Provincial TMJ Dysfunction Primary Care Clinical Pathway

Quick Links: Primer & Expanded details | Provider resources | Patient pathway | Provide feedback

1. History

Patient presents with any of the following TMJ symptoms:

- Pre-auricular pain
- Symptomatic joint sounds
- Limited mouth opening

Ensure history includes asking:

- Has your bite changed at all?
  - If yes - Acute or chronic change?
- Any history of trauma to head/neck?
- Sore tooth?
- Current stress level and life satisfaction?

2. Assessment

- Palpation & inspection
- Measure opening

Screen for red flags

3. Red Flags

- Signs of dental disease and/or infection → **Send to Dentist**
- Severe limited mouth opening (trismus) → **6. Urgent Advice**
- Suspected fracture and/or suspected dislocation (open lock jaw) → **6. Urgent Advice or send to ER**
- Suspected giant cell arteritis: Jaw claudication or visual changes → Order CRP → **6. Urgent Advice Rheumatology**
- Mass and/or deformity → Order CT / Order MRI → **7. Refer to OMF**

4. Investigations

Order CRP | Order CT | Order MRI

No red flags

5. Management

Patient Education

Jaw Rest

- Encourage soft/altered diet
- Avoid excessive mandibular movement: No chewing gum, avoid clenching, grinding teeth, and nail biting

Stress Reduction

- Behavioral management (psychosocial screen if appropriate)
- Warm compress and self massage

Dental Appliance/ Night Guard

- Suggest dentist fitted splint
- Caution patients on using over-the-counter options

Medications

- Offer NSAIDS if appropriate
- Muscle relaxants
- Avoid narcotics and benzodiazepines

Additional Options

- Physiotherapy
- Massage
- Neuromodulator (Botulinum toxin)

Is there clinical improvement after ≥3 months of conservative management?

No

Yes

Reinforce conservative management strategies

Alberta Health Services

Call to Action: We need your feedback during this **new** pathway's initial testing phase!

Alberta's Pathway Hub | Background

This primary care pathway was co-developed by primary and specialty care and includes input from multidisciplinary teams from all five zones. It is intended to be used in conjunction with specialty advice services, when required, to support care within the medical home.

EXPANDED DETAILS

Pathway Primer

This clinical pathway offers primary care providers guidance on evidence-based management of temporomandibular joint (TMJ) dysfunction. TMJ dysfunction is a heterogeneous group of musculoskeletal and neuromuscular conditions affecting the joint complex or surrounding musculature [1]. TMJ dysfunction is a common condition with a recent systematic review suggesting a prevalence as high as 31% in adults [2]. Most patients improve with conservative management, although the condition can be recurring or episodic which makes education and self-management techniques a key component to patient care. In certain cases, referral to oral maxillofacial (OMF) surgeons may be necessary.

1. History

The etiology of TMJ dysfunction can be multifactorial, often involving biopsychosocial components [3] with diagnosis most frequently achieved based on history and physical assessment of the patient. Therefore, it is important to perform a full history to ascertain what symptoms the patient is experiencing. Most commonly, the patient may report:

- **Pain**- Pain from the TMJ and masticatory muscles is a common symptom. It can be constant or episodic, often worse with functions of the jaw such as chewing or talking and in the morning in patients that may clench their jaw during sleep. TMJ pain is characterized by dull achiness around the temporomandibular joint and over the jaw muscles.
- **Symptomatic joint sounds**- Clicking may be heard with jaw movement, in symptomatic cases this is often caused from an uncoordinated movement of the condylar head and the articular disc. Crepitus is often heard due to the roughened or irregular articular surfaces grinding together and usually suggests more degenerative, chronic changes in the joint. It is important to note that asymptomatic joint sounds with normal movement do not require intervention.
- **Limited or reduced mouth opening**- A loss in range of motion for the TMJ is commonly seen and this restriction can occur in opening or closing of the mandible. Reasons for this restriction can be muscular, ligamentous or disc related. [4] [5]

Additionally, patients may also present with headache, otalgia, pain more so in the morning, or jaw locking.

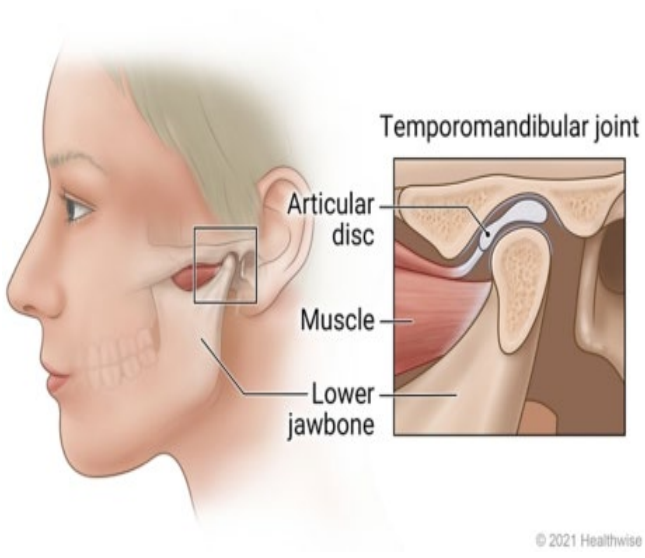


Figure 1. Basic TMJ anatomy [27]

Key questions to include within the history are:

- **Has your bite changed?**
  If yes, how long have your symptoms lasted? Looking to distinguish between acute onset that may raise suspicion of mandibular fracture versus a change in bite that has occurred over time, which may be more suggestive of structural changes within the TMJ such as a resorption of mandibular condyle.
- **Any history of trauma?**
  Traumatic mechanisms of injury would raise suspicion of certain pathology and can be sub-divided into microtrauma or macrotrauma. Microtrauma occurs following repetition strain on the joint from habits such as clenching or gum chewing. Patients will often have significant tooth wear and well-developed masseter and temporalis muscles. Macrotrauma occurs from a single event that can be identified such as a blow to the face or even as simple as yawning [4].
- **Sore tooth?**
  A common differential diagnosis of TMJ dysfunction is a dental issue. More specifically, TMJ pain can radiate down to causing pain around the teeth and the nature of pain for both TMJ dysfunction and dental issues can be similar. Additionally, if a patient has a sore tooth, this may alter their bite which can then trigger TMJ dysfunction [6]. If dental issues are not able to be ruled out, this should prompt further assessment such as looking inside the patients' mouth, looking for signs of infection, cracks, cavities etc.
- **Stress and life-satisfaction?**
  Literature supports that TMJ dysfunction is strongly associated with perceived stress and negative affect as well as suggesting that TMJ symptoms can be exacerbated during times of stressful events [7]. There may be benefit to screening patients for psychological triggers for those presenting with TMJ dysfunction [8].

2. Assessment

Palpation and inspection

A thorough examination should include palpation of the TMJ at rest and on active mouth opening whilst listening for any joint sounds (clicking, popping, crepitus). Additionally, palpate muscles of mastication for pain and hypertrophy. Inspection should include wear pattern on teeth and tongue scalloping.

Mouth opening

Range of movement should be assessed in the form of mouth opening and measured either in millimeters or by the number of finger widths that the patient can fit between their front teeth (Figure 2). Normal maximum mouth opening in adults is greater than 30 millimeters or 3 finger widths for the patient. A patient measuring less than 2 finger widths would suggest a TMJ dysfunction and a measurement of less than 1 finger or 10 millimeters would require an urgent referral to OMF, particularly in an acute presentation.

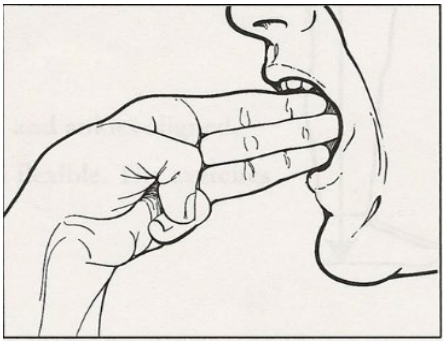


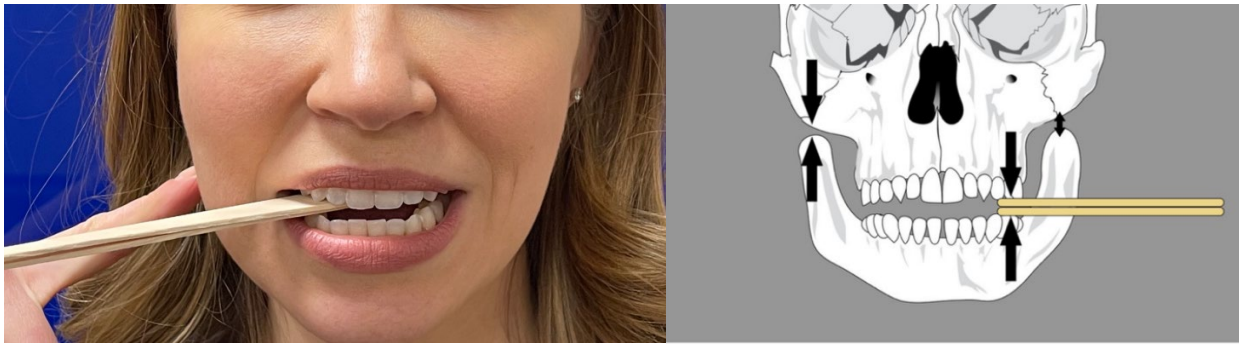
Figure 2. 3 Finger Test [9]

Mahan's test

Mahan's test can be used to help differentiate articular vs muscular pain. Although Mahan's test is not completely diagnostic it can be beneficial in helping direct *initial* treatment and further investigations.

When biting on a tongue depressor on the canines, you load the contralateral (opposite) joint, using the ipsilateral (same side) muscle.

- If pain is myogenic the patient will usually point to the ipsilateral masseter.
- If arthrogenic the patient will point to the contralateral TMJ.



3. Red Flags

Screen all patients presenting with TMJ symptoms for the following red flags:

Signs of dental disease and/or infection

- Swollen or tender gums, painful chewing, loose or sensitive teeth, or foul odor. If these are present send the patient to their family dentist.
- If patients do not have a family dentist encourage them to use the College of Dental Surgeons of Alberta, Dental Directory for assistance.

Severe limited mouth opening (trismus)

- Restriction of range of motion of the jaw requires further investigation and warrants a telephone advice call to OMF for appropriate referral and recommendations. The literature in this area lacks absolute guidance on what constitutes severe limitation, but clinically, this may be 1 finger width, ≤10mm or in cases where you have concern on the patient's ability to ingest food.

Suspected fracture and/or Suspected dislocation (open lock jaw)

If assessment findings lead to suspecting fracture of dislocation, the patient needs to be directed to hospital through RAAPID or the ER. Call RAAPID for on-call OMF or 911. The following symptoms are most often present in such situations:

- History of trauma
- New onset of malocclusion
- Pain and or swelling
- Jaw stiffness
- Bleeding
- Breathing difficulties
- Discomfort when chewing
- Numbness and bruising in the face
- Dental-related discomfort, such as numbness in the gums or loosened teeth

Suspected Giant Cell Arteritis

The diagnosis of giant cell arteritis is more likely in women and may be considered in a patient over the age of 50 years who have any of the following signs or symptoms [10]:

- Jaw claudication
- Abrupt onset of visual changes or disturbances
- New headache or change in characteristics of preexisting headache
- Vascular abnormalities such as asymmetric blood pressures, vascular bruits, abnormal radial pulse, temporal artery abnormalities such as tenderness to palpation, decreased pulse amplitude, and presence of nodules
- Unexplained fever
- History or symptoms of polymyalgia rheumatica (PMR)

Mass and/or deformity

- During assessment if a mass or deformity is present, order a CT and refer to OMF. Indicate your clinical and radiographic findings when referring.

4. Investigations

C-Reactive Protein (CRP) [11]

- CRP is considered a sensitive marker of inflammation in GCA.

CT [12]

- When a mass or deformity is suspected, a computer tomography (CT) scan should be ordered by the primary care physician at the same time a referral is made. Additionally, a cone beam CT (CBCT) is another option that could be considered in collaboration with the patient. A CBCT would be ordered and completed by the specialist which can offer a timely and accurate option for diagnosis. Dependent on the patient's diagnostic status, there may be associated costs to the CBCT diagnostic test.

MRI [13]

- MRI stands as the benchmark for TMJ imaging, providing valuable insights into the osseous and non-osseous structures. Prior to any surgical intervention, an MRI is considered mandatory and needs to be ordered at the same time the referral is made to OMF. [14]

5. Management

Patient education is the recommended initial approach for management of TMJ dysfunction.

The TMJ patient pathway outlines the recommended conservative management options and should be offered to all patients in the primary care setting. Offering education regarding the relationship between muscle hyperactivity and stress management improves patients' behavior towards the condition, psychological health, and temporomandibular disorder.

Jaw rest

- Encourage a soft/altered diet consistency [15]. If a patient needs support in adjusting their diet a referral to a dietician can be considered.
- Advise patients to alter maladaptive habits to ensure appropriate jaw rest. These include avoiding chewing gum, daytime clenching, grinding teeth, and nail biting.
- Use of warm compresses have been shown to be effective. Studies suggest the application of heat for at least 20 minutes once a day is recommended.
- Additionally, teaching and encouraging patients to do self-massage is beneficial in the management of TMJ dysfunction pain and tension [17].

Stress reduction

- Elevated stress levels can increase muscle activity. Enhancing sleep hygiene, reducing emotional stress, and addressing parafunction habits can notably alleviate symptoms.
- If psychosocial concerns are present, instruments can be used to aid in diagnosis, such as those in Axis-II of DC/TMD. When indicated, the patient can be referred for further psychological therapies which may include use of cognitive behavioral therapy amongst other modalities. [16].

Dental appliance / Night guard

- Dental appliances should be routinely explored, as they represent a non-invasive option with minimal risks. The use of occlusal splint therapy has been shown to decrease muscle activity, reduce tension and pain intensity and increase maximal mouth opening [18].
- It is important to caution patients on over-the-counter splints that are often used for sport activities. These appliances are not recommended, and patients need to see their dentist for a proper assessment and fitting for dental appliance.

Medications

Pharmacological intervention is affective for reducing pain, swelling and improving function [19].

- Offer nonsteroidal anti-inflammatory drugs (NSAIDs) for a minimum of 2 weeks [20]
- Offer muscle relaxants (in combination with NSAIDs) in patients with masticatory muscle spasm or tenderness to palpation. It may be beneficial to recommend that the patient takes these agents at bedtime because of associated drowsiness.
- Due to adverse properties including, tolerance and dependence, narcotics and benzodiazepines are contraindicated in their long-term use in the management of TMD or other conditions [21].

Additional options

In addition to the above conservative management options, the following have been shown to be effective and can be considered:

Physiotherapy

- Physiotherapy has been shown to be an important part in the management of TMJ dysfunction, which may be particularly useful for myalgia, myofascial pain and headaches [22].
- The commonly used manual techniques are soft tissue mobilization, joint mobilization, muscle conditioning, resistance exercises, passive muscle stretching, assisted muscle stretching, and postural training. Other physical therapy modalities include dry needling, thermotherapy, ultrasound, electro galvanic stimulation, and cold laser.
- Currently in Alberta, patients can self-refer to physiotherapy for TMJ management, but treatment is not covered under Alberta Health. Ensure patients are aware that physiotherapy treatments may incur costs.

Massage

- There can be a reduction in frequency and intensity of TMJ symptoms with the application of massage therapy [23].

Neuromodulator (Botulinum toxin)

- Botulinum toxin (BoNT) has been shown to provide long-term relief of TMJ dysfunction symptoms by diminishing the frequency, intensity, and duration of recurring episodes. Evidence shows, BoNT injections have minimal side effects, making it an appealing option for adjunctive therapy for patients who have failed initial conservative therapy and systemic pharmacotherapy [24].
- Many different disciplines in Alberta can offer Botulinum toxin injections including but not limited to dentists, neurologists, pain specialists, headache specialists, anesthesiologists, family physicians, and certified

nurses. Some of the services may be covered by Alberta Health while others are offered privately and are associated with a fee. It is important for patients to ensure that the provider offering the botulinum toxin injection is a competent injector and they are aware if a cost is associated with the service.

6. Advice Options

For suspected fracture or dislocation, the patient needs to be directed to hospital through RAAPID or the ER. Call RAAPID for on-call OMF or 911.

Zone	Program	Online Request	Phone Number	Hours of operation	Anticipated Turnaround Time
Urgent Telephone					
All Zones	RAAPID	N/A	**North:** 1-800-282-9911 780-735-0811 **South:** 1-800-661-1700 403-944-4486	**7 days per week** 24 hours	1 hour

7. Referral Process

Referral pathways are guidelines to help referring providers know what information, labs and diagnostic imaging are required with their referral to a specialty. These pathways are co-designed with Primary and Specialty Care, AHS Operations, and patients to ensure the right amount of information is included throughout the referral process to triage the patient as quickly as possible. To ensure referring providers have referral information at their fingertips, referral pathways may link to clinical pathways when available. AHS manages referral pathways and extensive work is ongoing as part of the Alberta Surgical Initiative. If you have questions or want to know more about the referral pathway development process, please email access.ereferral@ahs.ca.

- Urgent Referral – Call surgeon on call via RAAPID or call 911.
- For all referrals to OMF please ensure to follow the Provincial OMF, Adult Referral Pathway and use the Facilitated Access to Specialized Treatment (FAST) Provincial Referral Form (if available).
    - If not yet available - Send referral to OMF; see Alberta Referral Directory for all referral information.

BACKGROUND

About this pathway

- This pathway was developed in collaboration with oral maxillofacial surgeons, primary care physicians, patient and family advisors, and the Alberta Health Services (AHS) Provincial Pathways Unit.
- Condition-specific clinical pathways are intended to offer evidence-based guidance to support primary care providers in caring for patients with a range of clinical conditions.

Authors and conflict of interest declaration

- The authors represent a multi-disciplinary Co-Design Project Team. Additional review and expertise provided by the Provincial Working-Group. Membership available on request by emailing AlbertaPathways@ahs.ca.

Co-Design Team Project Membership	
Name and Designation/ Post Nominals	**Organization**
Dr. Eugene Lam, DMD, MD, MSc., F.R.C.D.(C)	Oral Maxillofacial Surgeon, Edmonton Zone
Dr. Matt Fay, DDS, MD, MSc., F.R.C.D.(C)	Oral Maxillofacial Surgeon, Edmonton Zone
Dr. Tuan Bui, MD, DMD, F.R.C.D.(C)	Oral Maxillofacial Surgeon, Calgary Zone
Dr. Rose Unuafe, MD, LMCC, CCFP.	Primary Care Physician, Central Zone
Dr. John Pasternak, MD.	Primary Care Physician, South Zone
Dick Olver	Patient and Family Advisor, Calgary Zone
Alta Magee	Patient and Family Advisor, South Zone

Pathway review process, timelines

- Primary care pathways undergo scheduled review every two years, or earlier if there is a clinically significant change in knowledge or practice. The next scheduled review is June 2025. However, we welcome feedback at any time. Please email comments to AlbertaPathways@ahs.ca.

Copyright information

PROVIDER RESOURCES

Resources	Link
TMJ Internal derangements (Oral Health Group)	www.oralhealthgroup.com/features/tmj-internal-derangements

PATIENT RESOURCES

Resources	Link
Patient Pathway on MyHealth Alberta > A webpage and two PDF formats are available to allow for easy printing, download, or scanning a QR code with the patient's smart phone for more information at their convenience	https://myhealth.alberta.ca/HealthTopics/tmj-dysfunction-pathway/Documents/tmj-dysfunction-pathway-summary.pdf
MyHealth Alberta > Health Information & Topics> **TMJ Dysfunction**. Information on causes, symptoms, treatments and resources for women with abnormal uterine bleeding.	https://myhealth.alberta.ca/tmj-dysfunction-pathway

REFERENCES

[1] R. Gauer and M. Semidey, "Diagnosis and treatment of temporomandibular disorders," *American family physician,* vol. 91, no. 6, pp. 378-386, 2015.

[2] L. Valesan, C. Da-Cas, J. Réus, A. Denardin, R. Garanhani, D. Bonotto, E. Januzzi and B. de Souza, "Prevalence of temporomandibular joint disorders: a systematic review and meta-analysis.," *Clinical oral investigations,* vol. 25, no. 2, pp. 441-453, 2021.

[3] L. T. and J. R., "Temporomandibular disorders: Old ideas and new concepts," *Cephalalgia,* vol. 37, no. 7, pp. 692-704, 2017.

[4] T. Shackleton, "TMJ Internal Derangements," Oral Health, 14 September 2020. [Online]. Available: https://www.oralhealthgroup.com/features/tmj-internal-derangements/. [Accessed 27 November 2023].

[5] K. Maini and A. Dua, "Temporomandibular Syndrome," StatPearls, Florida, 2023.

[6] A. Garstka, L. Kozowska, K. Kijak, M. Brzózka, H. Gronwald, P. Skomro and D. Lietz-Kijak, "Accurate Diagnosis and Treatment of Painful Temporomandibular Disorders: A Literature Review Supplemented by Own Clinical Experience.," *Pain research & management,* p. 102235, 2023.

[7] D. Li and Y. Leung, "Temporomandibular Disorders: Current Concepts and Controversies in Diagnosis and Management.," *Diagnostics,* vol. 11, no. 3, p. 459, 2021.

[8] I. Tanti, L. Himawan, L. Kusdhany, A. Bachtiar and R. Ismail, "Validation of stress screening questionnaire in temporomandibular disorders patient," *Journal of International Dental and Medical Research,* vol. 9, pp. 272-276, 2016.

[9] A. Gomes, "Trismus: Are you at Risk?," University Health Network, 2022. [Online]. Available: https://www.uhn.ca/PatientsFamilies/Health_Information/Health_Topics/Documents/Trismus_Are_You_at_Risk.pdf. [Accessed 27 November 2023].

[10] I. Baig, A. Pascoe, A. Kini and A. Lee, "Giant cell arteritis: early diagnosis is key," *Eye and Brain,* vol. 11, pp. 1-12, 2019.

[11] A. M., P. R. and K. B., "Giant Cell Arteritis (Temporal Arteritis)," StatPeals, 8 August 2023. [Online]. Available: https://www.ncbi.nlm.nih.gov/books/NBK459376/. [Accessed 12 December 2023].

[12] R. 2. Weiss and A. Read-Fuller, "Cone Beam Computed Tomography in Oral and Maxillofacial Surgery: An Evidence-Based Review.," *Dentistry Journal,* vol. 7, no. 2, p. 52, 2019.

[13] L. D. and L. Y., "Temporomandibular Disorders: Current Concepts and Controversies in Diagnosis and Management.," *Diagnostics,* vol. 6, no. 11, p. 459, 2021.

[14] D. Li and Y. Leung, "Temporomandibular Disorders: Current Concepts and Controversies in Diagnosis and Management," *Diagnostics,* vol. 11, no. 3, p. 459, 2021.

[15] Alberta Health Services, Nutrtion Services, "Planning a Healthy Menu: Enhancing Health Through Nutrition.," January 2022. [Online]. Available: https://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-pahm-s5-texture-modified-diets.pdf. [Accessed 4 December 2023].

[16] G. B. Rollman and J. Gillespie, "The role of psychosocial factors in temporomandibular disorders," *Current review of pain,* vol. 4, no. 1, pp. 71-81, 2000.

[17] M. Gębska, B. Dalewski and Ł. Pałka, "Evaluation of the efficacy of manual soft tissue therapy and therapeutic exercises in patients with pain and limited mobility TMJ: a randomized control trial (RCT)," *Head & Face Medicine,* vol. 19, no. 42, 2023.

[18] H. Albagieh, I. Alomran, A. Binakresh, N. Alhatarisha, M. Almeteb, Y. Khalaf, A. Alqublan and M. Alqahatany, "Occlusal splints-types and effectiveness in temporomandibular disorder management," *The Saudi dental journal,* vol. 35, no. 1, pp. 70-79, 2023.

[19] "Ouanounou, A.; Goldberg, M.; Haas, D.," *J Can Dent Assoc,* vol. 83, no. h7, 2017.

[20] E. Wright, Manual of temporomandibular disorders, Ames, Iowa: Wiley-Blackwell, 2010.

[21] R. van Seventer, F. Bach, C. Toth, M. Serpell, J. Temple, T. Murphy and M. Nimour, "Pregabalin in the treatment of post-traumatic peripheral neuropathic pain: a randomized double-blind trial," *European journal of neurology,* vol. 17, no. 8, pp. 1082-1089, 2010.

[22] H. van der Meer, L. Calixtre, R. Engelbert, C. Visscher, M. Nijhuis-van der Sanden and C. Speksnijder, "Effects of physical therapy for temporomandibular disorders on headache pain intensity: A systematic review," *Musculoskeletal science & practice,* vol. 50, p. 102277, 2020.

[23] L. Eisensmith, "Massage therapy decreases frequency and intensity of symptoms related to temporomandibular joint syndrome in one case study.," *Journal of bodywork and movement therapies,* vol. 11, no. 3, pp. 223-230, 2007.

[24] N. Mor, C. Tang and A. Blitzer, "Temporomandibular Myofacial Pain Treated with Botulinum Toxin Injection.," *Toxins,* vol. 7, no. 8, pp. 2791-2800, 2015.

[25] J. Smith, "Clinical pathways template," *ABC,* pp. 1-12, 2023.

[26] S. Reiter, E. Winocur, C. Goldsmith, A. Emodi-Perlman and G. Meir, "Giant cell arteritis misdiagnosed as temporomandibular disorder: A case report and review of the literature," *Journal of Oral and Facial Pain and Headache,* vol. 23, no. 4, pp. 360-365, 2009.

[27] Healthwise Staff, "Temporomandibular Disorders (TMD)," MyHealth.Alberta, 2021. [Online]. Available: https://myhealth.alberta.ca/health/pages/conditions.aspx?Hwid=hw209469. [Accessed 12 December 2023].

[28] U.S. Food & Drug Administration, "Dental Cone-beam Computed Tomography," U.S. Food & Drug Administration, 9 September 2020. [Online]. Available: https://www.fda.gov/radiation-emitting-products/medical-x-ray-imaging/dental-cone-beam-computed-tomography. [Accessed 12 December 2023].