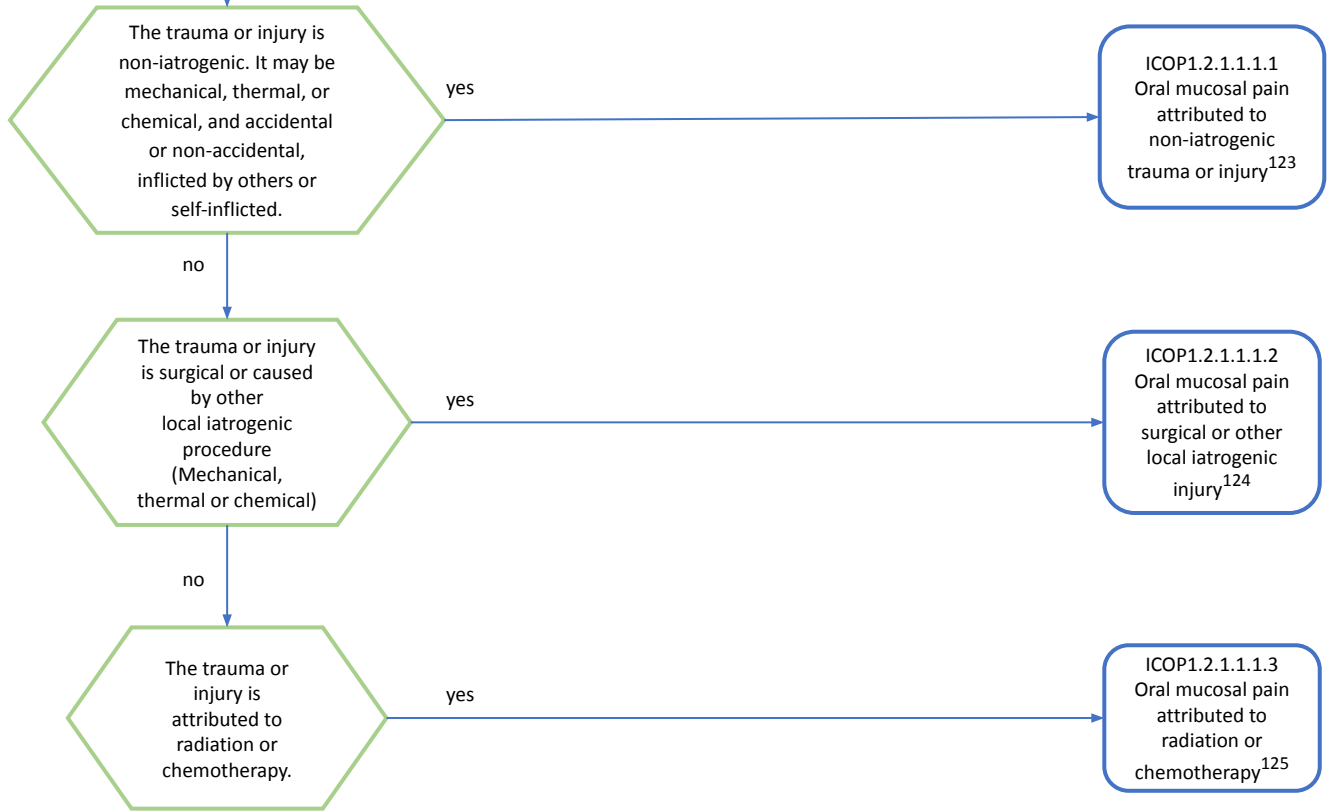
Dermatological causes of painful mucosal lesions include dermatitis herpetiformis, linear IgA disease, epidermolysis bullosa and chronic ulcerative stomatitis.

Antineoplastic therapy-induced mucositis involves a complex cascade of events which is initiated by reactive oxygen species with extensive inflammation, atrophy, swelling, erythema and ulceration. It includes chemotherapy-induced mucositis as well as radiation lesions. The latter occur in the exposed surfaces, while chemotherapy-induced mucositis affects the entire alimentary tract. The type and dosage of systemic cytotoxic agents, and the dosage and field of radiation, will affect the presence and severity of mucositis.

Evidence based guidelines for the management of cancer therapy induced oral mucositis are established and should be referred to in all cases of patients receiving these agents.

Benign hyperplastic lesions or tumors involving oral mucosa are usually not directly associated with pain, but may become painful if traumatized and/or infected because of interference with, for example, occlusion or dentures (see 1.2.1.1.1 Oral mucosal pain attributed to trauma or injury and 1.2.1.1.2 Oral mucosal pain attributed to infection).

ICOP1.2.1.1.1 Oral mucosal pain attributed to trauma or injury



¹²³Causes of 1.2.1.1.1.1 Oral mucosal pain attributed to non-iatrogenic trauma or injury include not only accidental dental injuries but also micro-trauma caused, for example, during eating or drinking overly hot foods or drinks, and trauma due to tooth brushing or flossing or other interdental instruments. Examination may reveal the causative factor, such as an underlying mandibular or maxillary or dentoalveolar fracture, tooth root fracture or solely a soft tissue injury. Poorly fitting dentures may cause painful ulcerations.

Over-erupted dentition, or parafunctional habits (biting or chewing on hard objects such as nails, pens, etc., or habitual chewing on lips, tongue or cheeks), may also cause local oral mucosal trauma with resultant inflammation and pain. Chemical burns may be related to misuse of anti-inflammatory tablets (e.g. sucking on tablets that are meant to be swallowed) or eating or drinking overly hot drinks or food. Self-harm may be a rare cause of oral mucosal trauma. In patients with dystonia or oral neuropathy, injury may be recurrent.

Traumatic injury of the oral mucosa causes acute inflammation and can be painful to a varying degree.

Traumatic ulceration of the oral mucosa may be acute or chronic in nature, with the latter diagnostically more challenging due to underlying fibrosis and clinical appearance of neoplastic induration. A thorough clinical history will often alert the clinician to a traumatic aetiology or burns caused by warm food or chemicals.

1.2.1.1.1.1 Oral mucosal pain attributed to non-iatrogenic trauma or injury may be mild to severe and is exacerbated by mechanical provocation of the oral mucosa. Spontaneous pain can occur.

¹²⁴Causes of 1.2.1.1.1.2 Oral mucosal pain attributed to surgical or other local iatrogenic injury include surgical trauma and injuries associated with dental or other oral treatments, such as dental injection injuries, and injuries due to direct local complications from oral procedures. Iatrogenic oral mucosa injury occurs during most dental surgery such as dental extractions and gingival or periodontal surgery. Thermal injuries occur during use of electrocauterization and surgical laser, and chemical injuries may occur following inappropriate use of, for example, disinfectants or dental materials.

¹²⁵Oral mucositis is a term reserved for erythematous and ulcerative lesions of the oral mucosa that may occur in patients who receive anticancer radiotherapy to head and neck cancer involving the oral cavity, or chemotherapy. Their frequency and severity vary significantly with the type and dose of therapy. The lesions typically manifest as very painful erythema or ulcerations that compromise nutrition and oral hygiene as well as increasing the risks of local and systemic infection. The condition may also be accompanied by taste disturbances and xerostomia.

The pathogenesis of oral mucositis is multifactorial; a complex five-stage model has been proposed in its development.

When uncomplicated by infection, mucositis heals within 2–4 weeks after cessation of cytotoxic chemotherapy.

Mucositis may be exacerbated by local factors and infections. While oral complications are associated primarily with discomfort and interference with oral function, with impaired quality of life in patients who are also immunocompromised or debilitated, these complications can become life-threatening. In particular, infections associated with oral mucositis lesions can cause life-threatening systemic sepsis during periods of profound immunosuppression. Thus, management of mucositis pain is a primary component of any mucositis management strategy.

ICOP1.2.1.1.2 Oral mucosal pain attributed to infection

The infection is bacterial.

yes

ICOP1.2.1.1.2.1 Oral mucosal pain attributed to bacterial infection¹²⁶

no

The infection is viral. Diagnosis is based on observation of a mucosal eruption in the area of pain together with polymerase chain reaction (PCR) identification of the virus from swabs taken from the area.

yes

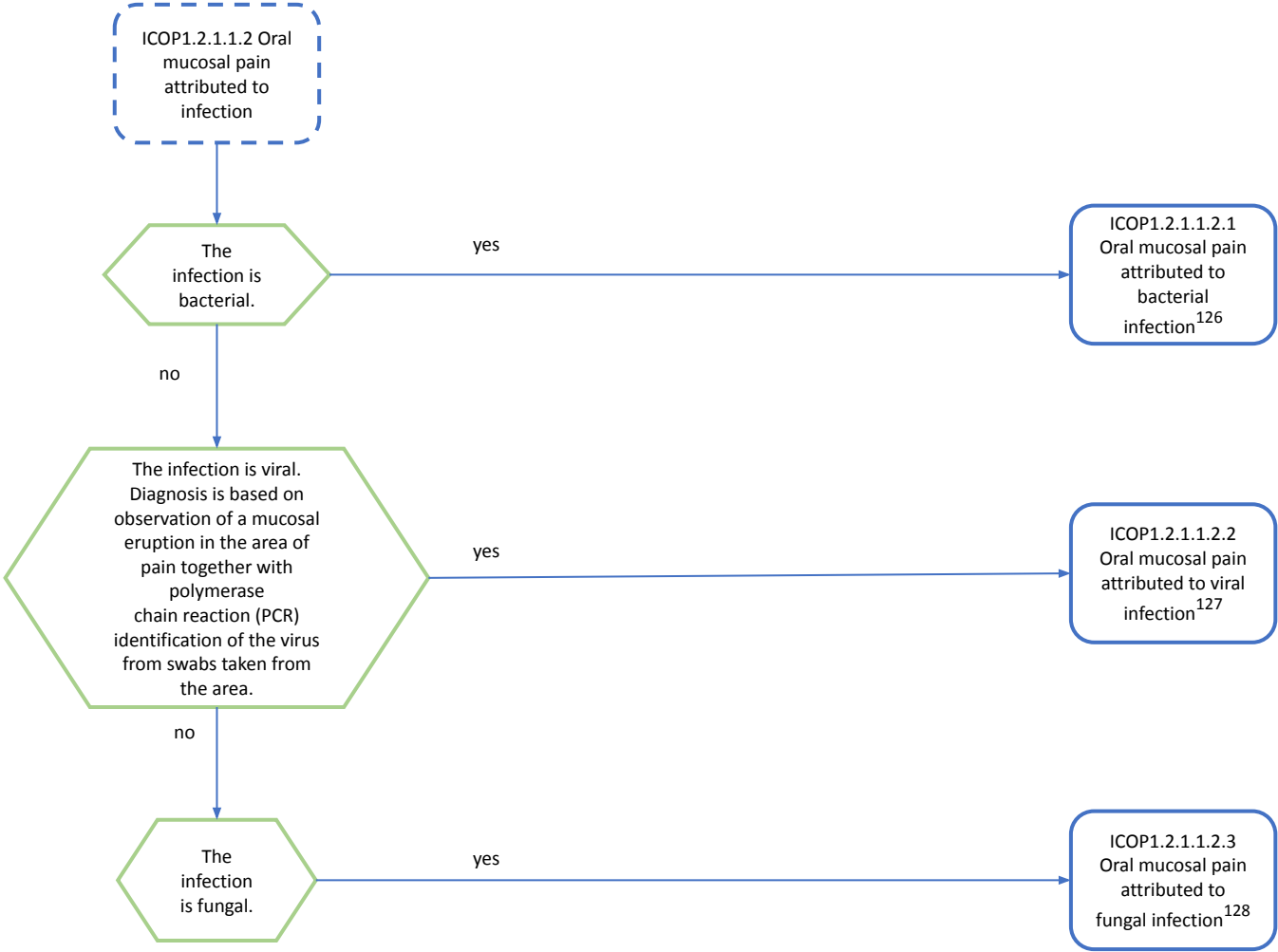
ICOP1.2.1.1.2.2 Oral mucosal pain attributed to viral infection¹²⁷

no

The infection is fungal.

yes

ICOP1.2.1.1.2.3 Oral mucosal pain attributed to fungal infection¹²⁸



¹²⁶Bacterial infections are the most common oral infections.

Bacterial infection of the oral mucosal tissues causes acute inflammation. Oral mucosa pain is often associated with underlying dental pathology, with periodontal infection or dental periapical infections presenting as swelling, inflammation and pain of the overlying oral mucosa.

1.2.1.1.2.1 Oral mucosal pain attributed to bacterial infection may be mild to severe and is exacerbated by mechanical provocation of the oral mucosa. Spontaneous pain can occur.

Acute necrotizing ulcerative gingivitis (ANUG), or necrotizing ulcerative gingivitis (NUG), periodontitis (NUP) or stomatitis (NUS) is an opportunistic oral mucosal infection caused by an array of bacteria in malnourished children, young adults and immune deficient patients. NUG is often the initial presentation, proceeding into NUP, NUS and ultimately noma (a form of gangrene affecting the face). Necrosis and ulceration of the oral mucosa, exquisite pain, severe halitosis, regional lymphadenopathy, malaise and fever differentiate this form of ulceration from others. When the alveolar bone becomes exposed, necrotic bone sequestrae may develop and should be removed with the associated teeth.

Syphilis, caused by *Treponema pallidum* infection, continues to be widespread, with increasing rates among men who have sex with men. The primary lesion presents at the first site of mucosal inoculation, frequently the oral mucosa. A highly infective, painless solitary ulcer with indurated margins and ipsilateral lymphadenopathy is the most common, with healing within 3 weeks. Non-characteristic mucous patches alert to the development of secondary syphilis, frequently accompanied by a maculo-papular rash of the palmo-plantar surfaces of the hands and feet, and generalized lymphadenopathy.

Gonorrhoeal lesions may occur in the mouth at a site of inoculation or secondarily by haematogenous spread from a primary focus elsewhere. The earliest symptoms are a burning or itching sensation, dryness or heat in the mouth, followed by acute pain on eating or speaking. The tonsils and oropharynx are most frequently involved, and oral tissues may be diffusely

inflamed or ulcerated. Saliva develops increased viscosity and fetid odour. In severe cases, submaxillary lymphadenopathy with fever occurs.

The emergence of multidrug-resistant *Mycobacterium tuberculosis* (TB) and the high numbers of HIV-infected individuals in East and Southern Africa have resulted in an increase of TB cases, urging inclusion in the differential diagnoses of orofacial pathology. Secondary TB in the form of painful, deep, irregular ulcers with indurated appearance, undermined edges and thick mucus-like material at the base of any aspect of the tongue are typical. Haematogenous spread from pulmonary TB or secondary inoculation of a traumatic ulcer with infected sputum is the most common pathogenesis. Primary oral TB is distinctly rare, usually associated with *Mycobacterium bovis*. Ulcers resemble chronic traumatic ulceration and even malignancy, urging a diagnostic biopsy. Associated symptoms of pain, fever, lymphadenopathy, hoarseness of voice and weight loss frequently accompany the ulcerations.

Acquired or congenital immunosuppression may lead to increased risk of mucosal infection. Patients on immunosuppressive therapy may develop a variety of opportunistic infections including pseudomembranous candidiasis and other fungal and viral infections.

tumor necrosis factor (TNF)- α therapy increases the risk of TB. Patients on infliximab and adalimumab with combined immunomodulatory therapy may be at increased risk of TB, histoplasmosis and coccidiomycosis infections. Antirheumatic drugs including methotrexate, abatacept and alefacept have increased the risk of herpes simplex and herpes zoster infections and TB.

¹²⁷Viral infection of the oral mucosal tissues causes acute inflammation. 1.2.1.1.2.2 Oral mucosal pain attributed to viral infection may be mild to severe and is exacerbated by mechanical provocation of the oral mucosa. Spontaneous pain can occur. Viral infections of the oral mucosa include HSV, VZV, HPV, CMV, coxsackieviruses and HIV infection. Note that ICHD-3 has a specific set of criteria for herpes zoster virus (13.1.2.1 Painful trigeminal neuropathy attributed to acute herpes zoster).

The infected oral mucosa tissues may often be ulcerated and painful to palpation. Severe local pain is often noted, in eating or drinking acidic or hot or cold foods or drinks. Pain is elicited on eating and may be so severe that the individual may be unable to eat or drink and become dehydrated.

Herpes simplex virus (HSV) is the most common virus to affect the oral mucosa. Herpetic gingivostomatitis, the primary HSV-1 infection, mostly affects children and presents either as an asymptomatic infection or with mucosal vesicles followed by quickly developing painful ulcerations affecting both keratinized and nonkeratinized mucosa and gingivae. Fever, malaise, foul odour and cervical lymphadenopathy often accompany the pain. Adults with primary infection suffer symptomatic herpetic pharyngotonsillitis, initiated as vesicles that rapidly break down into painful shallow ulcerations.

Recurrent manifestations of the virus in the form of herpes labialis are most commonly initiated by various factors, including, but not limited to, stress, UV exposure or dental local anaesthetic. Initial prodromal stinging or burning is followed by a cluster of approximately five small fluid-filled vesicles on erythematous mucosa that rupture to leave painful shallow ulcers which coalesce and crust.

Herpangina (hand, foot and mouth disease), caused by coxsackieviruses, ECHO virus, and other enteroviruses, typically affects children under 10 years.

Red macules or vesicles are followed by self-limiting ulcerations, approximately 5 mm in diameter, on the anterior tonsillar pillars, soft palate, uvula and/or tonsils. Pyrexia, sore throat and headaches are common. Ulcers heal within 4–6 days.

Herpes zoster (shingles) signifies reactivation of dormant varicella-zoster virus (VZV or HHV-3) infection, mostly affecting old and debilitated patients. The infection is well known for its pruritic, vesicular skin rash, ulceration and crusting, all occurring concurrently and following the dermatome of the ganglion in which the virus established latency. Crusting is absent in the oral mucosa, where lesions instead present as ulcerating papules. Severe burning or stinging pain in the affected dermatome is followed by fluid-filled vesicles that rupture to leave painful shallow ulcerations, which may coalesce to form large denuded areas. Oral manifestations signify involvement of the mandibular or maxillary divisions of the trigeminal nerve, with pathognomonic abrupt termination of lesions along the midline.

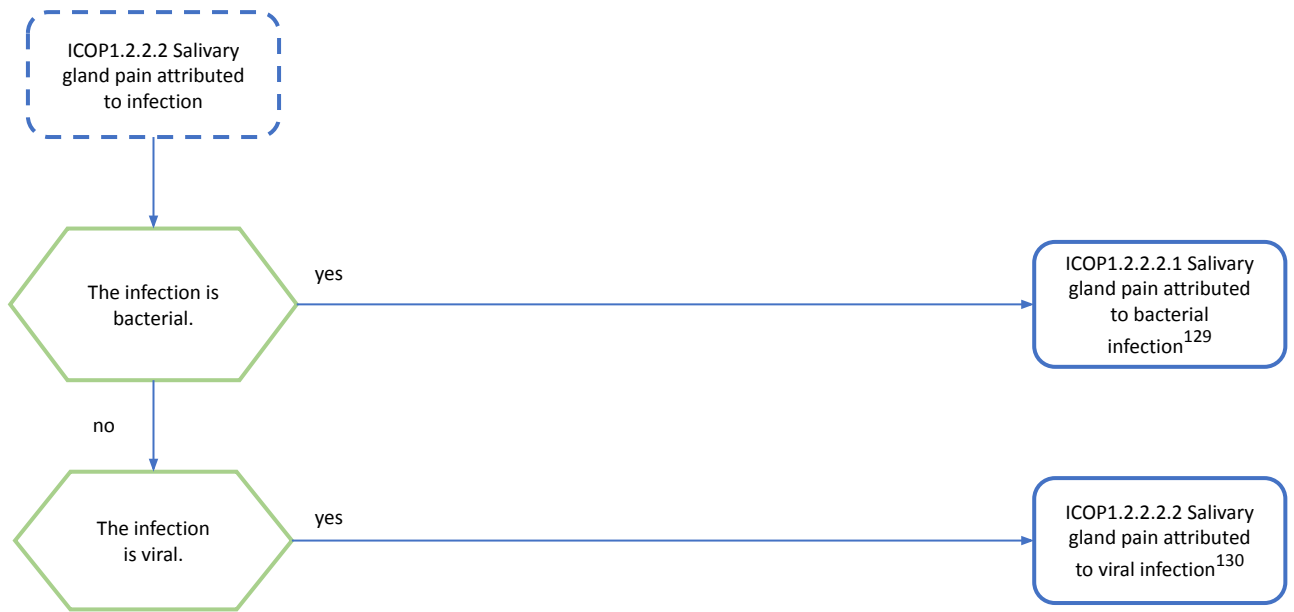
Osteonecrosis with tooth exfoliation has been reported, especially in immune deficient individuals. The infection often involves several locations in the anatomical distribution of the affected nerve branch (see also 4.1.2.1 Trigeminal neuropathic pain attributed to herpes zoster and 4.1.2.2 Trigeminal postherpetic neuralgia). Human papilloma virus (HPV) may cause single or multiple papillary lesions. These lesions are rarely painful unless traumatized.

Epstein–Barr virus causes mononucleosis, which may involve sore throat and numerous small ulcers that precede lymphadenopathy. Gingival bleeding and petechiae at the border between soft and hard palate are other clinical features.

¹²⁸Fungal infection of the oral mucosal tissues causes acute inflammation. 1.2.1.1.2.3 Oral mucosal pain attributed to fungal infection may be mild to severe and is exacerbated by mechanical provocation of the oral mucosa. Spontaneous pain can occur. In recent times, the prevalence of oral fungal infections other than candidiasis has been on the rise.

Immunodeficiency diseases such as HIV infection and AIDS, immunosuppressive therapy and prolonged usage of broad-spectrum antibiotics and corticosteroids are some of the notable reasons for disease emergence, which occurs when the oral homeostasis is disturbed. Diabetes and salivary gland hyperfunction are other predisposing factors.

The most common oral fungal infection is *Candida albicans*. Erythematous candidiasis presents with generalized erythema and pain. Median rhomboid glossitis affects the tongue and has three main types: pseudomembranous type, presenting with white patches that are easily wiped off, leaving a sore, erythematous and bleeding surface; erythematous type, with red macular lesions and often a burning sensation; and angular cheilitis type, which is characterized by sore cracks and redness at the angles of the mouth. Xerostomia, burning, stinging and itching sensations, and metal taste, are accompanying symptoms. Other mycoses to be considered in the context of oral mucosal pain include mucormycosis, aspergillosis, histoplasmosis, blastomycosis and paracoccidioidomycosis. While all are uncommon, *Aspergillus* and *Mucorales* infections are the most frequently encountered and follow inhalation of the spores from soil, manure, grain, cereal or mouldy flour. Both are superficial and invasive opportunistic fungal infections, encountered in the oral cavity of, especially, immunocompromised patients.



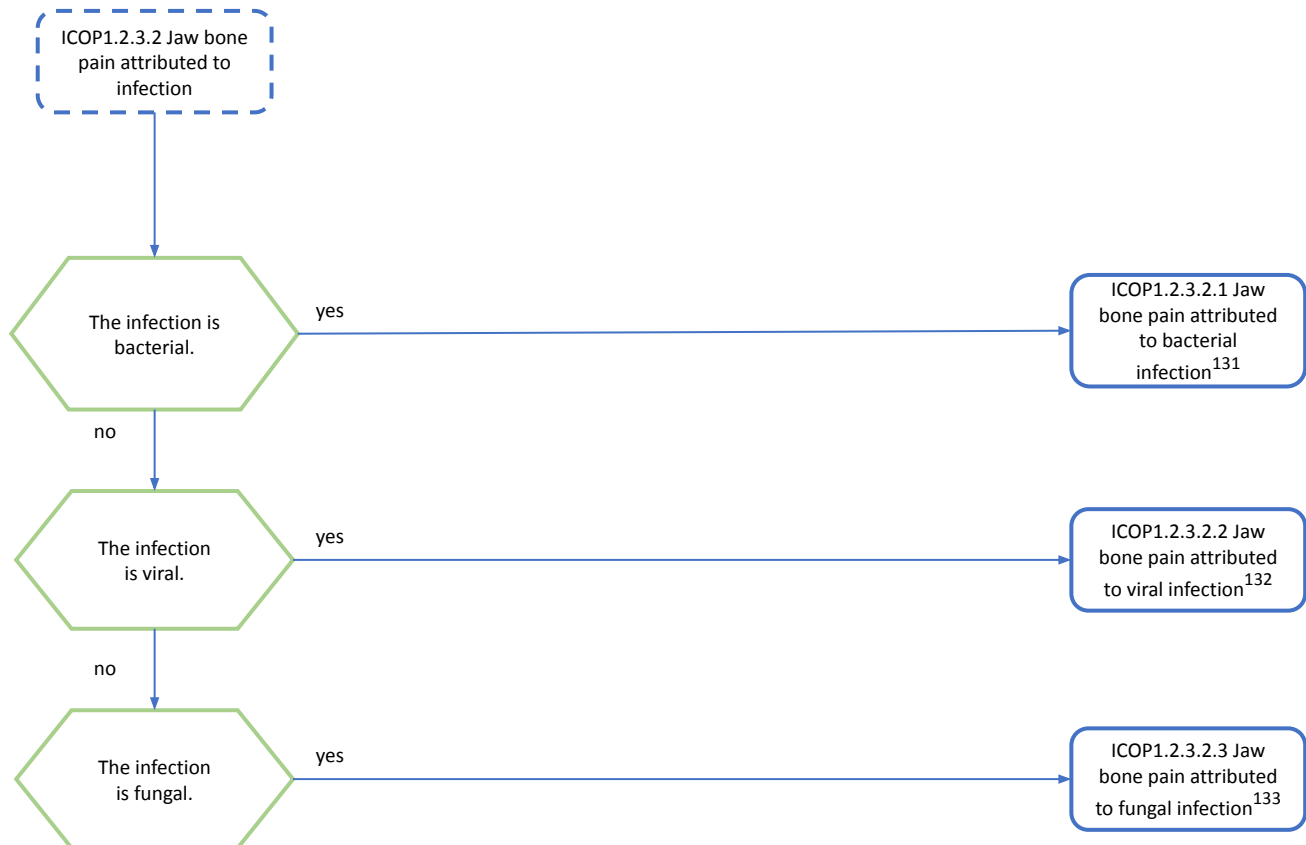
¹²⁹The most common bacterial cause is Staphylococcus infection.

Bacterial sialadenitis can be either acute or chronic. A decreased saliva flow rate is the primary predisposing factor, and this allows retrograde microbial colonization of the duct, which may result in the development of acute or chronic suppurative infection.

Acute sialadenitis is characterized by a painful swelling of a single salivary gland, commonly affecting the parotid gland. A purulent discharge may be expressed from the salivary duct orifice, and the patient may present with redness of the overlying skin or even abscess formation within the inflamed gland tissue, malaise, fever and cervical lymphadenopathy. Bacterial sialadenitis often occurs in immunocompromised patients and in elderly patients who suffer from salivary gland hypofunction due to systemic diseases, medication intake or dehydration, or it may be associated with obstruction of the salivary ducts by deposition of calculi, mucus plugs, tumor growth or by trauma. Chronic sialadenitis may develop following acute sialadenitis if the predisposing factors cannot be eliminated.

¹³⁰Viral infections of the salivary glands include mumps, HIV and CMV infection, which can cause pain in addition to swelling.

Mumps mostly affects the parotid gland, with bilateral sudden enlargement, painful to palpation, but up to 25% of cases involve unilateral swelling. Severe local pain is often noted in moving the jaws when talking and chewing, especially if partial duct obstruction occurs. It typically affects children 4–6 years of age.



¹³¹Bacterial infections of the jaw bone tissue include osteomyelitis.

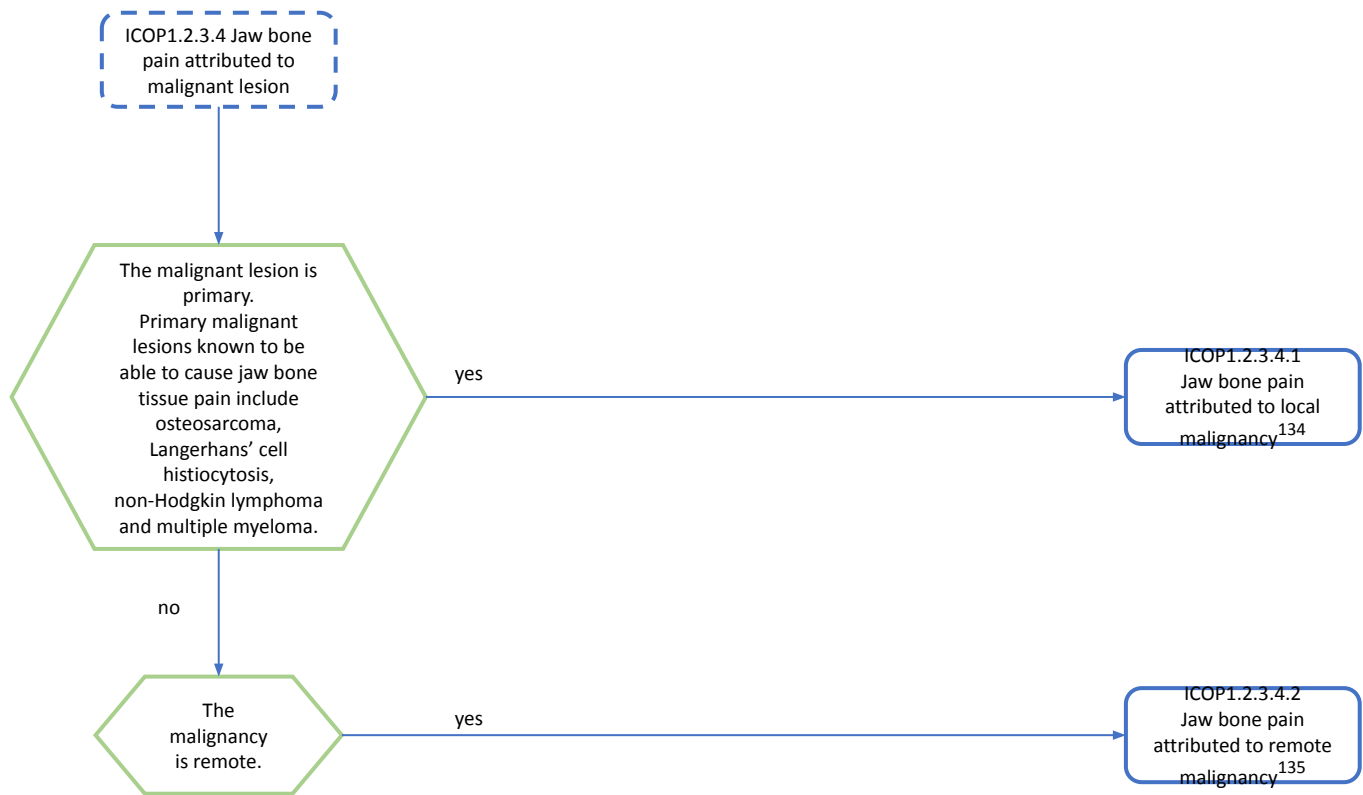
Odontogenic infections can spread and cause osteomyelitis of the jaw, but osteomyelitis secondary to odontogenic infection is relatively uncommon. Severe mandibular pain is a common symptom of jaw osteomyelitis and can be accompanied by anaesthesia or hypaesthesia on the affected side. In protracted cases, mandibular trismus may develop.

¹³²Viral infections of the jaw bone tissue include herpes zoster (HZ) (shingles), resulting from reactivation of the varicella-zoster virus. Complications include HZ-induced osteonecrosis. Unusual dental complications such as osteonecrosis, exfoliation of teeth, periodontitis, calcified and devitalized pulps, periapical lesions and resorption of roots, as well as developmental anomalies such as irregular short roots and missing teeth, may arise secondarily to involvement of second or third divisions of the trigeminal nerve by HZ.

¹³³The most likely fungal infections of the jaw bone tissue are aspergillosis and mucormycosis.

Aspergillosis of the oral cavity is an uncommon condition which most frequently occurs in immunocompromised patients, such as those with haematological malignancies. Osteomyelitis caused by *Aspergillus* species is an infection that is often neglected. Invasive oral aspergillosis, though rare, is a potentially lethal disease and it should be considered in immunosuppressed patients with oral lesions.

Mucormycosis is a rare opportunistic infection mostly affecting immunocompromised patients, but, rarely, otherwise healthy individuals after tooth extraction. The organism implicated in mucormycosis is a saprophytic fungus, mainly *Rhizopus* or *Mucor*. It is the most deadly and rapidly progressing form of fungal infection affecting humans.



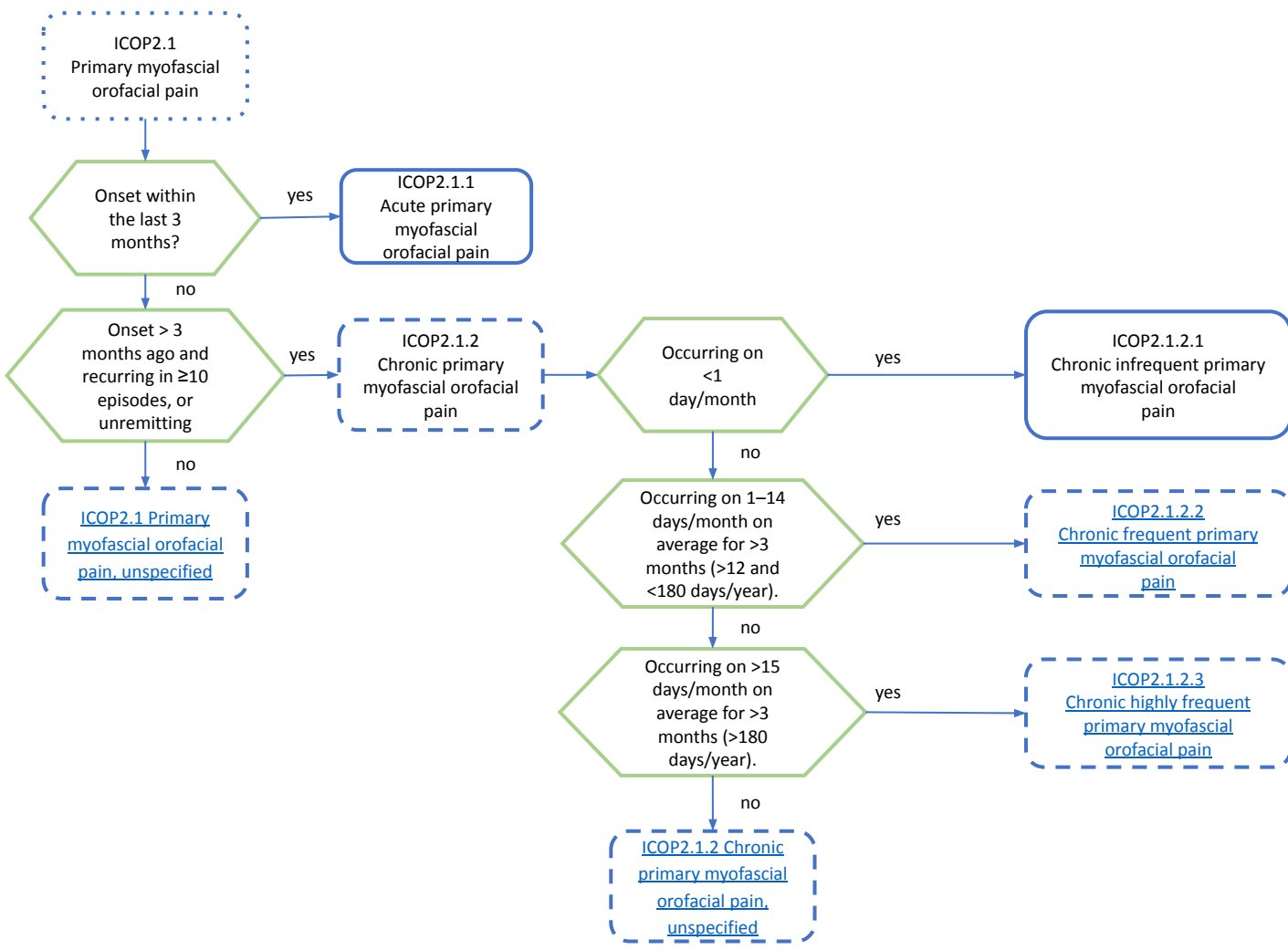
¹³⁴Osteosarcoma is an uncommon tumor, but, myeloma excluded, is by far the most likely primary malignant tumor to arise in bone (although often considered secondary, attributed to sarcomatous transformation of Paget's disease of bone or other benign bone lesions). The majority of patients with osteosarcoma present with localized pain, typically of several months' duration. Pain frequently begins after an injury and may wax and wane over a few weeks or months. Systemic symptoms such as fever, weight loss and malaise are generally absent. The most common sites of involvement are distal femur, proximal tibia and proximal femur; presence in the jaw bones is rather rare.

In Langerhans' cell histiocytosis (LCH), radiologic studies typically demonstrate a lytic, 'punched out' appearance, sometimes with an accompanying soft tissue mass. Pain in the jaw and loose teeth may be presenting symptoms. Although bone lesions may be asymptomatic in some areas, those in the mouth are especially troublesome because of tooth loss and a high recurrence rate. Posterior regions of the jaw bones are affected more often than anterior regions.

Non-Hodgkin lymphoma is a lymphatic system tumor originating from either B or T lymphocytes and showing a high malignant potential. Non-specific symptoms, such as unclear primary dental pain and unresolved periapical swelling, can make accurate diagnosis of non-Hodgkin lymphoma difficult, which frequently leads to delayed diagnosis. A CT or cone beam computed tomography (CBCT) scan of the jaws and immunohistochemical staining of the biopsy specimen are recommended. When the lesion affects the bones of the jaws, it is rare in the mandible when compared to the maxilla: in the reported cases, only 0.6% are in the mandible.

Multiple myeloma is a condition in which plasma cells proliferate in the bone marrow, often resulting in extensive skeletal destruction with osteolytic lesions, osteopenia and/or pathologic fractures. Bone pain, particularly in the back or chest, and less often in the extremities, is present at the time of diagnosis in approximately 60% of patients.

¹³⁵Remote malignant lesions cause pain through direct mass effects (including nerve compression and periosteal stretch) and paraneoplastic effect (a remote effect without metastatic spread to the jaw(s)).



ICOP2.1.2.2
Chronic frequent primary
myofascial orofacial
pain



Report of pain at a
site beyond the
boundary of the
muscle (temporalis
or masseter) being
palpated

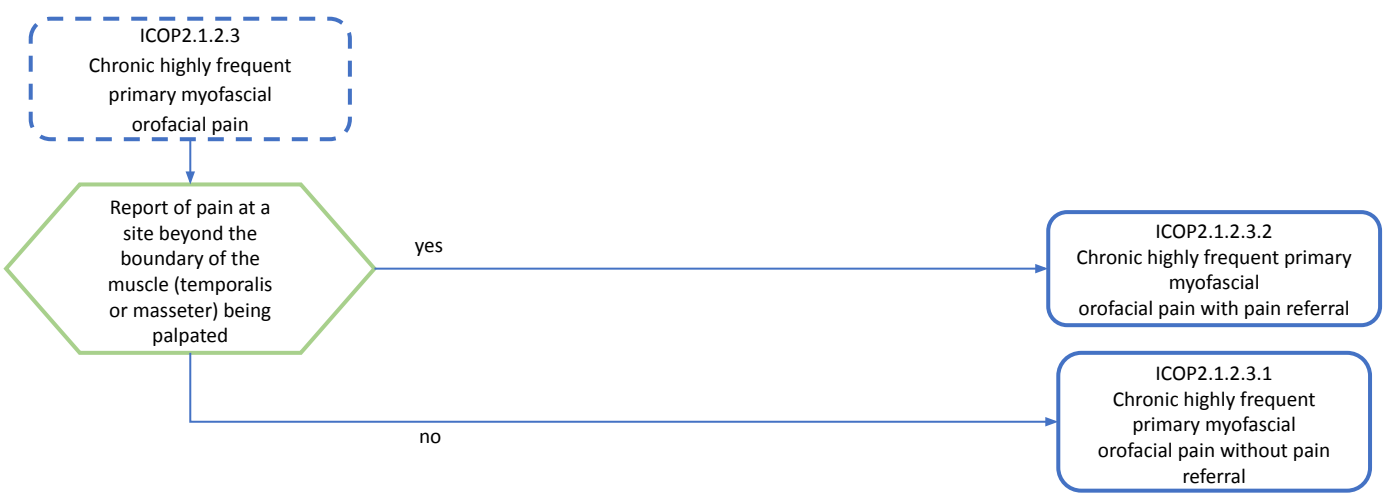
yes

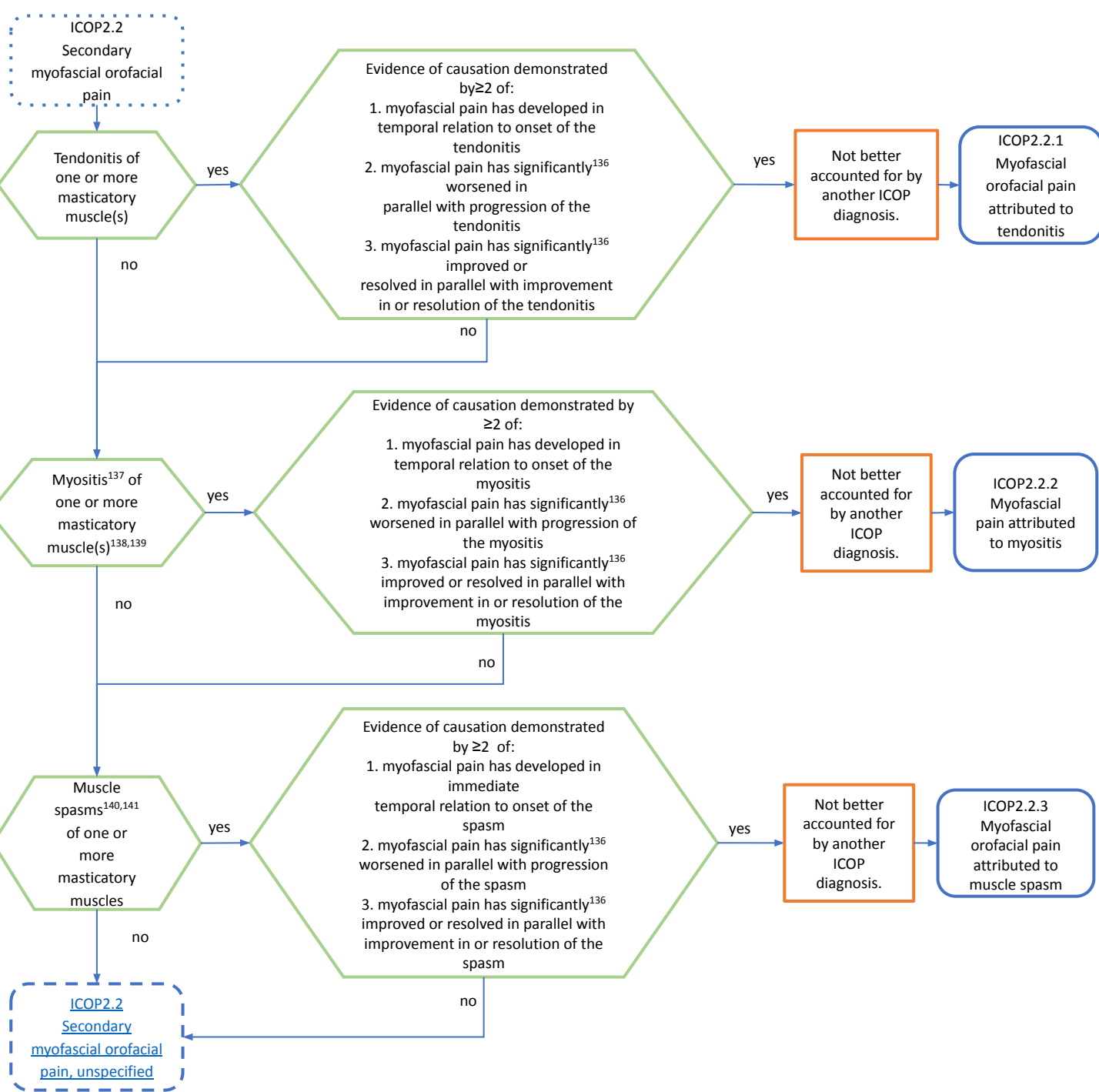
no

ICOP2.1.2.2.2
Chronic frequent
primary myofascial
orofacial
pain with pain
referral

ICOP2.1.2.2.1
Chronic frequent
primary myofascial
orofacial pain
without pain referral







¹³⁶ Such that the patient describes a step-change in intensity.

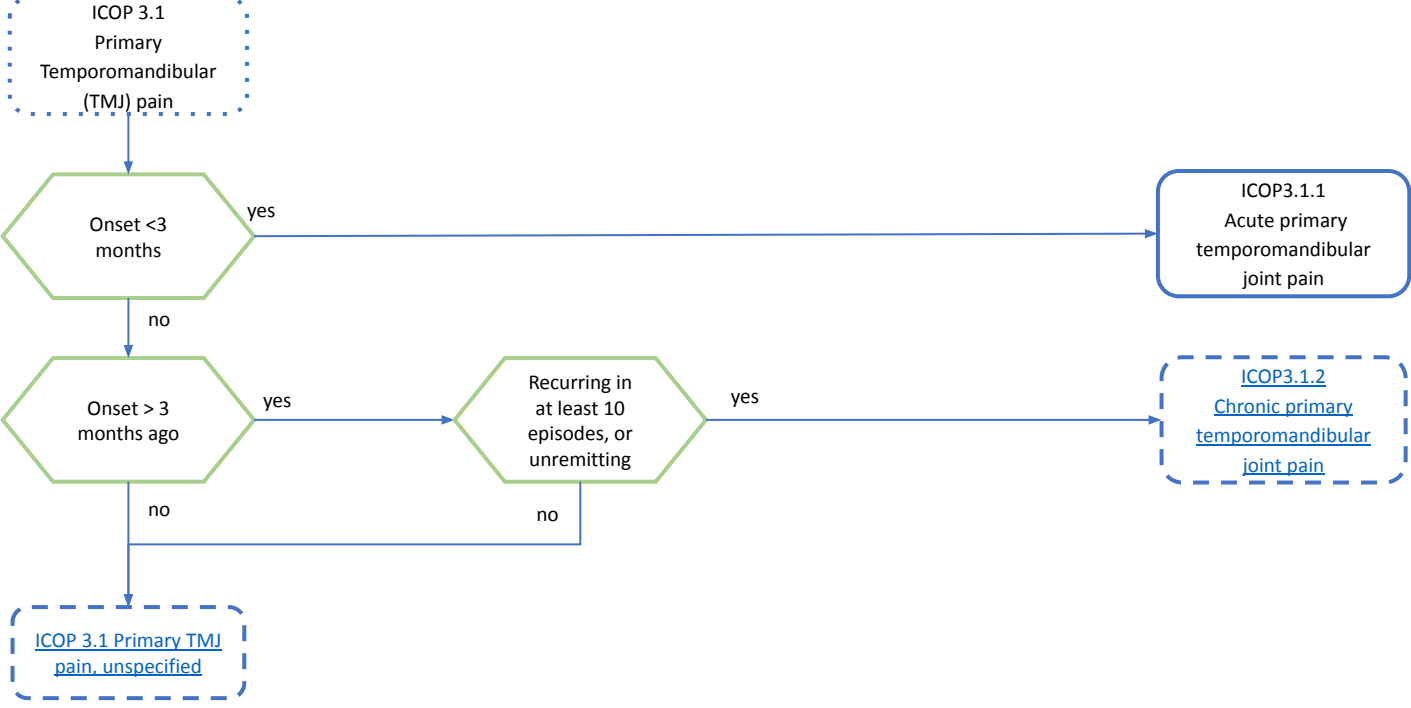
¹³⁷ Myositis may be due to inflammation, infection or trauma.

¹³⁸ Diagnostic signs are oedema, erythema and/or increased temperature over the muscle(s). Serologic tests reveal elevated enzyme levels (e.g. creatine kinase), markers of inflammation and the presence of autoimmune diseases.

¹³⁹ Serologic tests reveal elevated enzyme levels (e.g. creatine kinase), markers of inflammation and the presence of autoimmune diseases

¹⁴⁰ Limited range of jaw movement in a direction that elongates the affected muscle(s) is diagnostic: for example, for jaw closing muscles, opening is limited to <40mm; for lateral pterygoid muscle, ipsilateral movement is limited to <7mm

¹⁴¹ If the diagnosis needs to be confirmed, intramuscular electromyography (EMG) shows elevated activity when compared to contralateral unaffected muscle



ICOP3.1.2
Chronic primary
temporomandibular
joint pain

Occurring on
<1 day/month

yes

ICOP3.1.2.1
Chronic infrequent
primary
temporomandibular
joint pain

no

Occurring on 1–14
days/month on
average for >3
months (>12 and
<180 days/year).

yes

ICOP3.1.2.2
Chronic frequent
primary
temporomandibular
joint pain

no

Occurring on >15
days/month on
average for >3
months (>180
days/year)

yes

ICOP3.1.2.3
Chronic highly frequent
primary
temporomandibular joint
pain

no

ICOP3.1.2
Chronic primary
temporomandibular joint
pain, unspecified

ICOP3.1.2.2
Chronic frequent
primary
temporomandibular
joint pain



Pain on TMJ
palpation.
localized to the
immediate site
of palpation.

yes



ICOP3.1.2.2.1
Chronic frequent primary
temporomandibular joint
pain without pain referral

no



Pain on TMJ
palpation
beyond the area
of the joint.

yes

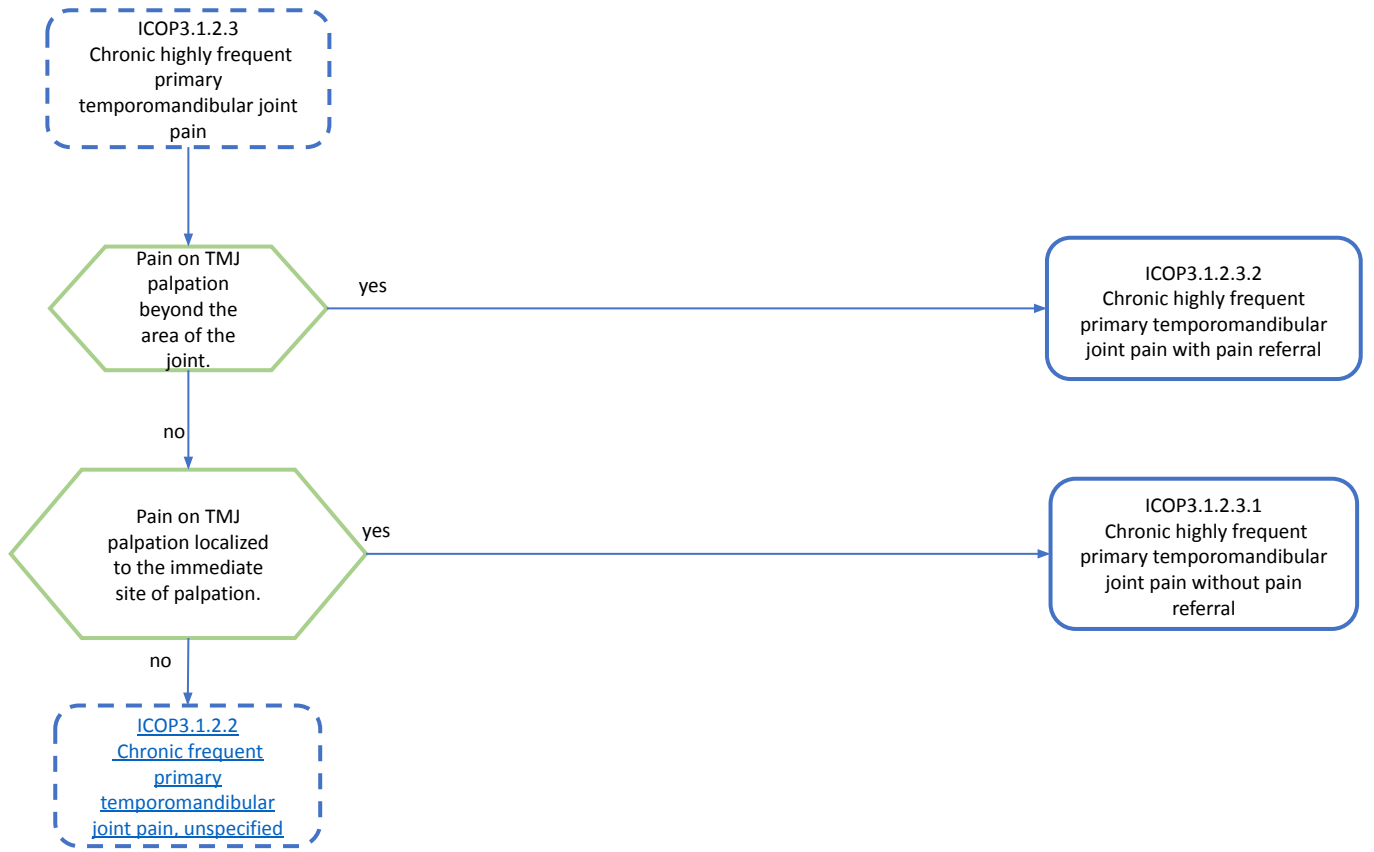


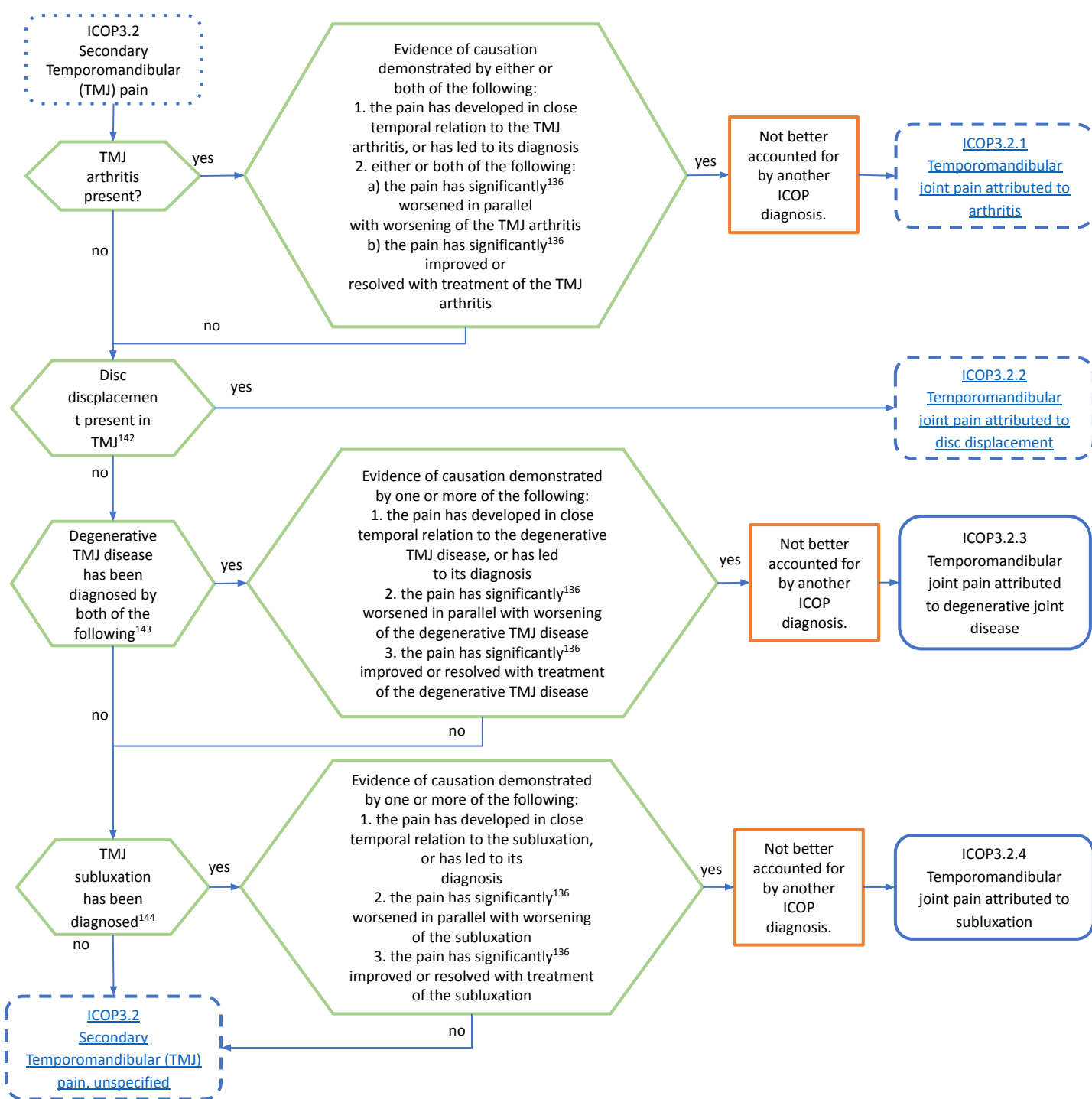
ICOP3.1.2.2.2
Chronic frequent
primary
temporomandibular
joint pain with pain
referral

no



ICOP3.1.2.2
Chronic frequent
primary
temporomandibular
joint pain, unspecified





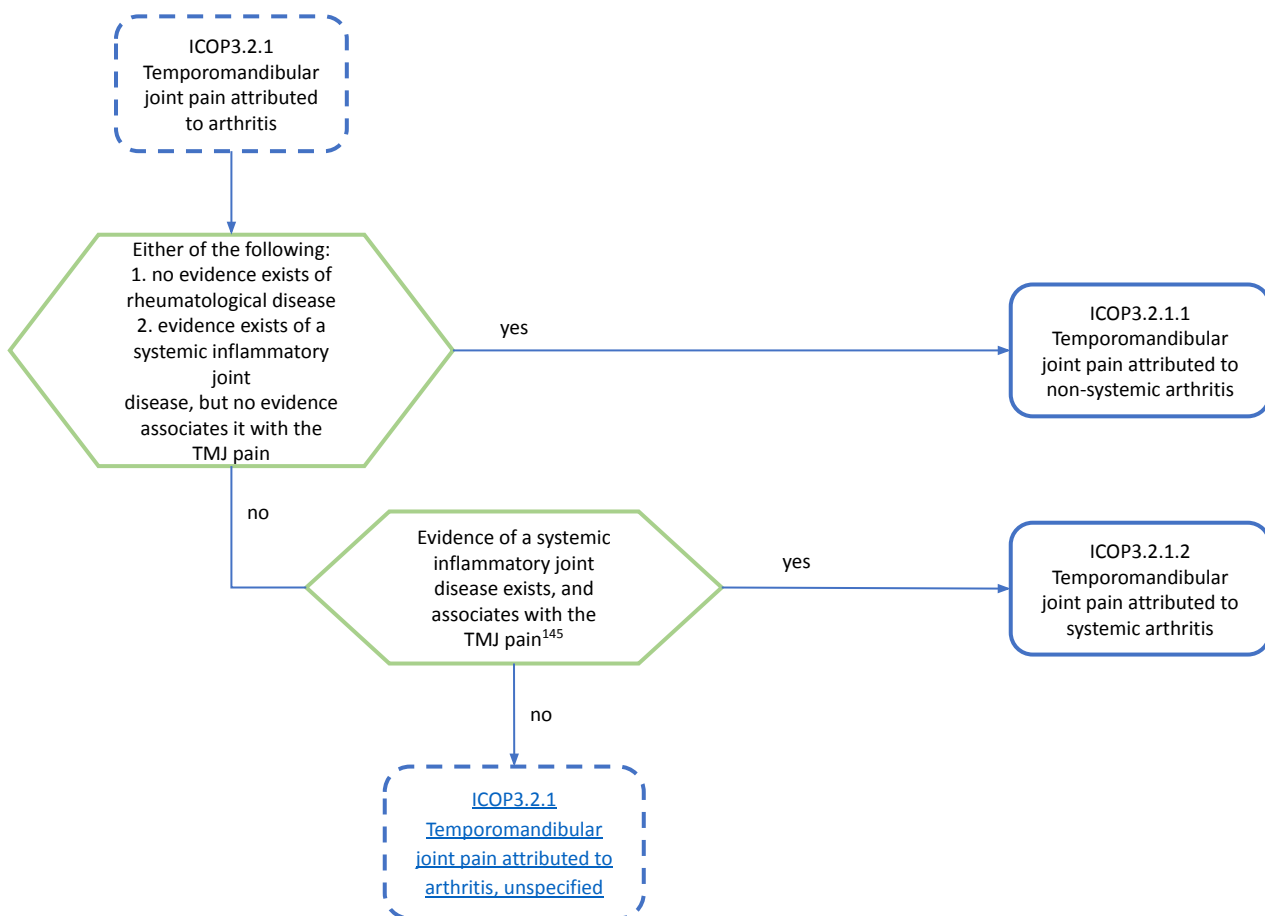
¹⁴² There are currently no specific criteria to relate TMJ pain to disc displacement with or without reduction. However, there is reason to believe that disc displacement can elicit TMJ pain upon jaw movement in certain circumstances, which implies that the TMJ pain is secondary. This is a topic that needs more research to develop optimal criteria, for which these are suggestions for a starting point

¹⁴³ Degenerative TMJ disease has been diagnosed by both of the following:

1. any TMJ noise(s) on jaw movement or function reported in the last 30 days, and/or during examination
2. crepitus detected with palpation during maximal unassisted or assisted opening, lateral and/or protrusive movements

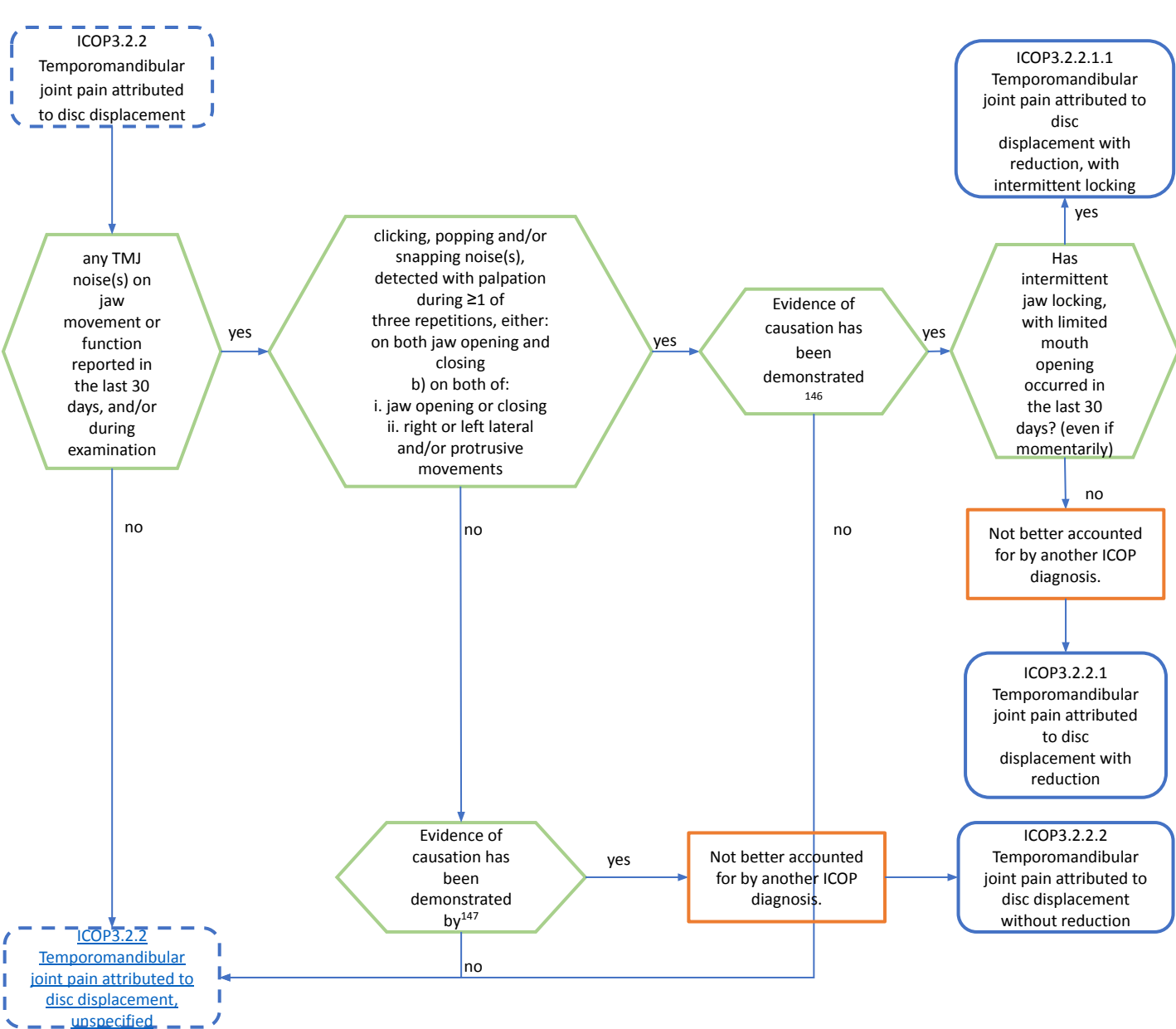
¹⁴⁴ TMJ subluxation has been diagnosed by both of the following:

1. jaw locking or catching (even if only momentarily), in the last 30 days, preventing closure from the wide-open position
2. inability to return the mouth from an open to a normal closed position without the performance of a specific manipulative manoeuvre



¹⁴⁵ Both of the following:

1. the pain has developed in close temporal relation to other symptoms and/or clinical or biological signs of onset of the systemic inflammatory joint disease, or has led to its diagnosis
2. either or both of the following
 - a) the pain has significantly (such that the patient describes a step-change in intensity) worsened in parallel with worsening of the systemic inflammatory joint disease
 - b) the pain has significantly (such that the patient describes a step-change in intensity) improved or resolved with treatment of the systemic inflammatory joint disease.

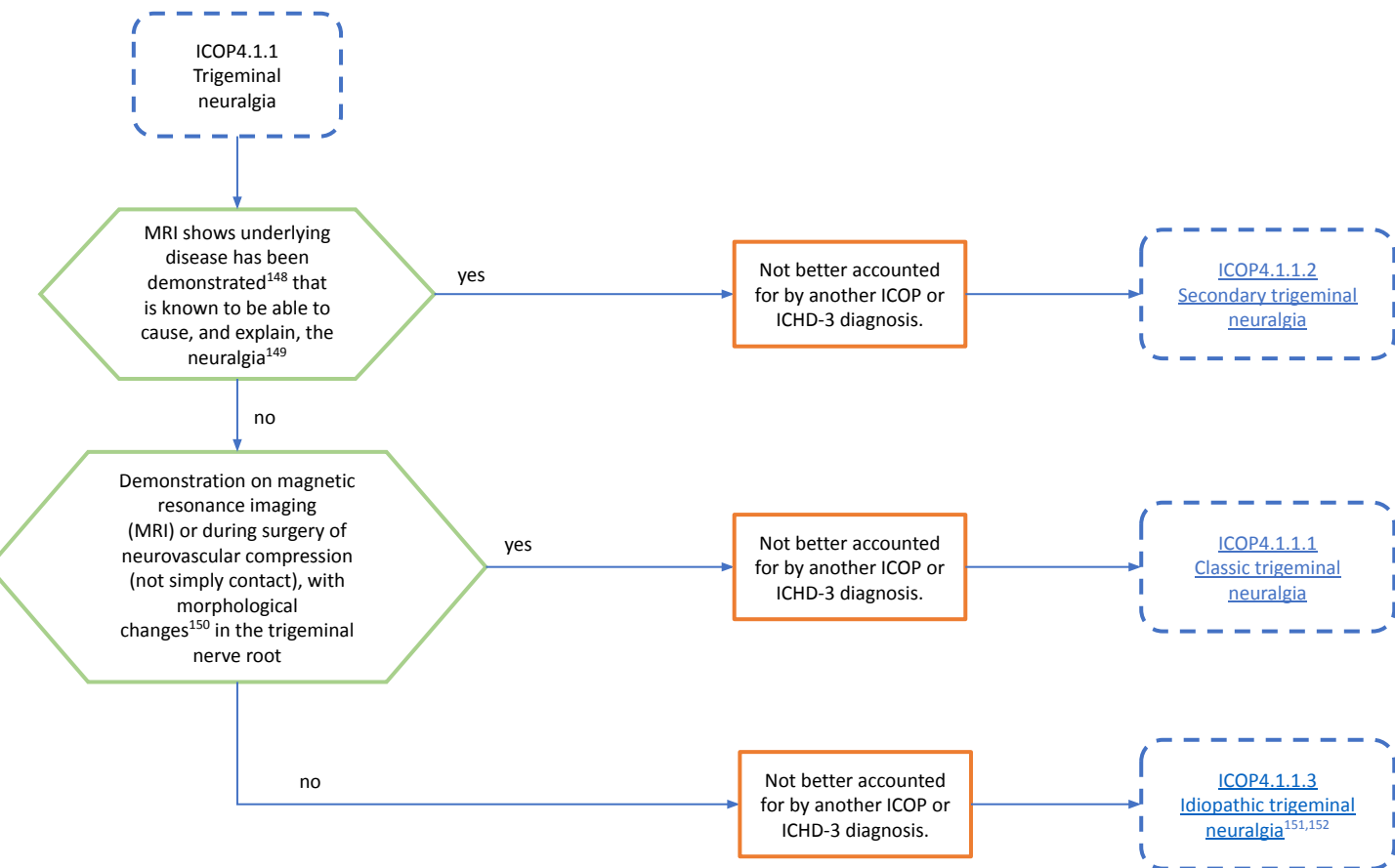


¹⁴⁶Evidence of causation demonstrated by at least two of the following:

1. the pain coincides precisely with the clicking, popping and/or snapping noise(s)
2. the pain has developed in close temporal relation to the disc displacement, or has led to its diagnosis
3. either or both of the following: a) the pain has significantly (such that the patient describes a step-change in intensity) worsened in parallel with worsening of the disc displacement
b) TMJ pain has significantly (such that the patient describes a step-change in intensity) improved or resolved with treatment of the disc displacement

¹⁴⁷Evidence of causation demonstrated by one or more of the following:

1. the pain has developed in close temporal relation to the disc displacement or has led to its diagnosis
2. the pain has significantly (such that the patient describes a step-change in intensity) worsened in parallel with worsening of the disc displacement
3. the pain has significantly (such that the patient describes a step-change in intensity) improved or resolved with treatment of the disc displacement



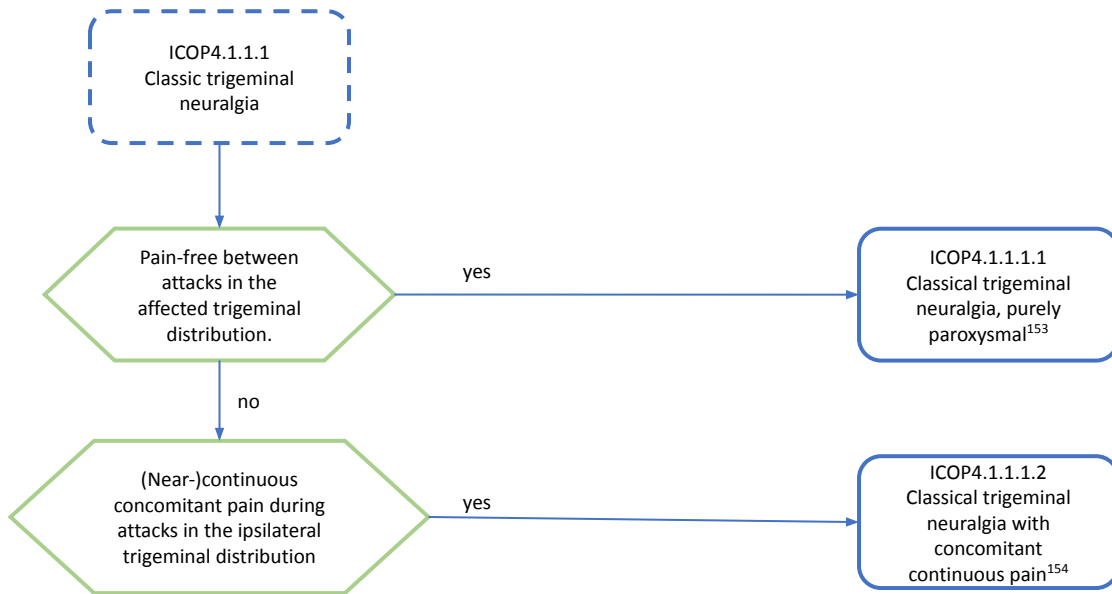
¹⁴⁸ MRI is best equipped to detect an underlying cause of 4.1.1.2 Secondary trigeminal neuralgia. Other investigations may include neurophysiological recording of trigeminal reflexes and trigeminal evoked potentials, suitable for patients who cannot undergo MRI.

¹⁴⁹ Recognized causes are tumor in the cerebellopontine angle, arteriovenous malformation and multiple sclerosis.

¹⁵⁰ Typically atrophy or displacement.

¹⁵¹ Neither 4.1.1.1 Classical trigeminal neuralgia nor 4.1.1.2 Secondary trigeminal neuralgia has been confirmed by adequate investigations such as electrophysiological tests or MRI

¹⁵² A contact between a blood vessel and the trigeminal nerve and/or nerve root is a common finding on neuroimaging in healthy subjects. When such a contact is found in the presence of 4.1.1 Trigeminal neuralgia, but without evidence of morphological changes (e.g. atrophy or displacement) in the nerve root, the criteria for 4.1.1.1. Classical trigeminal neuralgia are not fulfilled and the condition is considered idiopathic



¹⁵³ 4.1.1.1.1 Classical trigeminal neuralgia, purely paroxysmal is usually responsive, at least initially, to pharmacotherapy (especially carbamazepine or oxcarbazepine).

¹⁵⁴ Peripheral or central sensitization may account for the continuous pain.

ICOP4.1.1.2
Secondary trigeminal
neuralgia

Both of the following: 1. MS has been diagnosed
2. MRI shows an MS plaque at the trigeminal root entry zone or in the pons affecting the intrapontine primary afferents, or its presence is suggested by routine electrophysiological studies¹⁵⁵ showing impairment of the trigeminal pathways

yes

Not better accounted for by another ICOP or ICHD-3 diagnosis.

ICOP4.1.1.2.1
Trigeminal neuralgia attributed to multiple sclerosis¹⁵⁶

no

Both the following
1. Imaging shows a space-occupying lesion in contact with the affected trigeminal nerve.
2. pain has developed after identification of the lesion, or led to its discovery

yes

Not better accounted for by another ICOP or ICHD-3 diagnosis.

ICOP4.1.1.2.2
Trigeminal neuralgia attributed to space-occupying lesion

no

Both of the following:
1. a disorder, other than those described above but known to be able to cause trigeminal neuralgia,¹⁵⁷ has been diagnosed
2. pain has developed after onset of the disorder, or led to its discovery

yes

Not better accounted for by another ICOP or ICHD-3 diagnosis.

ICOP4.1.1.2.3
Trigeminal neuralgia attributed to other cause

¹⁵⁵Blink reflex or trigeminal evoked potentials.

¹⁵⁶ Patients with 4.1.1.2.1 Trigeminal neuralgia attributed to multiple sclerosis benefit less from pharmacological and surgical interventions than those with 4.1.1.1 Classical trigeminal neuralgia

¹⁵⁷ Recognized causes are skull-base bone deformity, connective tissue disease, arteriovenous malformation, dural arteriovenous fistula and genetic causes of neuropathy or nerve hyperexcitability.

ICOP4.1.1.3
Idiopathic trigeminal
neuralgia



Pain-free between
attacks in the affected
trigeminal
distribution.

yes

ICOP4.1.1.3.1
Idiopathic trigeminal
neuralgia, purely
paroxysmal

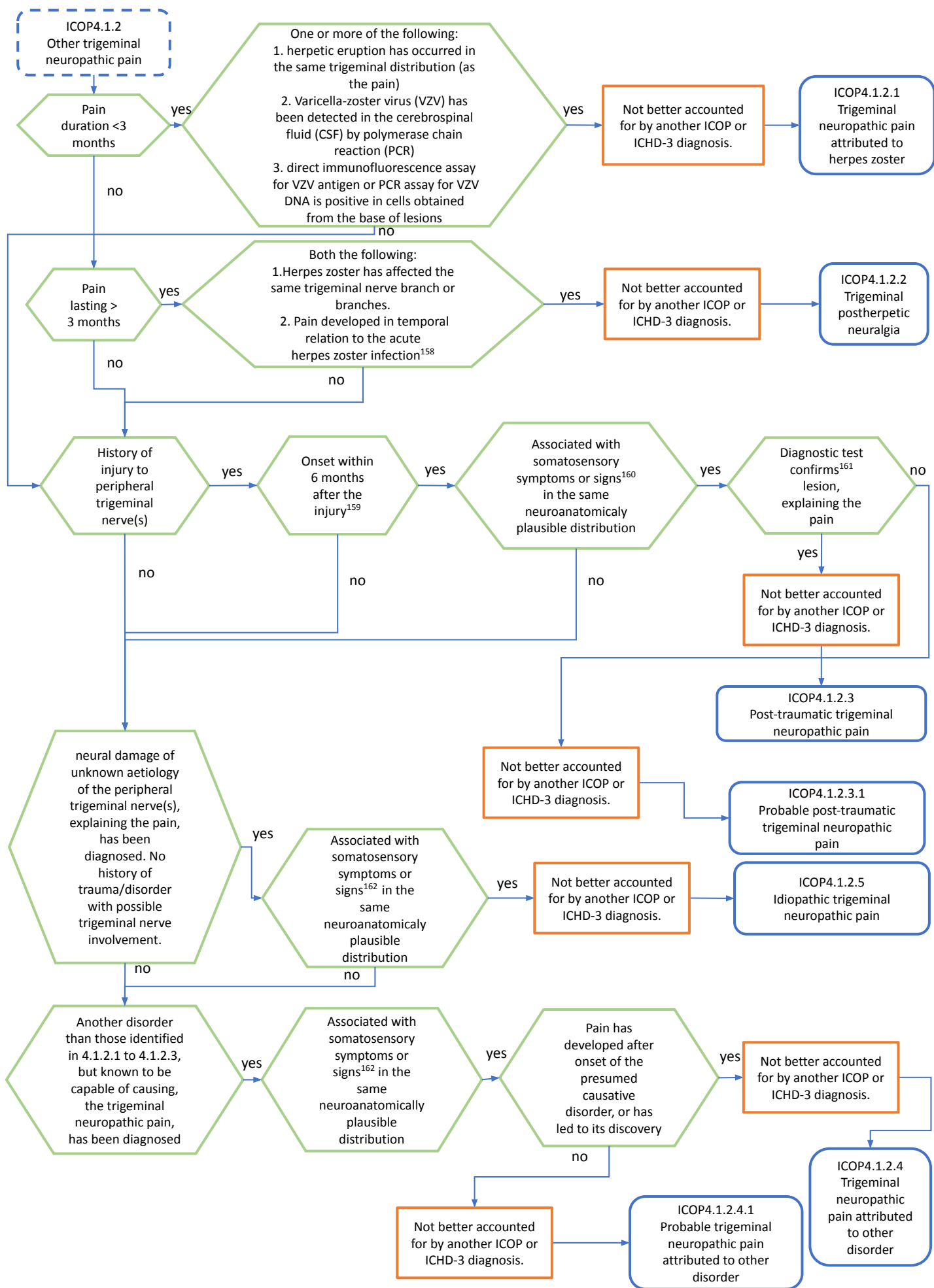
no



(Near-)continuous
concomitant pain during
attacks in the ipsilateral
trigeminal distribution

yes

ICOP 4.1.1.3.2
Idiopathic trigeminal
neuralgia with
concomitant
continuous pain



¹⁵⁸Usually, pain will have developed while the rash was still active, but on occasion later, after the rash has healed. In such cases, pale or light purple scars may be present as sequelae of the herpetic eruption

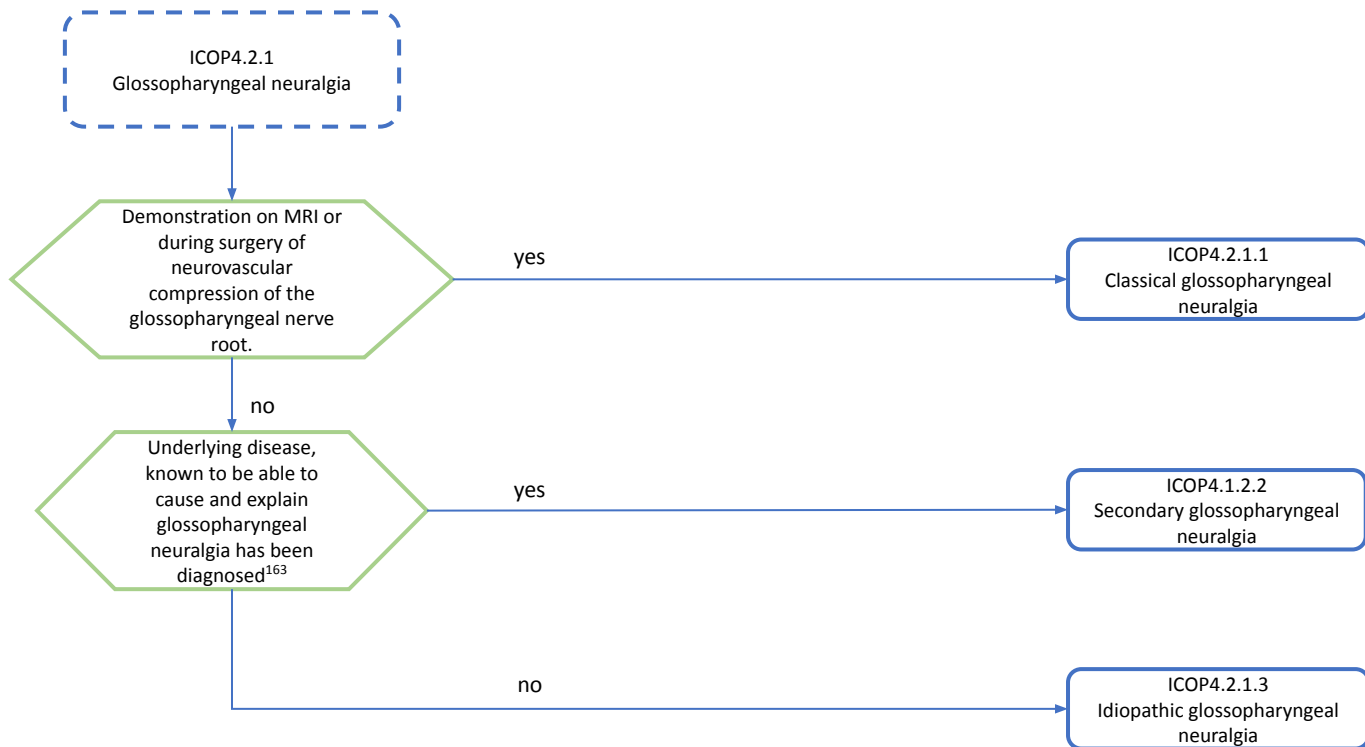
¹⁵⁹Specifically following radiation-induced postganglionic injury, neuropathic pain may appear after >3 months.

¹⁶⁰Somatosensory symptoms or signs may be negative (e.g. hypaesthesia and/or hypalgesia) and/or positive (e.g. hyperalgesia and/or allodynia).

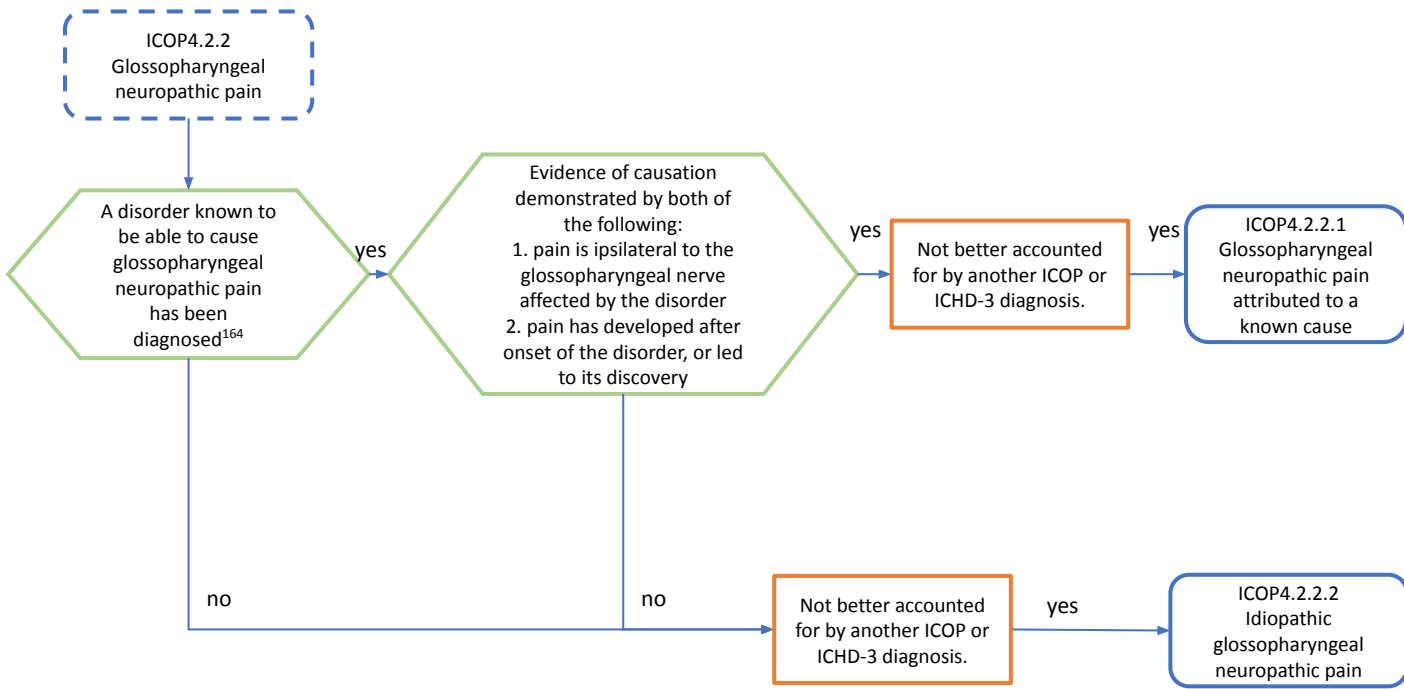
Note that positive somatosensory signs are not specific to neuropathy. Negative or positive somatosensory signs consistent with the distribution of the pain may be sufficient to indicate the presence of a lesion of the trigeminal nerve. The clinical examination is supplemented by laboratory tests such as quantitative sensory testing.

¹⁶¹Tests that confirm a relevant lesion or disease affecting the trigeminal nerve may, for example, be surgical or radiological confirmation of nerve compression or lesion, nerve conduction study, laser-evoked potentials, blink reflex or skin biopsy confirmation of reduced nerve fibre terminals. Positive findings in these investigations may provide important diagnostic hints at the source of pain. However, all clinical and diagnostic aspects of the pain need to be considered.

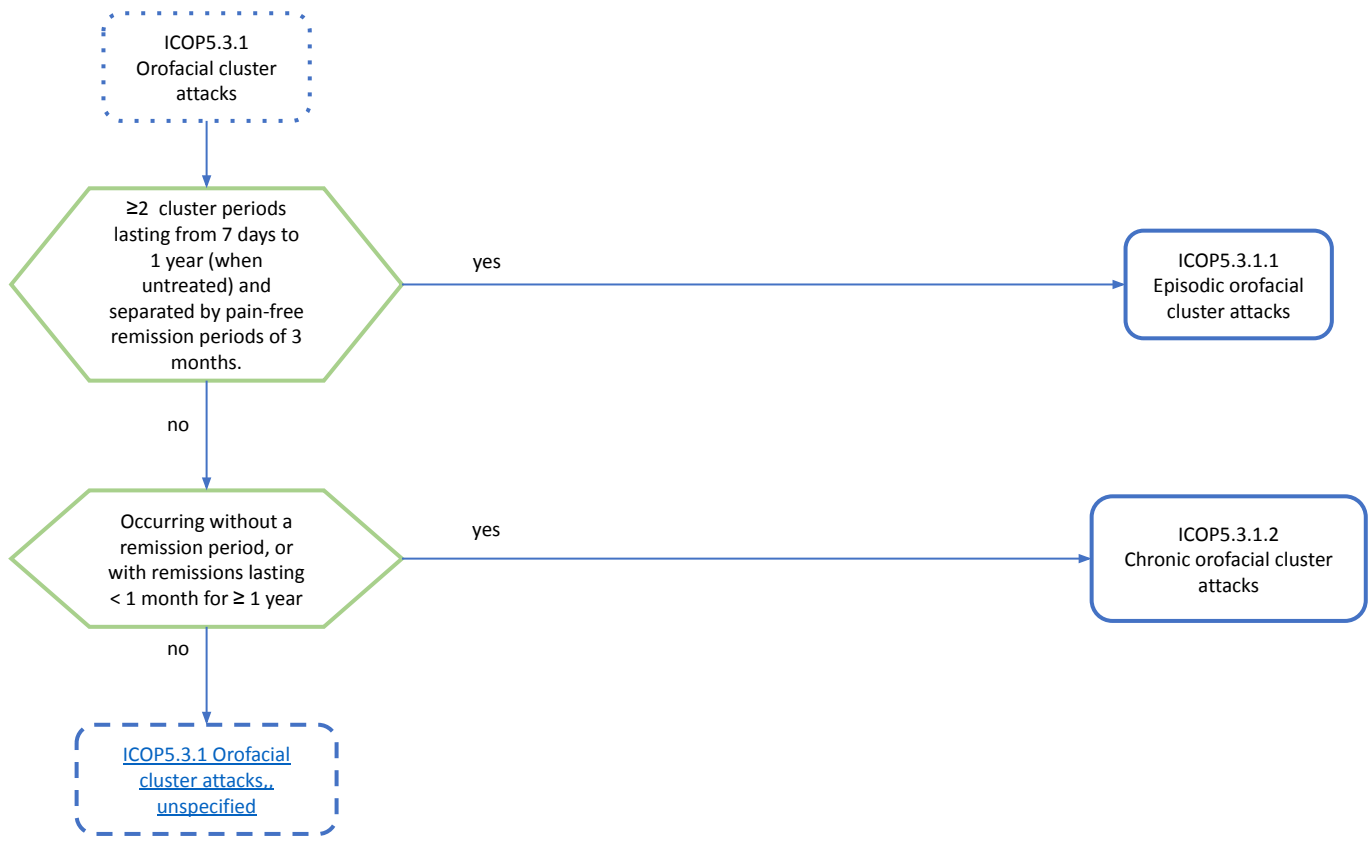
¹⁶² Somatosensory symptoms or signs may be negative (e.g. hypaesthesia and/or hypalgesia) and/or positive (e.g. hyperalgesia and/or allodynia)

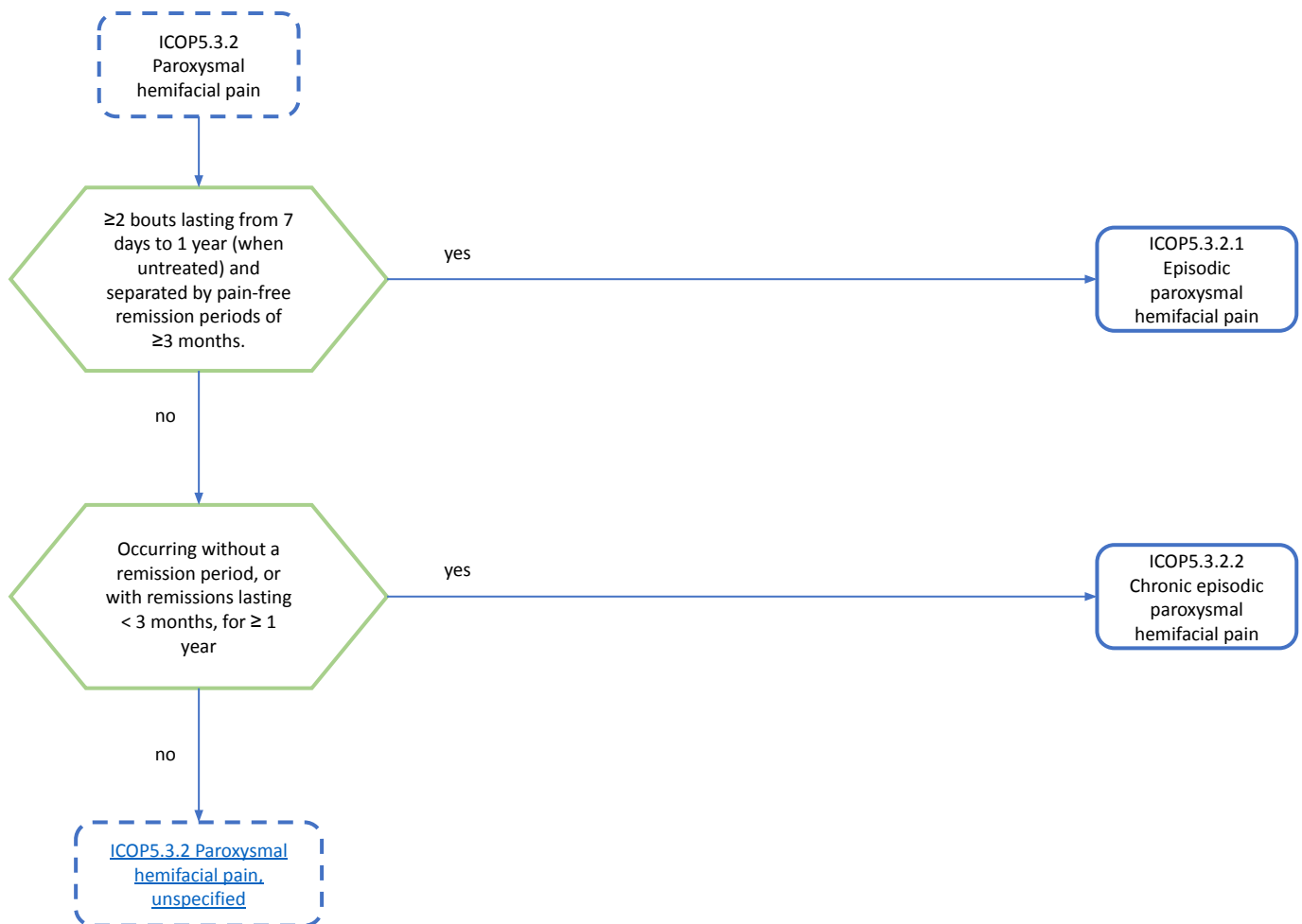


¹⁶³ There are single reports of 4.2.1.2 Secondary glossopharyngeal neuralgia caused by neck trauma, multiple sclerosis, tonsillar or regional tumors, cerebello-pontine angle tumors and Arnold– Chiari malformation

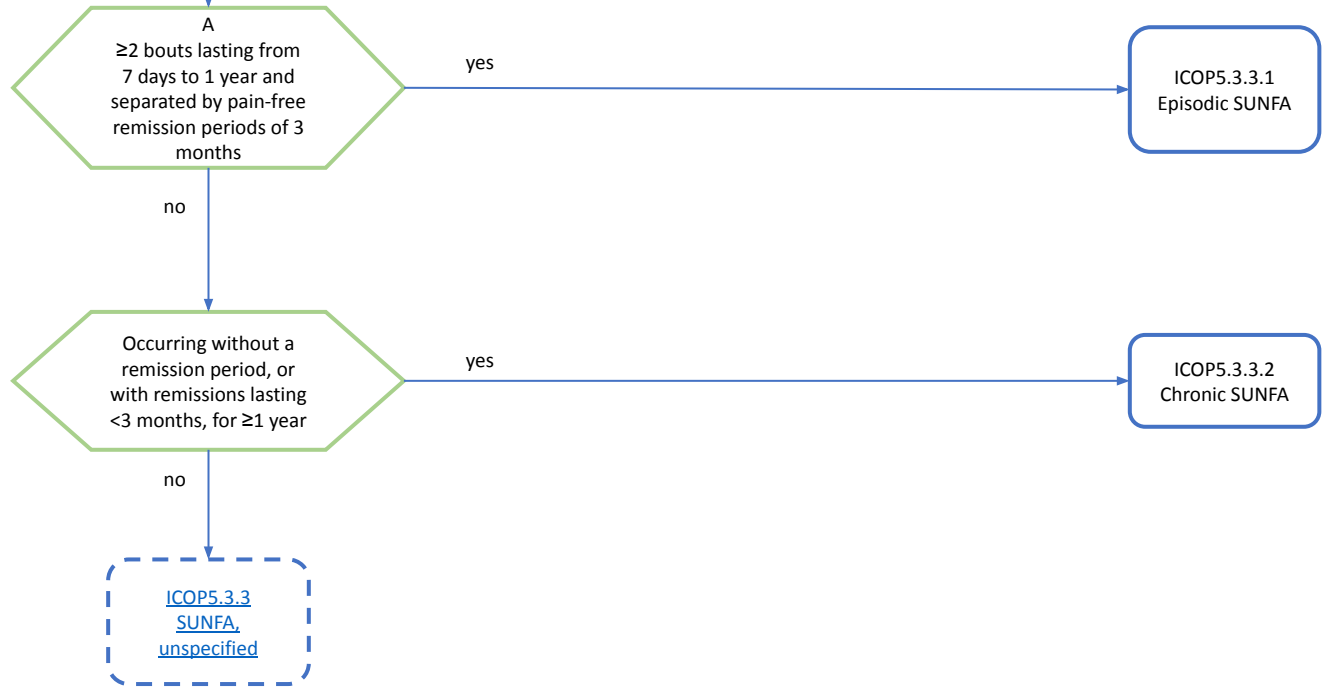


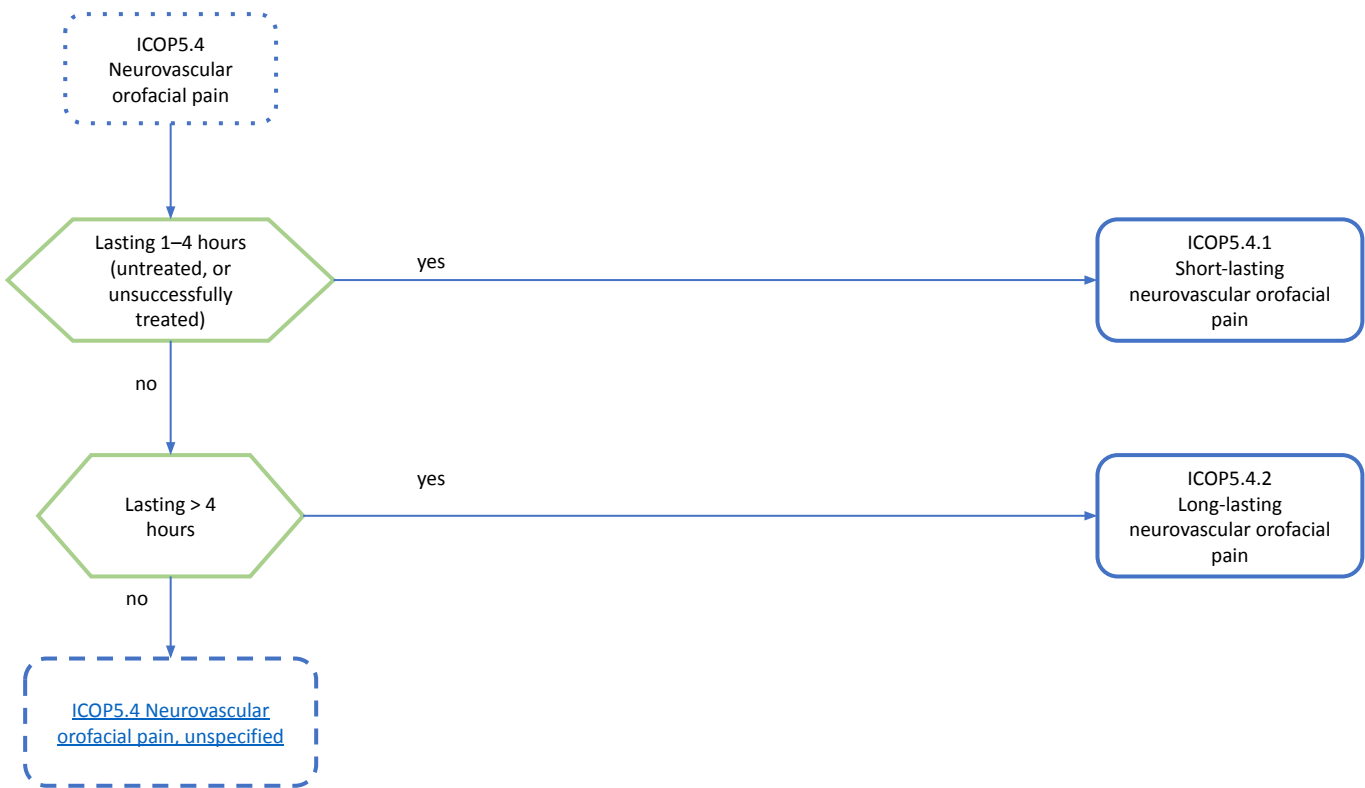
¹⁶⁴ tumors of the cerebellopontine angle and iatrogenic injury during interventional procedures have been reported as causes of 4.2.2.1 Glossopharyngeal neuropathic pain attributed to a known cause

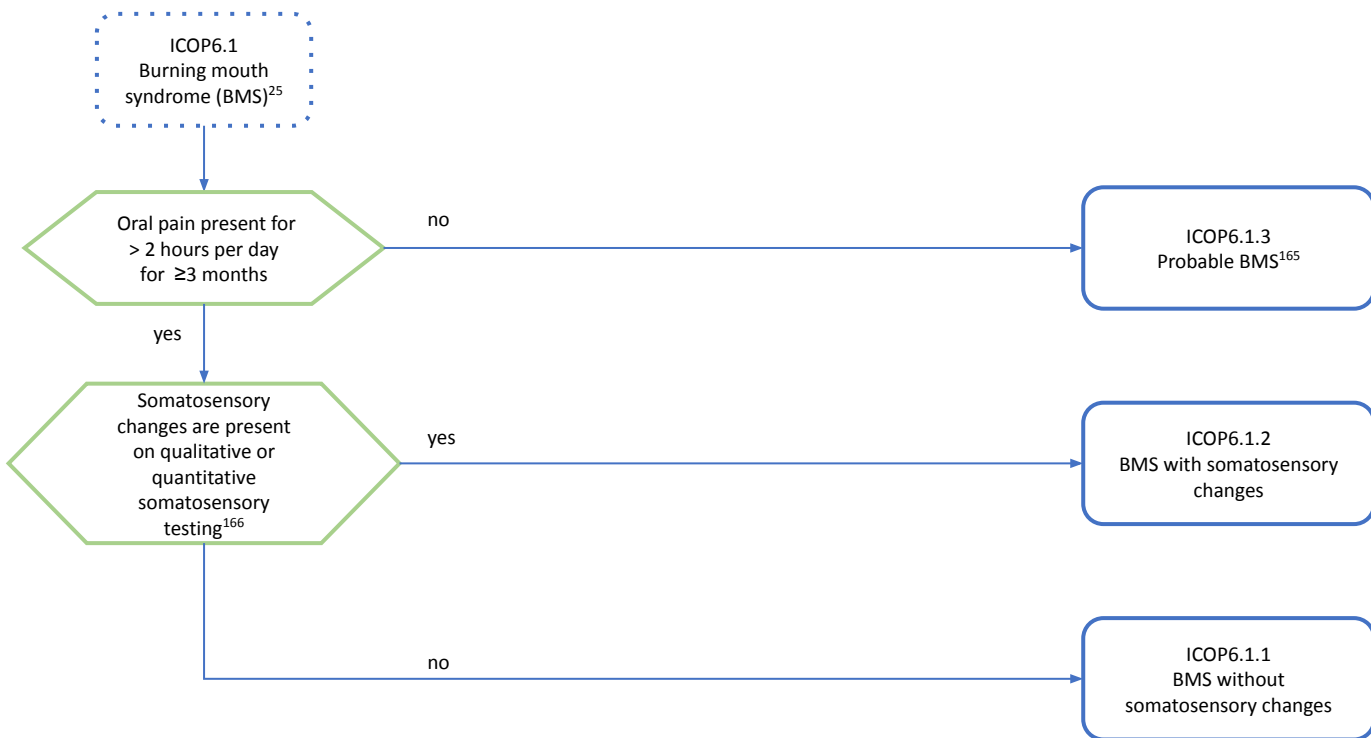




ICOP5.3.3
Short-lasting unilateral
neuralgiform facial pain
attacks with cranial autonomic
symptoms (SUNFA)



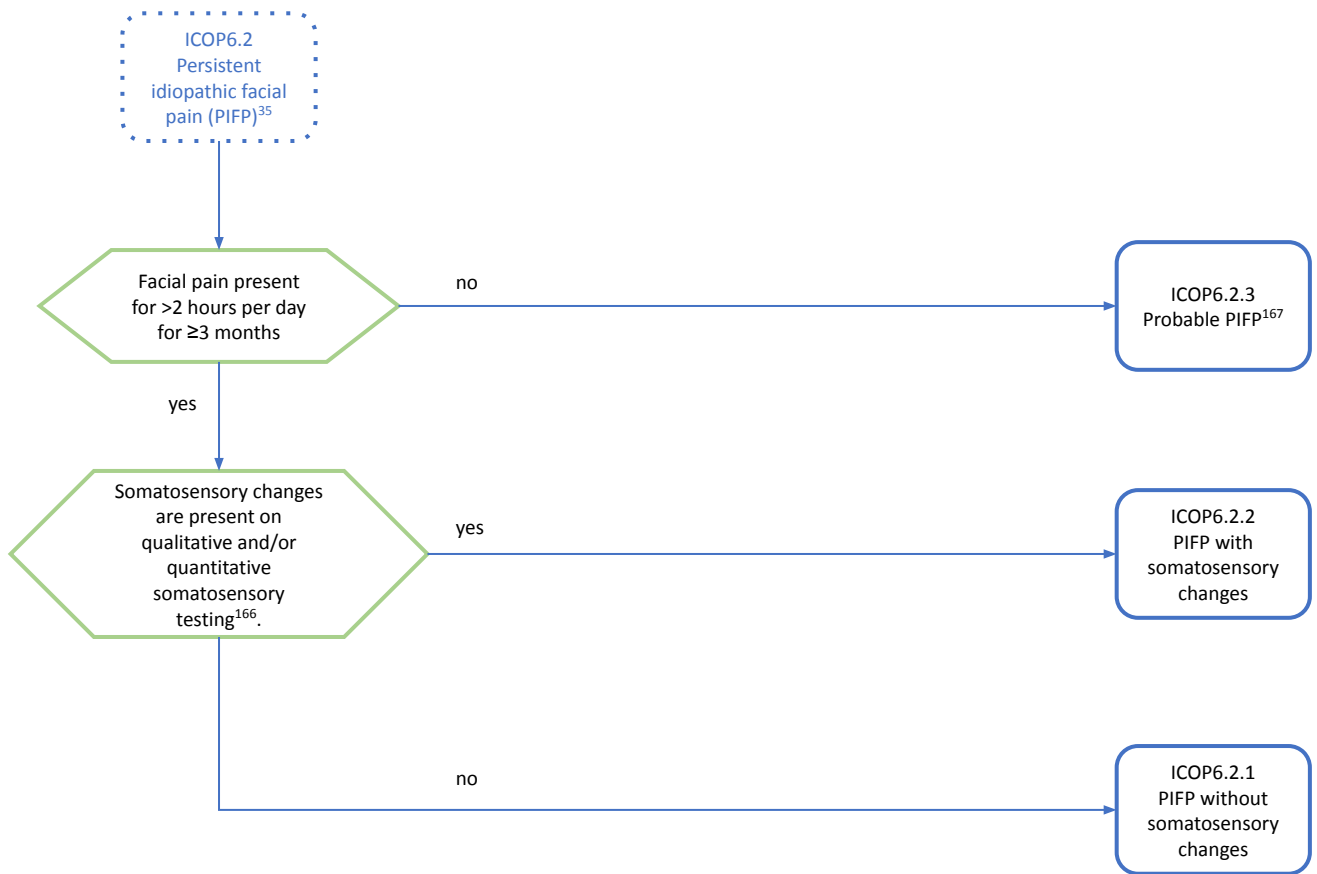




²⁵ During part, but less than half of the active timecourse of 5.3.2 Paroxysmal hemifacial pain, attacks may be less frequent.

¹⁶⁵ Once 3 months have elapsed, the diagnosis becomes 6.1 Burning mouth syndrome (or one of its subtypes).

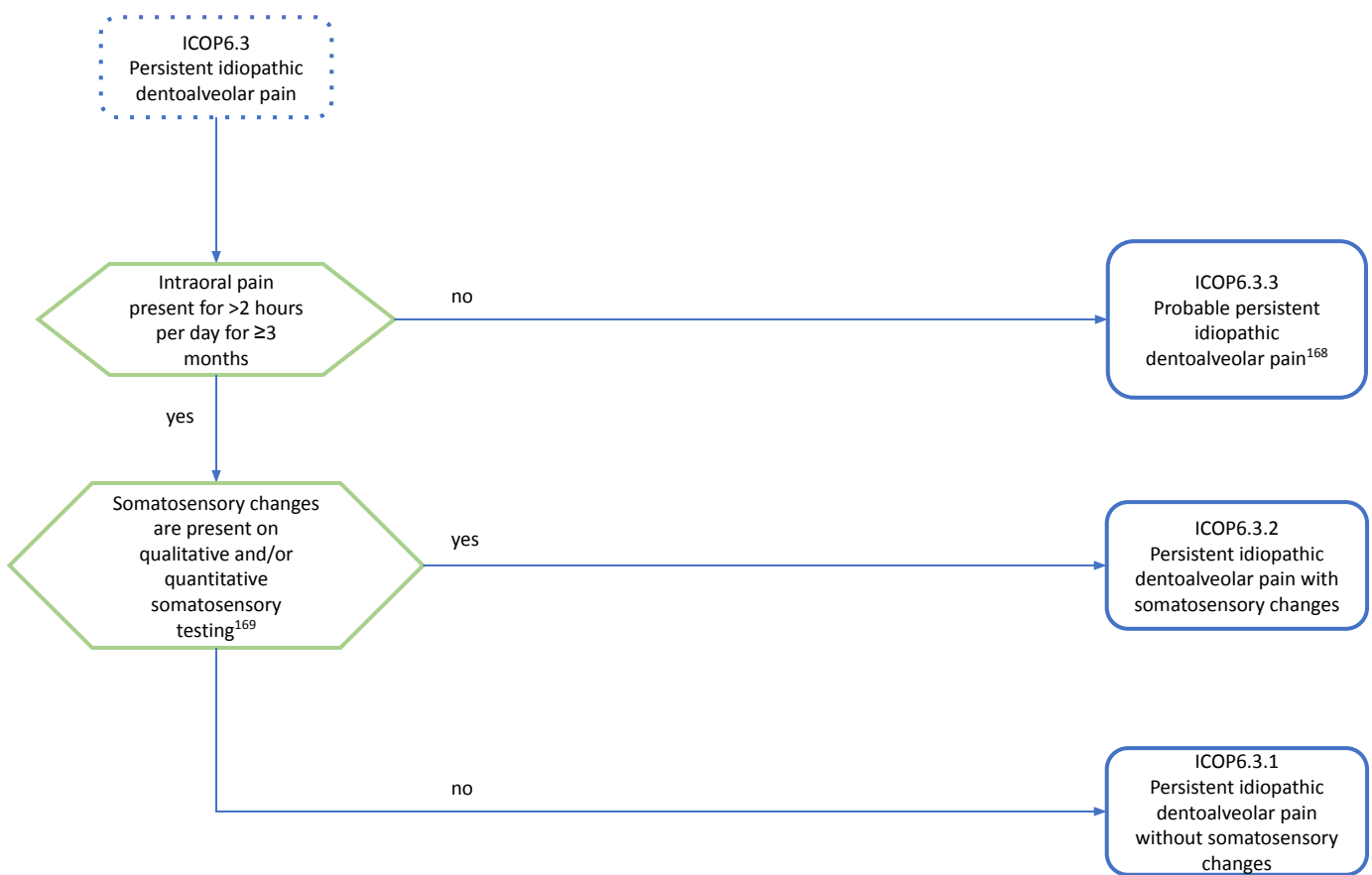
¹⁶⁶ Negative (e.g. hypaesthesia and/or hypalgesia) and/ or positive (e.g. hyperalgesia and/or allodynia) sensory symptoms and/or signs.



³⁵ The exacerbations must occur as attacks clearly distinct from the background pain, with patients describing pain having these two sets of features; otherwise the diagnoses of 5.3.2 Paroxysmal hemifacial pain or 6.2 Persistent idiopathic facial pain should be considered. A response to indomethacin should rather lead to the diagnosis of 5.3.2 Paroxysmal hemifacial pain.

¹⁶⁶ Negative (e.g. hypaesthesia and/or hypalgesia) and/ or positive (e.g. hyperalgesia and/or allodynia) sensory symptoms and/or signs.

¹⁶⁷ Once 3 months have elapsed, the diagnosis becomes 6.2 Persistent idiopathic facial pain (or one of its subtypes).



¹⁶⁸ Once 3 months have elapsed, the diagnosis becomes 6.3 Persistent idiopathic dentoalveolar pain (or one of its subtypes).

¹⁶⁹ Negative (e.g. hypaesthesia and/or hypalgesia) and/ or positive (e.g. hyperalgesia and/or allodynia) sensory symptoms and/or signs are present, but not spatially confined to a neuroanatomically relevant area, in contrast to 4.1.2.3 Post-traumatic trigeminal neuropathic pain