

**CONSIDERATION OF A REQUEST TO ESTABLISH A PROCESS OF
ACCREDITATION FOR ORAL AND MAXILLOFACIAL SURGERY CLINICAL
FELLOWSHIP TRAINING PROGRAMS IN TRIGEMINAL NERVE SURGERY AND
DISORDERS**

Background: On July 23, 2024 the Commission on Dental Accreditation (CODA) received correspondence from Dr. John Zuniga requesting that the Commission establish a process of accreditation for clinical fellowship training programs in oral and maxillofacial surgery - trigeminal nerve surgery and disorders (**Appendix 1**).

The Commission's Policies and Procedures for Accreditation of Programs in a New Dental Education Area or Discipline (**Appendix 2**) provides a framework for the Commission to determine whether a process of accreditation review should be initiated for the clinical fellowship training program in oral and maxillofacial surgery - trigeminal nerve surgery and disorders.

Summary: The Commission is requested to consider the July 23, 2024 correspondence from Dr. John Zuniga. The Commission may direct that an Ad Hoc Committee composed of Commission members be appointed to further study the request in accordance with the Commission's Policies and Procedures for Accreditation of Programs in A New Dental Education Area or Discipline, with a report on the ad hoc committee's progress at the Winter 2025 meeting of the Commission.

Recommendation:

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Appendix 1

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ACCREDITATION OF PROGRAMS IN A NEW DENTAL EDUCATION AREA OR DISCIPLINE

*PROPOSAL FOR ONE-YEAR POST-ORAL AND MAXILLOFACIAL SURGERY FELLOWSHIP IN
TRIGEMINAL NERVE SURGERY AND DISORDERS*

PREPARED by JOHN R. ZUNIGA D.M.D., M.S., Ph.D.

July 23, 2024

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1. DOES THE DENTAL EDUCATION AREA OR DISCIPLINE ALIGN WITH THE ACCREDITING AGENCY'S MISSION AND SCOPE?

a. Define the nationally accepted scope of the dental education area or discipline

The scope of this educational area, Trigeminal Nerve Surgery and Disorders, is within the discipline of dentistry since the trigeminal nerve affects the integrity and function of oral tissues and structures associated with the oral cavity. The trigeminal nerve provides general sensory, special sensory and general motor/movement of the mouth, oral structures and face. Disorders, including those leading to the loss of trigeminal nerve function, can cause painful and non-painful conditions that severely impact normal homeostasis of tissues and structures associated with the oral cavity and negatively impacts oral health and quality of life. Currently, there exists no formal, focused education in trigeminal nerve surgery and disorders leading to competence and expertise in the discipline.

CODA accredited Advanced Dental Education Programs in Oral and Maxillofacial Surgery recognize the surgical management of trigeminal nerve surgery and categorizes such surgical treatment by residents in-training as component skills in the area of reconstruction. Within the CODA Accreditation Standards for Advanced Dental Education Programs in Oral Maxillofacial Surgery, 4- 11 Major Surgery, 175 procedures must be completed by each authorized final year resident, 20 in each area, one of which is in reconstruction. 4-11.5 defines Reconstructive Surgery as procedures as vestibuloplasties, augmentation procedures, TMJ reconstruction, hard and soft tissue reconstruction of defects, craniofacial implants, facial clefts and other (cosmetic procedures) and peripheral nerve repair. Thus, the total number of trigeminal nerve surgery experiences will vary among final year residents, some of which may have had no experience upon completion, or limited.

Advanced Dental Education Programs in Oral and Maxillofacial Surgery include education in trigeminal nerve surgery and disorders within the SCOPE educational curriculum sponsored by AAOMS. Trigeminal nerve surgery and disorders are included in the AAOMS Parameters of Care and included in the OMSITE in-training examination and Part 1 ABOMS written examination.

Within CODA Accreditation Standards for Advanced Dental Education Programs in Orofacial Pain, 2-6 Biomedical Sciences requires educational exposure to “neurobiology of pain mechanisms and transmission in central and peripheral nervous systems and 2-10 Clinical Sciences requires clinical exposure to “pharmacological management of orofacial pain”, including but not limited to neuropathic pain.

Within CODA Accreditation Standards for Advanced Dental Education Programs in Endodontics, 4-5 Biomedical Sciences requires instruction provided in

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“neurosciences” and 4-8, Clinical Sciences, requires instruction and clinical training in “management of patients with orofacial pain and anxiety”.

No educational instruction or clinical training in trigeminal nerve surgery or disorders were found in CODA Accreditation Standards in Advanced Dental Education Programs in Periodontics, Prosthodontics, Pediatric Dentistry and Orthodontics.

b. List the nationally accepted educational goals and objectives of the dental education area or discipline

PARAMETERS OF CARE: AAOMS Clinical Practice Guidelines for Oral and Maxillofacial Surgery (AAOMS ParCare), Sixth Edition, 2017
Supplement Journal of Oral and Maxillofacial Surgery
Volume 75, number 8, Suppl 1, August 2017
Pages e286-288

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AAOMS ParCare 2017
 Reconstructive Surgery

DEFECTS OF THE FRONTAL BONE AND ASSOCIATED SOFT TISSUES
(continued)

- g. Trapezius free flap
 - i. Excessive scarring and/or cosmetic defects
 - ii. Upper extremity range of motion disturbance

NEUROLOGIC DEFECTS

I. Indications for Therapy for Neurologic Defects

May include one or more of the following:

Injuries to the terminal branches of the trigeminal nerve (eg, lingual, inferior alveolar; long buccal nerves) are known risks of oral and maxillofacial surgery, especially following dentoalveolar surgery. In addition, the use of local anesthesia (eg, mandibular block) may increase the risk of nerve injury. Most nerve injuries resolve spontaneously, but some do not resolve and require consideration for non-surgical and/or surgical intervention.

Microneurosurgical repair should be considered when the disability is of concern to the patient, and there is clinical evidence of moderate, severe, or complete neurosensory impairment; paresis or paralysis of facial muscles; loss, decreased, or abnormal taste sensation; or neuropathic pain of peripheral origin. Surgical repair should incorporate specialized microsurgical techniques (eg, operating magnification, nerve grafting), when indicated.

A. Unobserved (closed) nerve injuries

1. Most injuries to the lingual and inferior alveolar nerves are not recognized by the clinician at the time of injury, but manifest in the postoperative period with compromised spontaneous return of sensation
2. Following recognition of the nerve injury documented by history and clinical examination, patients should be referred for neurologic assessment if there is a persistent lack of spontaneous improvement, and if the clinician does not have the skills to perform comprehensive neurosensory assessment and/or does not have the expertise to perform surgical repair, if indicated
3. Nerve injuries may result in reduced sensation (eg, hypoesthesia or anesthesia), and/or painful sensation (eg, hyperesthesia, allodynia, dysesthesia)
4. Based upon clinical neurosensory testing, nerve injuries that demonstrate moderate, severe, or complete sensory impairment, that are non-resolving, may benefit from microneurosurgery
5. Symptomatic unpleasant sensations (eg, neuropathic pain, dysesthesia, dysgeusia, ageusia or hypogeusia, with or without a painful trigger zone) may benefit from nonsurgical management (eg, pharmacologic treatment, neurology consultation)
6. Presence of sustained intolerable neuropathic pain (eg, allodynia, hyperalgesia, hyperpathia) unrelieved by medical and physical therapies, may benefit from microneurosurgical intervention, especially if the symptoms are alleviated by a diagnostic local anesthetic nerve block
7. Non-resolving, or worsening functionally debilitating neurosensory deficits may benefit from microsurgical intervention
8. Non-resolving facial nerve muscular paresis and deficient nerve conduction deficits (based upon EMG studies) may benefit from physical therapy, facial reanimation procedures, or microneurosurgical intervention

B. Observed (open) nerve injuries

1. On occasion, a nerve injury may be seen at the time of injury. Management is based upon several factors:
 - a. A transected nerve lying within soft tissue (eg, lingual nerve, facial nerve), may be amenable to immediate or delayed primary (21 days) repair, or secondary repair (following initial soft tissue healing and assessment of spontaneous recovery) depending upon the exact nature of the injury (eg, clean vs avulsive), the patient's physical status, the status of wound (eg, contaminated, infected), and the availability of microsurgical equipment and clinical skill
 - b. A transected, well-aligned nerve lying within a bony canal (eg, inferior alveolar nerve within the inferior alveolar canal) may or may not require primary, delayed primary, or secondary repair, depending upon local factors and clinical judgment, since the bony canal may act as a physiologic conduit to guide spontaneous nerve regeneration

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NEUROLOGIC DEFECTS (continued)

2. Avulsive nerve injuries, whether lying within soft tissue or bony canals, more often require primary, delayed primary, or secondary surgical repair than clean transection nerve injuries
3. Consideration should be given towards neural reconstruction following ablative jaw procedures that result in nerve continuity defects, using interpositional autogenous or allogeneic nerve grafting

II. Specific Therapeutic Goals for Neurologic Defects

The goal of therapy is to restore form and/or function. However, risk factors and potential complications may preclude complete restoration of form and/or function.

- A. Presence of a general therapeutic goal, as listed in the section entitled General Criteria, Parameters, and Considerations for Reconstructive Surgery
- B. Restoration of acceptable functional sensory, special sensory (eg, taste), and/or motor function
- C. Alleviation or reduction in pain or discomfort

III. Specific Factors Affecting Risk for Neurologic Defects

Severity factors that increase risk and the potential for known complications:

- A. Presence of a general factor affecting risk, as listed in the section entitled General Criteria, Parameters, and Considerations for Reconstructive Surgery
- B. Functional deficiencies in mastication and/or swallowing
- C. Presence of neuromuscular disorders
- D. Patient age
- E. Patient gender
- F. Type of injury
- G. Presence of neuropathic pain
- H. Time since injury
- I. Location of injury
- J. Associated soft tissue injuries
- K. Other comorbidities (eg, immunocompromised status, use of tobacco)

IV. Indicated Therapeutic Parameters for Neurologic Defects

The presurgical assessment includes, at a minimum, a history, a clinical evaluation, clinical neurosensory or motor nerve conduction tests when indicated, and an imaging evaluation if indicated by clinical presentation. Also see the Patient Assessment chapter.

- A. Nonsurgical treatment
 1. Nonsurgical treatment may be the primary indicated therapy in selected nerve injury patients. Such patients may include those with the following:
 - a. Metabolic neuropathies
 - b. Centrally-induced pain
 - c. Atypical pain not conforming to normal peripheral nerve distribution
 - d. Chronic injuries when irreversible atrophy has occurred in the distal nerve (Wallerian degeneration)
 - e. Pain not effectively relieved by peripheral diagnostic local nerve blocks
 - f. Sympathetic-mediated pain or reflex-sympathetic dystrophy (Complex Regional Pain Syndrome)
 - g. Poor ASA physical status in which surgical risks outweigh potential benefits
 2. Nonsurgical treatment includes several categories, any or all of which might be indicated for a given patient, whether or not surgical treatment is also indicated:
 - a. Psychological—evaluation, counseling, support groups, meditation, yoga, stress management, psychotherapy
 - b. Physiologic—biofeedback exercises, physical therapy, occupational therapy, transcutaneous electrical stimulation (TENS), acupuncture, low-level laser therapy
 - c. Pharmacologic—therapeutic local anesthetic nerve blocks, systemic local anesthetics, antineuralgic-antiepileptic medications, antidepressants, nonsteroidal anti-inflammatory drugs, topically applied counterirritants, other medications, as indicated, and as directed by a neurologist
- B. Surgical treatment

The following procedures, which are among those that may be required for the surgical management of neurologic defects, are not listed in order of preference:

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NEUROLOGIC DEFECTS (continued)

1. Nerve decompression (external neurolysis)
2. Internal neurolysis
3. Excision of neuroma
4. Direct nerve repair (direct neurorrhaphy)
5. Indirect nerve repair (indirect neurorrhaphy)
 - a. Autogenous (eg, sural) nerve grafts
 - b. Allogeneic (cadaveric) nerve grafts
 - c. Conduit repair (entubulation)
6. Nerve protection (nerve wrap)
7. Epineurial capping
8. Nerve sharing
9. Nerve transfer
10. Nerve transpositioning/lateralization
11. Nerve ablation techniques (eg, gamma knife therapy, radiofrequency, cryosurgery)

V. Outcome Assessment Indices for Neurologic Defects

Indices are used by the specialty to assess aggregate outcomes of care. Outcomes are assessed through clinical evaluation and may include an imaging evaluation.

A. Favorable therapeutic outcomes

1. General favorable therapeutic outcomes, as listed in the section entitled General Criteria, Parameters, and Considerations for Reconstructive Surgery
2. Restoration of acceptable functional sensory, special sensory (eg, taste), and/or motor function
3. Alleviation or reduction in pain or discomfort

B. Known risks and complications associated with therapy

1. Presence of a general known risk and/or complication, as listed in the section entitled General Criteria, Parameters, and Considerations for Reconstructive Surgery
2. Persistent sensory or special sensory (eg, taste) impairment or loss
3. Persistent paresis or paralysis of facial muscles
4. Persistent moderate, severe, or complete sensory impairment
5. Persistent neuropathic pain
6. Donor site neurosensory deficit, neuroma formation, skin scar (eg, autogenous nerve graft harvest)

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NEUROLOGIC DEFECTS

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c. Describe how the area of discipline aligns with the CODA mission and scope.

An Advanced one-year post-OMFS graduate Fellowship in Trigeminal Nerve Surgery and Disorders will educate and train postgraduate Oral and Maxillofacial Surgery Fellows to the level of competence in the diagnosis, prognosis and management of Trigeminal Nerve Disorders with the goal to improve the lives of patients with trigeminal nerve disorders, including injury. The scope of the Fellowship will be to provide up-to-date evidence-based modalities used to diagnose, provide realistic prognosis and treatments ranging from non-surgical to surgical care of patients with trigeminal nerve disorders.

This will be accomplished by implementing standards to promote and monitor Fellows biomedical and clinical experiences over a one-year period. Only recognized programs that are accredited by an agency recognized by the US Department of Education or its equivalent, including JCAHO, CODA, etc will be allowed to conduct such a Trigeminal Nerve Surgery and Disorders Fellowship. Fellowship Program Directors will ensure that one on one didactic topic-specific curriculum cover the broad scope of trigeminal nerve disorders. Heavy and continuous patient contact at all phases of care from consultation to follow up of

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patients. This includes operative experiences at hospitals affiliated with Fellowship sponsored institutions.

The overall goal is to improve the quality of care for patients with oral/trigeminal nerve disorders which parallels the mission of the Commission on Dental Accreditation.

d. Describe the quality of the dental education area or discipline and need for accreditation review of the program, as an important aspect to the health care of the general public.

Ten million third molar removal surgeries occur each year and an incidence of permanent paresthesia of the lip, chin, tongue ranges from 11,500 to 35,000 a year, 0.33% (Oral Surgery, Oral Medicine, Oral Pathol 92:377-83, 2001 doi:10.1067/moe.2001.118284 and Am J Public Health 97:1554-59, 2006 doi:10.2105/AJPH.2006.100271). The National Institute of Health Statistics survey indicates that facial pain represents 4% of chronic pain conditions in the USA, of which 0.03% are Atypical Facial Pain/odontalgia, 0.02% are post-traumatic trigeminal neuropathic pain and 0.005% are trigeminal neuralgia.

Van der Cruyssen F et al, *Consensus Guidelines on the Training, Diagnosis, Treatment and Follow-up Care of Trigeminal Nerve Injuries. Int. J. Oral Maxillofac Surg. 2023, xx:1-13. <https://doi.org/10.1016/j.ijom.2023.06.003>*. The study reported strong agreement (78%) that all oral maxillofacial surgeons should be able to diagnose patients with trigeminal nerve injuries, as well as know when, how and where patients should be referred. However, not all oral and maxillofacial surgeons should be competent in surgical treatment and repair, which belongs to a fellowship after maxillofacial surgery training.

e. Provide evidence that the programs and academic programs sponsored by an institution accredited by an agency legally authorized to operate and recognized by the United States Department of Education or, as applicable, by an accreditation organization recognized by the Centers for Medicare and Medicaid Services (CMS), rather than a series of continuing educational experiences.

The proposed Advanced Fellowship in Trigeminal Nerve Surgery and Disorders will be conducted in programs that are accredited by the US Department of Education or its equivalent, such as JCAHO, CODA. Fellowships based in hospitals or teaching institutions will be aligned with other existing dental graduate and post-graduate programs and administered by Program Directors with full scope privileges in trigeminal nerve care. Trigeminal Nerve Surgery and Disorders Fellowship programs will be at least one-year in duration and use formal and ongoing outcomes assessment processes to ensure competence has been obtained.

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For example, a proposed Advanced Fellowship in Trigeminal Nerve Surgery and Disorders at Parkland Hospitals will be under the direction of Dr. John R. Zuniga DMD, MS, PhD, Robert V. Walker Chair in Oral and Maxillofacial Surgery, Professor in the Departments of Surgery and Neurology, University of Texas Southwestern. Clinical instruction and education will be provided at the University of Texas Southwestern and hospitals (Zale Lipshy, Clements and Presbyterian Dallas), Parkland Hospital, and Children's Medical Center at Dallas.

The University of Texas Southwestern is the flag-ship hospital of the University of Texas Systems and is a CMS accredited Institution in Dallas, Texas. It includes a 4-year Medical School, Allied Health Care schools, is a major health care research center with multiple degree-granting departments including clinical research. There are 22 clinical departments, each support post-graduate residency programs under ACGME accreditation. Parkland Hospital is the Dallas County Hospital flag-ship hospital and the sponsor of the CODA accredited Advanced Dental Education Program in Oral and Maxillofacial Surgery. The OMS Program recently received accreditation without recommendations in May, 2024 and will next be site-visited in 2029. The Children's Medical Center at Dallas is the major hospital providing health care for pediatric patients and is CMS accredited. Dr. Zuniga has active credentials to practice oral and maxillofacial surgery, including trigeminal nerve surgery at all the above hospitals.

f. Describe the sponsoring, professional organization/association(s), if any, and (if applicable) the credentialing body, including the following

The proposed Advanced Fellowship in Trigeminal Nerve Surgery and Disorders will be conducted in programs that are accredited by the US Department of Education or its equivalent, such as JCAHO, CODA. Fellowships based in hospitals or teaching institutions will be aligned with other existing dental graduate and post-graduate programs and administered by Program Directors with full scope privileges in trigeminal nerve care. Trigeminal Nerve Surgery and Disorders Fellowship programs will be at least one-year in duration and use formal and ongoing outcomes assessment processes to ensure competence has been obtained.

There are currently several programs in major teaching hospital and dental schools which are considering development of Advanced Fellowships in Trigeminal Nerve Surgery and Disorders (see **3c** in this document).

For example, at Parkland Hospitals:

1. Number of members
 - a. Parkland
2. Names and contact information of association officers

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a. Parkland

i. Dr. Fred Cerise, Chief Executive Officer

[REDACTED]

[REDACTED]

ii. Elizabeth Ponce, Director, Graduate Medical Education

[REDACTED]

3. Sponsored CE Programs for members within last 5 years
 - a. none
4. Credentialing Body, exam criteria, number of candidates and pass rate for past 5 years
 - a. CODA
 - b. Advanced Standards for Advanced Dental Education Programs in Oral and Maxillofacial Surgery
 - c. 5 per year for total of 25 in past 5 years
 - d. 100% part 1 ABOMS part 1; 100% part 2 ABOMS who have participated

2. IS THERE SUFFICIENT BODY OF KNOWLEDGE TO EDUCATE INDIVIDUALS IN A DISTINCT DENTAL EDUCATION AREA OR DISCIPLINE, NOT MERELY ONE OR MORE TECHNIQUES?

a. Describe why this area of knowledge is a distinct dental education area or discipline, rather than a series of just one or more techniques

The trigeminal nerve is a complex cranial nerve that innervates the oral cavity and associated facial structures and provides many functions, including sensory and motor but also special sense (taste with the chorda tympani, parasympathetic innervation of salivary glands). Disorders of the trigeminal nerve can occur due to chemical, mechanical, metabolic, infectious, autoimmune and neoplastic conditions. However, the most common cause of disorder is injury due to third molar surgery, dental implant placement, endodontic therapy, periodontal surgery, routine dental injections (1:40,000 mandibular injections with 1:800,000 permanent injury), trauma and reconstructive surgery. Disorders result in loss of function (sensory, gustatory, salivary, etc) and in some cases, painful conditions of post-traumatic trigeminal neuropathic pain (PTTNp). Trigeminal pain disorders also can be idiopathic, such as trigeminal neuralgia or confused with orofacial conditions such as atypical facial pain/odontalgia and burning mouth/tongue syndrome. The outcomes affect normal oral function (taste, movement, chewing, speech, lip and

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tongue competence, etc.) and when painful causes significant reduction in quality of life. Prognosis for recovery is dependent upon correct classification of injury, time from injury, age, location and differentiation from non-trigeminal pathology, if present. Treatment can range from non-surgical (medical, behavioral, neurosurgical, neuromodulatory) to surgical. Accurate prognosis and effective treatment depend upon the correct diagnosis and outcome of treatment which is time-sensitive to the injury/condition.

In conclusion, these facts show that education to the level of competence in trigeminal nerve surgery and disorders is complex and currently outside the scope of non-fellowship training, including dental school and post-dental school education. As pointed out previously, experts agree that all oral and maxillofacial surgeons should be able to diagnose and refer but not all should be trained to the level of competence in trigeminal nerve surgery due to the special skill-set required for microneurosurgery. Additionally, those trained to the level of competence should also be able to differentially diagnose other conditions that affect the trigeminal nervous system, non-trigeminal disorder and pain conditions so the correct treatment can be provided to meet the goals of the fellowship training.

b. Describe how scientific dental knowledge in the education area or discipline is substantive to educating individuals in the education area or discipline.

Van der Cruyssen F et al, *Consensus Guidelines on the Training, Diagnosis, Treatment and Follow-up Care of Trigeminal Nerve Injuries*. *Int. J. Oral Maxillofac Surg.* 2023, xx:1-13. <https://doi.org/10.1016/j.ijom.2023.06.003>. A two-round multidisciplinary Delphi study was designed to query 18 experts in forming a consensus guideline in four education and treatment topics related to trigeminal nerve injuries; 1. Service and training; 2. Diagnosis; 3. Treatment; 4. Follow up care. In summary, the greatest agreement among experts was in Service and Training - every OMFS should be able to make an accurate diagnosis and knowledgeable about treatment. Surgical treatment is not required competence for every OMFS, but specialist teams of OMFS at higher level locations should be available and fellowship training will be required for OMFS competency in surgery. Diagnostic and treatment delays should be kept to a minimum and in some cases intervention should occur within 48 hours, but not conclusive agreement. Consensus of less than half was reached for treatment ranging from non-surgical to surgical. Regular follow up was major consensus but agreement on outcome measures was not based on consensus. These findings support the need for competent training in trigeminal nerve surgery and disorders.

c. Document the complexity of the body of knowledge of the education area by identifying specific techniques and procedures.

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In the area of diagnosis and prognosis of trigeminal nerve injuries and disorders, several known and accepted clinical neurosensory testing modalities, 1992 (Zuniga JR, Essick G. A contemporary approach to the clinical evaluation of trigeminal nerve injuries. *OMFS Clin North Amer*, 4:353-367, 1992) have been validated for specificity and sensitivity, positive predictive and negative predictive values for clinical application (Zuniga JR, Meyer RA, Gregg JM, Miloro MD, Davis LA. The accuracy of clinical neurosensory testing for nerve injury diagnosis. *J Oral Maxillofac Surg*, 56:2-8, 1998). More recently, the application of Magnetic Resonance Neurography has been demonstrated to provide non-radiation exposure identification of trigeminal nerve injuries accurately, while showing location, size and classification even within days of the injury (Zuniga JR, Mistry C, Tikhonov I, Dessouky R, Chhabra A: Magnetic Resonance Neurography of Traumatic and Non-Traumatic Peripheral Trigeminal Neuropathies. *J Oral Maxillofac Surg* 76:725-736, 2018, doi: 10.1016/j.joms.2017.11.007; Xia S, Thornton T, Ravi V, Hammad Y, Zuniga JR, Chhabra A: Efficacy of Magnetic Resonance Neurography of Peripheral Trigeminal Nerves: Correlation of Sunderland Grade versus Neurosensory Testing. *Amer J Neuroradiol*, February 2024. <https://doi.org/10.3174/ajnr.A8120>). The access to MRN is limited in the USA and thus, exposure to musculoskeletal radiologist performing and interpreting the studies is needed to develop competence in the diagnosis of trigeminal nerve injury and disorder in order to provide the correct treatment. MRN should be available in the proposed fellowship training year as a component educational requirement.

In the area of treatment using non-surgical modalities, especially for pain conditions, several treatment algorithms have guided current therapy (Bates et al, A comprehensive management for neuropathic pain, *Pain Medicine* 20:S2-12, 2019, doi:10.1093/PM/pnz025; Fillerup et al, Pharmacotherapy for neuropathic pain in adults ; systematic review, meta-analysis and updated NeuPSIG recommendations. *Lancet Neruo* 14/162-73, 2015, doi:10.1016/S1474-4422 (14) 70251-0). Complex evidence -based algorithms require an understanding of neuropathology and neuropharmacology for management that is safe and effective over large numbers of patient care experiences that is best obtained in a dedicated environment as a fellowship.

Surgical management requires microsurgical experience leading to competence defined as access, preparation and microsuturing within and outside the oral cavity. This requires heavy and continuous experiences in the operating room with an experienced surgeon. Experience should also include the use of techniques that provide tensionless repairs (connector- assisted- repair), nerve allograft (AVANCE, AxoGen inc.) which have been available since 2008.

- d. List the nationally accepted competency statements and performance measures for the dental education area.**

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The CODA Accreditation Standards for Advanced Dental Education Programs in Oral Maxillofacial Surgery, 4- 11 Major Surgery, 175 procedures must be completed by each authorized final year resident, 20 in each area, one of which is in reconstruction. 4-11.5 defines Reconstructive Surgery as procedures as vestibuloplasties, augmentation procedures, TMJ reconstruction, hard and soft tissue reconstruction of defects, craniofacial implants, facial clefts and other (cosmetic procedures) and peripheral nerve repair.

The CODA Accreditation Standards for Advanced Dental Education Programs in Orofacial Pain, 2-6 Biomedical Sciences requires educational exposure to “neurobiology of pain mechanisms and transmission in central and peripheral nervous systems and 2-10 Clinical Sciences requires clinical exposure to “pharmacological management of orofacial pain”, including but not limited to neuropathic pain

The CODA Accreditation Standards for Advanced Dental Education Programs in Endodontics, 4-5 Biomedical Sciences requires instruction provided in “neurosciences” and 4-8, Clinical Sciences, requires instruction and clinical training in “management of patients with orofacial pain and anxiety”

- e. Identify the distinct components of biomedical, behavioral and clinical sciences in the dental education area or discipline**
- i. Biomedical:** the trigeminal nerve is the fifth cranial nerve and has three divisions, Ophthalmic (upper face and scalp), Maxillary (sensations in the middle face and mouth) and Mandibular (largest division with sensory and motor functions involving chewing and swallowing). All three divisions subserve sensory functions including pain, temperature, tactile and vibration stimulation of the dermatome innervated. The mandibular division provides motor to the masticatory muscles and proprioception for their function during mastication and deglutition. There are also special sensory functions that merge with trigeminal for gustation, salivation and sweating.
 - ii. Behavioral:** the normal function of the trigeminal nerve is noted above. Disorders affecting any of the peripheral trigeminal nerves can result in loss or abnormal function subserved by that nerve. Loss of sensory stimulus to pain, temperature, vibration and tactile results in self-inducing injury (lip/tongue biting), altered speech (loss of proprioception), altered chewing function, loss of pleasure (altered sensation to kissing), loss or diminished taste. When painful, there is reduced quality of life, chronic pain induced behaviors including somatization, depression, obsessive compulsive focus, and hysteria, dysgeusia.
 - iii. Clinical Sciences:** The trigeminal nerve can be injured during routine and traumatic management of the oral and maxillofacial, neck and craniofacial conditions. The incidence is least common in the ophthalmic (supraorbital, supratrochlear), followed by the maxillary (infraorbital, alveolar, descending

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palatine) and most common in the mandibular divisions, especially the lingual and inferior alveolar nerves. In descending order from highest to lowest incident etiologies are 1. Third molar surgery; 2. Dental implant placement in posterior mandible; 3. Local anesthesia injections; 4. endodontic treatment of premolar and molars; 5. orthognathic surgery; 6. mandibular fractures between mental and posterior ramus; 7. Periodontal surgery. In head and neck management of malignant and benign neoplasms, infections (osteomyelitis), radiation induced osteonecrosis and medication induced necrosis of the jaws that involve the body of the mandible requiring resection, the incidence is 100% of inferior alveolar nerves requiring intentional resection or lateralization.

- f. Provide documentation that there is a body of established, substantive, scientific dental knowledge that underlies the dental education area or discipline.**
- i. Incidence and epidemiology
 - a. Zuniga JR. Nerve Injuries: Considerations in Orthognathic Surgery, in Oral and Maxillofacial Surgery Knowledge Update, Vol 2, (ed) John PW. Kelly, American Association of Oral and Maxillofacial Surgery, Rosemont, Illinois, pp 381-396, 1995
 - b. Ziccardi V, Zuniga JR. Traumatic Injuries of the Trigeminal Nerve, *in* Fonseca RJ, Walker, RV, Betts NJ, Barber HD, Powers MP (eds), Oral and Maxillofacial Trauma, 3rd edition, St. Louis, MO, Elsevier Saunders, 2005, vol. 2. pp 877-914
 - c. Radwan A, Boxx, C. Zuniga J: Post-Traumatic Injuries of the Trigeminal and Facial Nerve, *in* Trauma Surgery, *Atlas of the Oral and Maxillofacial Surgery Clinics*, (ed) Robert Strauss, Alaaadin Radwan, Elsevier, Philadelphia, PA, 27, 127-133, 2019, doi.org/10.1016/j.cxom.2019.05.009
 - d. Hegtvedt AK, Zuniga JR. Lingual nerve injury as a complication of rigid fixation of the sagittal split osteotomy: report of a case. *J Oral Maxillofac Surg*, 48:647-650, 1990.
 - e. Zuniga JR. Studies of traumatic neuralgias in the maxillofacial region: surgical and neural mechanisms, discussion. *J Oral Maxillofac Surg*, 48:238-239, 1990.
 - f. Blakey GH, Zuniga JR. Lingual nerve injury associated with superior border wire fixation. *Int J Adult Orthod Orthog Surg*, 7:115-117, 1992
 - g. Tay ABG, Zuniga JR. Clinical Characteristics of Trigeminal Nerve Injury Referrals to a University-Based Specialist Center, *Int J Oral Maxillofac Surg*, 36:922-927, 2007
 - h. Ziccardi VB, Zuniga JR. Nerve injuries after third molar removal. *Oral Maxillofac Surg Clin N Amer* 19:105-115, 2007

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- i. Miller, Derek, Zuniga JR: Injection Injury to the Third Branch of the Trigeminal Nerve, Selected Readings in Oral Maxillofac Surg., 20, no.4, November, 2012
- ii. Diagnosis and prognosis
 - a. Zuniga JR, Tay ABG. Dentoalveolar Problems: Trigeminal Nerve Injury, *in* Decision Making in Oral and Maxillofacial Surgery, (eds) Daniel Laskin, Omar Abubaker, 1st edition, Quintessence Publishing Co., Hanover Park, IL, 2007, pp 12-14
 - b. Zuniga JR, Radwan, A: Classification of Nerve Injuries, *in* Trigeminal Nerve Injuries, 1st edition, (ed) Michael Miloro, Springer-Verlag, 2013 pp17-25
 - c. Zuniga J: Maxillofacial Nerve Injuries – Diagnosis and Management, *in* Oral and Maxillofacial Review – A Comprehensive and Contemporary Update. (eds) Bennett J, Ferneini EM, Oakstone Productions, 12/1/2020
 - d. Zuniga JR, Essick G. A contemporary approach to the clinical evaluation of trigeminal nerve injuries. *OMFS Clin North Amer*, 4:353-367, 1992
 - e. Zuniga JR, Chen N, Miller IJ. Effects of chorda-lingual nerve injury and repair on human taste. *Chemical Senses*, 19:657-665, 1994
 - f. Feldman JA, Essick GK, Zuniga JR, Phillips C. Inter-examiner reliability of three subjective clinical neurosensory tests. *Int J Adult Orthod Orthog Surg*, 12:273-285, 1998
 - g. Zuniga JR, Meyer RA, Gregg JM, Miloro MD, Davis LA. The accuracy of clinical neurosensory testing for nerve injury diagnosis. *J Oral Maxillofac Surg*, 56:2-8, 1998
 - h. Phillips C, Essick F, Zuniga JR, Tucker M, Blakey G: Qualitative descriptors used by patients following orthognathic surgery to portray altered sensation. *J Oral Maxillofac Surg* 64:1751-1760, 2006
 - i. Cox, B, Zuniga JR, Panchal N, Cheng J, Chhabra A: Magnetic Resonance Neurography in the Management of Peripheral Trigeminal Neuropathy: experience in a tertiary care centre. *Eur Radiol*, 10:3392-3400, 2016. DOI 10.1007/s00330-015-4182-5
 - j. Zuniga JR, Mistry C, Tikhonov I, Dessouky R, Chhabra A: Magnetic Resonance Neurography of Traumatic and Non-Traumatic Peripheral Trigeminal Neuropathies. *J Oral Maxillofac Surg* 76:725-736, 2018, doi: 10.1016/j.joms.2017.11.007
 - k. Dessouky R, Xi Y, Zuniga J, Chhabra A: Role of Magnetic Resonance Neurography (MRN) for the Diagnosis of Peripheral Trigeminal Nerve Injuries in Patients with Prior Molar Tooth Extraction. *Am J NeuroRadiol*, 39 (1) 162-169; DOI: <https://doi.org/10.3174/ajnr.A5438>, 2018.

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- l. Chhabra A, Bajal G, Wadhwa V, White J, Myers L, Bardia A, Zuniga J: Magnetic Resonance Neurography Evaluation of Facial and Neck Pain: Normal and Abnormal Lower Craniospinal Nerves Below the Skull Base. *Radiographics*, 38:1498-1513, 2018
<http://doi.org/10.1148/rg.201870194>
- M. Selvi F, Yildirimyan N, Zuniga JR: Inferior Alveolar and Lingual Nerve Injuries: An Overview of Diagnosis and Management. *Front Oral Maxillofac Med*. 4-27, 2022.
<https://dx.doi.org/10.21037/fomm-21-8>
- N. Xia S, Thornton T, Ravi V, Hammad Y, Zuniga JR, Chhabra A: Efficacy of Magnetic Resonance Neurography of Peripheral Trigeminal Nerves: Correlation of Sunderland Grade versus Neurosensory Testing. *Amer J Neuroradiol*, February 2024.
<https://doi.org/10.3174/ajnr.A8120>
- iii. Post-traumatic neuropathic pain (PTTNp)
 - a. Mirchel R, Zuniga JR, Bouloux G: Neuropathic Pain and Chronic Opioid Use, *in* Complications of Temporomandibular Joint Surgery, (ed) Gary Bouloux, Springer, Cham, Switzerland, 2017, 81-98
 - b. Zuniga JR, Yates D, Phillips CE: The Presence of Neuropathic Pain Predicts Postoperative Neuropathic Pain Following Trigeminal Nerve Repair. *J Oral Maxillofac Surg*, 72:2422-2427, 2014
 - c. Zuniga JR, Renton T: Managing Trigeminal Post-Traumatic Neuropathic Pain: Is Surgery Enough? *J Neurol Neuromed* 1(7): 10-14, 2016
 - d. Chhabra A, Bajal G, Wadhwa V, White J, Myers L, Bardia A, Zuniga J: Magnetic Resonance Neurography Evaluation of Facial and Neck Pain: Normal and Abnormal Lower Craniospinal Nerves Below the Skull Base. *Radiographics*, 38:1498-1513, 2018
<http://doi.org/10.1148/rg.201870194>
- iv. Non-surgical management for PTTNp
 - a. Mirchel R, Zuniga JR, Bouloux G: Neuropathic Pain and Chronic Opioid Use, *in* Complications of Temporomandibular Joint Surgery, (ed) Gary Bouloux, Springer, Cham, Switzerland, 2017, 81-98
 - b. Zuniga JR. Current advances in anesthesia and pain control research: Neurotransmitter receptor interactions with clinical relevance. *OMFS Clin North Amer*, (4:875-885), 1992
 - c. Zuniga JR. The use of non-opioid drugs in management of chronic orofacial pain. *J Oral Maxillofac Surg*, 56:1075-1080, 1998
 - d. Zuniga JR, Renton T: Managing Trigeminal Post-Traumatic Neuropathic Pain: Is Surgery Enough? *J Neurol Neuromed* 1(7): 10-14, 2016

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- e. Treade RD, Jensen TS, Campbell JN, Cruccu G, Dostrovsky JO, Griffin JS, Hansson P, Hughes R, Nurmikko T, Serra J: Neuropathic pain: redefinition and a grading system for clinical and research purposes. *Neurology* 70:1630-1635, 2008.
- f. Akkaya T, Ozkan D: Chronic post-surgical pain. *Agri*.21;1-9,2009.
- g. Kehlet H, Jensen TS, Woolf,CJ: Persistent postsurgical pain: risk factors and prevention. *Lancet* 367:1618-1625. 2006.
- h. Felder JM, Ducic, I: Chronic Nerve Injuries and Delays in Surgical Treatment Negatively Impact Patient-reported Quality of Life. *Plast Reconstr Surg Glob Open* 9:e3570, 2021; doi:10.1097/GOX.0000000000003570.
- i. Bates D, Schultheis C, Hanes MC, Jolluy SM, Chakraverthy KV, Deer TR, Levy RM, Hunter CW: A Comprehensive Algorithm for Management of Neuropathic Pain. *Pain Medicine* 20:S2- S12, 2019; doi.10.1093/pm/pnz075
- j. Moulin DE, Clark AJ, Gordon A, Lynch M, Morley-Forster PK, Nathan H, Smyth C, Toth C, VanDenKerkhof E, Gilani A, Ware MA: Long-term Outcome of the Management of Chronic Neuropathic Pain: A Prospective Observational Study. *J Pain* 16: 852-861, 2015
- k. Meewis J, Renton T, Jacobs R, Politis C, Van der Cruyseen F: Post-traumatic trigeminal neuropathy: correlation between objective and subjective assessments and a prediction model for neurosensory recovery. *Res Square* ; doi.org/10.21203/rs.3.rs-363798/v1.
- l. Van der Cryseen F, Peeters F, De Laat A, Jacobs R, Politis C, Renton T: Prognostic factors, symptoms evolution and quality of life of persistent post-traumatic trigeminal neuropathy. *Pain*
- m. Barreiros de Fonseca PR, Olivia Gatto E, Tondato VA: Post-Trauma and Postoperative Painful Neuropathy. *Rev Dor. Sao Paulo* 17:S59-62, 2016
- v. Surgical repair
 - a. Tay ABG, Zuniga JR: Nerve Repair, in *Atlas of Operative Oral and Maxillofacial Surgery*, (eds) Christopher Haggerty, John Langdon, Wiley-Blackwell, 2015, 522-534
 - b. Zuniga JR, Tay AB: Nerve Injuries and Repair, *in Operative Oral and Maxillofacial Surgery*, 3rd Edition, (eds) John Langdon, Mohan Patel, Robert Ord, Peter Brennan, CRC Press Taylor & Francis Group, Boca Raton, Florida, USA, 2017, 75-81
 - c. Zuniga J: Maxillofacial Nerve Injuries – Diagnosis and Management, *in Oral and Maxillofacial Review – A Comprehensive and*

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- Contemporary Update. (eds) Bennett J, Ferneini EM, Oakstone Productions, 12/1/2020
- d. Daifallah TC, Tay ABG, Zuniga JR: Nerve Harvest and Repair in Atlas of Operative Oral and Maxillofacial Surgery, Second Edition, (eds) Christopher J Haggerty, Robert M Laughlin, Wiley Blackwell. 2023, 924-937
 - e. Zuniga JR, Chen N, Miller JJ. Effects of chorda-lingual nerve injury and repair on human taste. *Chemical Senses*, 19:657-665, 1994
 - f. Zuniga JR, Chen N, Phillips CL. Chemosensory and somatosensory regeneration of the lingual epithelium following lingual nerve repair in humans. *J Oral and Maxillofac Surg*, 55:2-13, 1997
 - g. Gregg JM, Zuniga JR. An outcome analysis of clinical trials of the surgical treatment of traumatic trigeminal sensory neuropathy. *Oral Maxillofac Surg Clin N Amer* 13:377-381, 2001
 - h. Zuniga JR. Surgical management of trigeminal neuropathic pain. *Atlas Oral Maxillofac Surg Clin N AMER*. 9:59-75, 2001
 - i. Zuniga JR: Sensory Outcomes After Reconstruction of Lingual and Inferior Alveolar Nerve Discontinuities Using Processed Nerve Allograft- A Case Series. *J Oral Maxillofac Surg*, 73:734-744, 2015
 - j. Zuniga JR, Williams F, Petrisor D: A Case Control, Multi-site, Positive Controlled, Prospective Study of the Safety and Effectiveness of Immediate Inferior Alveolar Nerve Processed Nerve Allograft Reconstruction with Ablation of the Mandible for Benign Pathology. *J Oral Maxillofac Surg* 75:2669-2681, 2017. doi: 10.1016/j.joms.2017.04.002
 - k. Miloro M, Zuniga JR: Does Immediate Inferior Alveolar Nerve Allograft Reconstruction Result in Functional Sensory Recovery in Pediatric Patients. *J Oral Maxillofac Surg*, 78, 11: 2073-2079, 2020
 - l. Morgan S, Zuniga JR: Nerve Grafting In Head and Neck Reconstruction. *Facial Plastic Surgery*, 2020:00: 1-9. <https://doi.org/10.1055/s-0040-1721106>. ISSN 0736-6825.
 - m. Zuniga JR, Neal TW: How Does Changing the Time to Surgery Affect the Recurrence of Post-Traumatic Trigeminal Neuropathic Pain. *J Oral Maxillofac Surg* 81:265-271, 2023, <https://doi.org/10.1016/j.joms.2022.11.007>
 - n. Zuniga JR, Neal T, Kim RY, Miloro M, Moles SL, Callahan N, Petrisor D, Rogers B, Marwan H, Young S, Melville JC, Ahmed O, Hernández-Nuño de la Rosa, MF, Oreadi D, Creed H: Does Immediate Long-Span Nerve Allograft Reconstruction Affect the Incidence of Chronic Postsurgical and Neuropathic Pain in the Reconstructed Mandible Following Resection for Benign and Malignant Disease: An OMS

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- o. Zuniga JR, Neal TW: New Perspectives in Peripheral Nerve Surgery for Neuropathic Pain. *Medical Research Archives*, online, *Europ Soc Medicine*, 2023; 11 (5) <https://doi.org/10/18103/mra.v11i5.3810>
- vi. Guidelines
 - a. Zuniga J: Maxillofacial Nerve Injuries – Diagnosis and Management, *in Oral and Maxillofacial Review – A Comprehensive and Contemporary Update.* (eds) Bennett J, Ferneini EM, Oakstone Productions, 12/1/2020
 - b. Van der Cruyssen F, Palla B, Jacobs R, Politis C, Zuniga JR, Renton T: Consensus Guidelines on the Training, Diagnosis, Treatment and Follow-up Care of Trigeminal Nerve Injuries. *Int. J. Oral Maxillofac Surg.* 2023, xx:1-13. <https://doi.org/10.1016/j.ijom.2023.06.003>
- g. Document that the dental education program is the equivalent of at least one twelve-month full-time academic year in length.**
The Advanced Fellowship in Trigeminal Nerve Surgery and Disorders will be structured post-OMFS residency programs designed to provide focused knowledge and skills and be at least one year in duration. During the year long program, the fellow will be provided didactic and clinical experiences that cover the complete patient experience from initial to follow up for surgical and non-surgical care. Funding support by the sponsoring program will be at the PGY5 level for one-year. Benefits and services will be provided by the sponsors Graduate Medical Education office to the Fellow for the one-year period. Operating and patient care credentialing will be provided by each participating institution through the respective credentialing committees for the one-year period.
- h. Describe the current and emerging trends in the dental education area or discipline.**
The Accreditation Standards for Advanced Dental Education Programs in Oral and Maxillofacial Surgery are the only CODA based dental programs that recognize trigeminal (peripheral) nerve surgery in the education of residents and dental specialists. A recent Delphi study (referenced previously) identified the diagnosis of trigeminal nerve injuries as necessary for all oral and maxillofacial surgeons, but competency in surgical repair was not expected and should be provided in a fellowship education area or discipline (Table 2).
- i. Document that dental health care professionals currently provide health care services in the identified dental education area or discipline**
The numbers of trigeminal nerve repairs in the USA within Oral and Maxillofacial Surgery Residency Programs varies from zero to 20+ per final year resident. Further evidence of surgical care is documented in **2-f.3,4,5** above.

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3. Do a sufficient number of established programs exist and contain structured curricula, qualified faculty and enrolled individuals so that accreditation can be a viable method of quality assurance?

a. Document that the educational program is comprised of formal curriculum at the postsecondary or postgraduate level of education leading to a bona fide educational credential (certificate or degree) that addresses the scope, depth and complexity of the higher education experience, rather than a series of continued education courses.

An Advanced Fellowship in Trigeminal Nerve Surgery and Disorders is a structured post-residency educational experience devoted to the acquisition of knowledge and skill in the biomedical and clinical sciences of trigeminal nerve disorders leading to competency in trigeminal nerve surgery.

At the conclusion of fellowship training, the fellow will be able to provide diagnosis, prognosis and treatment of trigeminal nerve disorders including surgery at the level of competence.

Surgical experiences will include exposure, experience and competence in trigeminal nerve surgeries of sufficient number and variety. No absolute number can ensure competency, however, it is expected that each fellow will experience a minimum of 30 operating cases.

The Advanced one-year Post-Graduate Oral and Maxillofacial Surgery Fellowship educational program will be comprised of the following elements of education:

1. Biomedical Sciences: Weekly one-on-one didactic sessions with the fellowship director will occur through the entire program. The topics represent the broad range of the neurobiology and neuropathology associated with the trigeminal nerve and disorder from injury to neoplasm. Examples of general topic in curriculum will include:

- a. Neurobiology
 - i. Neuroanatomy
 - ii. Neurophysiology
 - iii. Neurochemistry/ neurotransmitters
 - iv. Nociception, proprioception, somatosensation
 - v. Special senses – gustatory, salivatory, parasympathetic
 - vi. Motor function
 - vii. Oral function
 - viii. Facial, neck, craniofacial function
- b. Etiology and epidemiology of Trigeminal Nerve Injury (TNI)
 - i. Third molar surgery, dental implants, injections, periodontal surgery, endodontics, orthognathic, tmj surgery
 - ii. Pathology – malignant, benign, MRONJ, ORN

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- iii. Mechanical versus chemical
- iv. Trauma
- c. Neuropathology of TNI
 - i. Wallerian degeneration and cellular/molecular
 - ii. Schwann cell response
 - iii. Receptor response
 - iv. Monocytes, blood brain barrier
 - v. neuromas
 - vi. Regeneration, sensory/motor/special sensory
 - vii. Classifications -Sunderland, Seddon classifications
 - viii. Chemical injury, local anesthetics/steroids
 - ix. PTTNp – peripheral and central and SMP
- d. Diagnosis of TNI
 - i. Clinical NST algorithm; level A, B,C
 - ii. MRN
 - iii. Other, SEP, blink reflex
- e. Diagnosis of PTTNp
 - i. Clinical NST for PTTNp; level A, B, C, D
 - ii. Stellate blocks, other
 - iii. NeurSIG
 - iv. QOL surveys
- f. Prognosis for Sunderland classifications
- g. Prognosis for PTTNp
- h. Non-surgical management of Sunderland TNI
 - i. Medications, behavioral, chemical denervation, neuromodulation
 - ii. Success versus failure
 - iii. complications
- i. Non-surgical management of PTTNp
 - i. 5 lines therapy/ medications, combination, neuromodulation, opioids, chronic pain management
 - ii. Success versus failure
 - iii. complications
- j. Surgical management of Sunderland TNI
 - i. Access, preparation, repair
 - ii. Lingual, inferior alveolar, infraorbital, other
 - iii. Instrumentation and technique
 - iv. 3D microscopes, loopes
 - v. Success versus failure
 - vi. complications
- k. Surgical management of PTTNp

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- i. Access, preparation, repair
 - ii. Lingual, inferior alveolar, infraorbital, other
 - iii. Neurolysis, nerve capping, RPNI, neurectomy
 - iv. Gamma knife, DBI
 - v. Success versus failure
 - vi. complications
 - l. Outcomes of surgical repair of Sunderland TNI
 - i. Risk factors; age, location, type, duration, HTN, tobacco, DM
 - ii. MRCS grading, MRN, other
 - m. Outcomes of surgical repair of PTTNp
 - i. Risk factors; age, type of PTTNp, time, VAS scaling
 - ii. Recurrence; complete versus incomplete
 - n. Special surgical cases
 - i. Pediatrics, geriatrics
 - ii. Benign, malignant disease and radiation/chemotherapy
 - iii. Gustatory, salivatory
 - iv. ORN, MRONJ
 - v. Nerve neoplasms
 - o. Trigeminal Disorders
 - i. Motor deficits – Parry- Rhombert, craniofacial syndromic, stroke, post- craniotomy, trauma, bell’s
 - ii. Sensory- Parry-rhombert, congenital sensory neuropathy
 - iii. Gustatory – conduction, sensorineural
 - p. Trigeminal pain disorders
 - i. Odontogenic, tmj, AFP/odontalgia, BMS, TN
 - ii. Trigeminal neuralgia, diagnosis, prognosis, medical and surgical management
 - iii. AFP/odontalgia –diagnosis and management
 - iv. BMS- diagnosis and management
 - v. Outcomes
2. Clinical Sciences
- a. Outpatient experiences
 - i. Participate in all ambulatory sessions with the fellowship director in the division of oral and maxillofacial surgery
 - 1. Presurgical evaluation including clinical neurosensory testing for sunderland classification and PTTNp diagnosis and prognosis
 - a. Goal- conduct independent diagnostic evaluations

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- b. Differentiate non-surgical versus surgical candidates
 - 2. Follow up visitations for all treatment modalities including non-surgical and surgical
 - a. Goal- interpret treatment outcomes and management
 - 3. Consultation for orofacial pain including but not limited to TMJ, AFP, BMS, TN and all follow up visitations for outcome assessment of treatment
 - a. Goal- correctly identify other orofacial pain conditions and manage appropriately
 - ii. Participate in UTSW general neurology/headache and facial pain patient care including didactic sessions and lectures
 - iii. Participate and rotate with UTSW radiology, musculoskeletal division accessing and reading MRN studies for trigeminal neuropathies
 - 1. Goal- independently interpret an MRN study of the trigeminal nerve
- b. Major Surgery
 - i. Perform at least 6 procedures as first-assistant to the Fellowship Director involving trigeminal nerve surgery
 - ii. Perform at least 6 procedures as primary- surgeon with the Fellowship Director
 - iii. Perform at least 6 procedures as primary-surgeon without the Fellowship Director assistance (indirect supervision) to define competence
 - iv. Include at least 1 of the following experiences
 - 1. Neurolysis – external or internal with microscope
 - 2. Neurorrhaphy – direct
 - 3. Neurorrhaphy – with allograft or autograft
 - 4. RPNI or nerve capping for painful neuroma
 - 5. Connector-assisted- repair technique with various suturing modalities (ie. Parachute technique, other)
 - 6. Nerve transposition
 - 7. Immediate reconstruction with long span graft for benign or malignant mandibular pathology
- c. Other educational experiences
 - i. Participate in the didactic programs associated with the Advanced Dental Education Program in Oral and Maxillofacial Surgery
 - ii. Attend AAOMS annual meeting

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- iii. Attend ASPN (American Society of Peripheral Nerve)
 - iv. Join the GNF (Global Nerve Foundation) as fellow member
 - d. Research experiences
 - i. Participate in the development, conduct and dissemination of at least one clinical research study involving trigeminal nerve injury and disorders with intent to abstract at AAOMS or ASPN or both with or without publication in peer-reviewed journal.
3. For Example, evidence of Major Trigeminal Nerve Surgery at Parkland Hospital:

SUMMARY OF 5 YEAR TRIGEMINAL NERVE REPAIR DATA (2013 THROUGH SEPT 2017)

	Class I	Class II	Class III	Class IV	Class V	TOTAL
LN	0	2	4	27	11	44
IAN	5	7	10	3	10	35
TOTAL	5	9	14	30	21	79

Calendar year 2023

	Class 1	Class II	Class III	Class IV	Class V	TOTAL
LN	0	0	3	10	6	19
IAN	0	3	1	5	0	9
TOTAL	0	3	4	15	6	28

b. Describe the historical development and evolution of educational programs in the dental education area or discipline

The best reference to address this query can be found in Markewicz MR, Miloro M: The Evolution of Microvascular and Microneurosurgical Maxillofacial Reconstruction. J Oral and Maxillofac Surg 76: 687-699, 2018 doi: org/10.1016/j.joms.2018.01.001

This publication reviews the history of trigeminal nerve injury, diagnosis and treatment from pre-surgical era (75 years ago) to the current time which was initially developed as a clinical skill in the mid-20th century and the use of continuing education courses in 2013. Educational training in Plastic and Reconstructive Surgery began in early 2000s and included hand surgeons, orthopedic surgeons, neurosurgeons, otolaryngology surgeons and now oral and maxillofacial surgeons. The article points out that “there is a paucity of trigeminal nerve surgeons”. The

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Parameters of Care (noted in section **1.b**) includes a section on *Neurologic Defects* (pages e2286-288) in its' 2017 sixth edition with the first edition in 1986 and last in 2023. *Neurologic Disorders* section was first included in the 6th edition in 2016.

c. Provide a list of all the currently operational programs in the dental education area or discipline.

There are no current operational post-graduate Oral and Maxillofacial Fellowship Programs in Trigeminal Nerve Surgery and Disorders.

However, there are several hospital and dental school based Advanced Training Programs in Oral and Maxillofacial Surgery in the USA where trigeminal nerve surgery and management of trigeminal nerve disorders are being conducted. These programs have documented experience and competent surgeons and faculty capable and interested in the development of an Advanced Fellowship in Trigeminal Nerve Surgery and Disorders as described in this document. Each program have a recognized faculty member having competence in trigeminal nerve surgery and disorders.

Those programs include but are not limited to:

1. University of Texas Southwestern/Parkland Hospital
 - a. John Zuniga, Professor
2. University of Illinois at Chicago
 - a. Michael Miloro, Professor and Chair
3. Rutgers University
 - a. Vince Ziccardi, Professor and Chair
4. University of South Carolina
 - a. Martin Steed, Professor and Chair
5. Virginia Commonwealth University
 - a. Vickas Argawal, Assistant Professor
6. Oregon Health and Sciences University
 - a. Dan Petrisor, Associate Professor
7. University of Texas Health Sciences University in Houston
 - a. James Melville

Attachment A to this document are letters of support for an Advanced Fellowship in Trigeminal Nerve Surgery and Disorders in four programs on the list above that do not include Parkland Hospital. The substance of these letters' points to the national recognition and support of the goals and objectives of the proposed Fellowship(s), as well as qualified professionals willing to serve as CODA examiners, if needed.

4. Is there evidence of need and support from the public and professional communities to sustain educational program in the discipline?

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- a. **Provide evidence of the ability to perform a robust, meaningful peer-reviewed accreditation process including a sufficient number of peers to conduct reviews at all levels of the Commission, as needed:**

The programs listed in 3c above have sponsoring institutions for the Advanced Dental Education Program in Oral and Maxillofacial Surgery. Each have a Graduate Medical Education (GME) office with officers that are familiar with the CODA accreditation process. The Oral and Maxillofacial Surgery departments and divisions oversee the same programs and have liaisons to the GME office at sponsoring hospitals and institutions that have experience in preparing, conducting, and administering CODA accreditation processes and maintenance of CODA and AAOMS rules and regulations.

The Fellowship Director/Program Director will be board certified in OMFS and the single responsible individual for the development and goals and objective, ensuring physical facilities, provide selection and supervision of selected fellows, and the maintenance of records associated with the fellows activities.

There are sufficient number of peers to conduct a CODA site accreditation visit for a one-year Post-Graduate Oral and Maxillofacial Surgery Fellowship in Trigeminal Nerve Surgery and Disorders. The following are recognized experts with clinical experience in Trigeminal nerve surgery and disorders in the US: Michael Miloro (chair OMS at UIC); Vince Ziccardi (chair OMS at Rutgers); Martin Steed (chair of OMS at USC); Thomas Schlieve (PD at UTSW/Parkland), Dan Petrisor (OHSU faculty), James Melville (UT Houston, faculty), Neeraj Panchal (UPENN, faculty), Fayette Williams (JPS fort worth), Rodrick Kim (JPS fort worth), Salvadore Ruggiero (long island NY), Shahrokh Bagheri (Atlanta GA) are some examples.

- b. **List States where graduates of the dental education area or discipline are recognized for licensure and /or practice.**

All US States under the State Board of Dental Examination in that particular state. No restrictions are known

- c. **Provide evidence of the potential for graduates to obtain employment.**

- i. **Employment placement rates**

This is a new Fellowship and there are no employment rates that can be addressed. However, post-fellowship employment would be expected to occur for every fellow following the one-year experience with competence in trigeminal nerve surgery. Thus, each fellow is expected to obtain credentials to provide trigeminal nerve surgical service at any hospital or institution where privileges to provide these services is required. This is important since Trigeminal Nerve Surgical privileges are not considered “core” privileges, rather they are expanded scope (such as for laser use, pediatric cleft lip/palate repair, etc) in oral and maxillofacial surgery. Thus, in many

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hospitals/institutions, oral and maxillofacial surgeons cannot provide this service unless there is demonstrated competence and experience.

ii. **Documentation of employment/practice opportunities/setting**

This is a new Fellowship and there is no history of employment of post-graduate Fellows.

d. **Evidence of career opportunities, student interest, and an appropriate patient base**

Trigeminal nerve surgery and management of patients with trigeminal nerve disorders/pain has been documented in section **1.a** (CODA Accreditation Standards for Advanced Dental Education Programs in Oral and Maxillofacial Surgery, 4-11 and 4-11.5 and **1.b** (AAOMS Parameters of care) as services of need within the specialty of oral and maxillofacial surgery. In order to provide these services, privileges are provided by credentialing committees in US hospitals and institutions and since these privileges are not “core”, competence must be documented and maintained. Post-graduate fellowship training in the new educational area and discipline of trigeminal nerve surgery and disorders will provide needed documentation to meet credentialing criteria to provide care. Fellows who are able to obtain privileges with competence in trigeminal nerve surgery and disorders are expected to enhance their career opportunities. This can include academics (teach, conduct research and obtain external funding), the military or private practice as they have expanded scope service skills. There are two examples of future career opportunities provided in section **4-c.ii**.

All Advanced Dental Education Programs in Oral and Maxillofacial Surgery, Orofacial Pain and Endodontics, section **1.a**, recognize trigeminal nerve surgery and disorders (neuroscience, neuropathic pain) as component areas of education in their standards demonstrating there is a student interest via exposure or even experience in trigeminal nerve surgery and disorders. Van der Cruysen et al (Van der Cruysen F et al, *Consensus Guidelines on the Training, Diagnosis, Treatment and Follow-up Care of Trigeminal Nerve Injuries*. *Int. J. Oral Maxillofac Surg.* 2023, xx:1-13.

<https://doi.org/10.1016/j.ijom.2023.06.003>). Point out that experts in the field have consensus that all oral and maxillofacial surgeons should be able to diagnose trigeminal nerve disorders but not demonstrate competence in surgical repair. Miloro et al (Miloro M, Zuniga JR, Meyer R:How many oral surgeons does it take to classify a nerve injury? *J Oral Maxillofac Surg.* 79:1550-56, 2021) reported that experience does not provide sufficient diagnostic skills to reach high sensitivity and specificity of accurate classification of trigeminal nerve injuries. Thus, oral and maxillofacial surgeons with competence in trigeminal nerve surgery and disorders is needed.

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The literature provides evidence that appropriate patient population exists that have trigeminal nerve injuries and disorders that require diagnosis, prognosis and treatment, section **2.f**. Tay and Zuniga (Tay ABG, Zuniga JR: Clinical Characteristics of Trigeminal Nerve Injured Referrals to a University Centre. *Int J Oral Maxillofac Surg*, 36:922-27, 2007) reported that 73 patient were referred in 10 months, included lingual, inferior alveolar and maxillary nerve injuries caused by multiple etiologies associated with dental procedures, resulting in Sunderland injuries and PTTNp, requiring both non-surgical and surgical care. Van der Cruysen et al (Van der Cruysen F Peeters F, Bill T, De Laat A, Jacobs R, Politis C, Renton T. Sings and symptoms, quality of life and psychosocial data in 1331 post-traumatic trigeminal neuropathy patients seen in two tertiary referral centres in two countries. *J Oral Rehab* 47:1212-21, 2020) reported over 1,000 patients with trigeminal nerve injuries and disorders were referred to two university centers in Europe, included maxillary, lingual and inferior alveolar nerve, multiple etiologies, non-painful and painful treated with non-surgical and surgical methods. These studies clearly show adequate patients with trigeminal nerve disorders seek diagnosis, prognosis and treatment.

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ATTACHMENT A

Letters of Support

1. University of Illinois Chicago, Michael Miloro DMD, MD, FACS
2. Rutgers School of Dental Medicine, Vincent Ziccardi, DDS, MD, FACS
3. Medical University of South Carolina, Martin Steed, DDS, FACS
4. Virginia Commonwealth University, Vickas Argawal DDS, MD



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UNIVERSITY OF
ILLINOIS CHICAGO

College of Dentistry

July 15, 2024

Re: Fellowship in Trigeminal Nerve Surgery and Disorders

To Whom It May Concern:

This is a strong letter of support for the proposal for a one-year post-oral and maxillofacial surgery fellowship in trigeminal nerve surgery and disorders. This area of specialization falls within the discipline of dentistry for many reasons including the anatomical location of the trigeminal nerve branches, the most common etiologies of nerve injuries result from dental procedures, and the oral and maxillofacial surgeon is the one specialist who can effectively diagnose and manage these injuries.

There is a very clear need for an increased number of surgeons who can treat these injuries since access to care and barriers to referral to a microneurosurgery expert has been a problem in the past but is currently at a critical point due to a scarcity of trained surgeons. By all estimates, there are only a handful of trained trigeminal nerve surgeons who can provide services to nerve-injured patients. As one of the surgeons who provides these services, I can tell you that I have been seeing an exponential increase in the number of nerve-injured patients from all over the USA, and abroad. In addition, while there are a few senior surgeons who manage nerve injuries, many of these surgeons are at or near retirement with few junior surgeons with the training to manage the nerve-injured patient since they likely had little or no exposure to nerve injuries during their oral and maxillofacial surgery residency training programs.

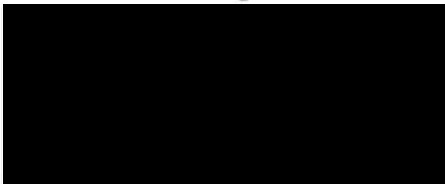
A CODA Fellowship in Trigeminal Nerve Disorders would be a welcome start to begin to address the access to care issues with these patients. It would be nice to establish Centers of Excellence throughout the USA at regional sites that may facilitate referrals and treatment.

As one of the proposed clinical training sites for this Fellowship, I can say that I am fully committed to this Fellowship, and I do believe that the other sites are committed as well since we all realize the significant clinical need for access to care for these patients.

Sincerely,

A handwritten signature in black ink that reads "Michael Miloro".

Michael Miloro, DMD, MD, FACS
Daniel M. Laskin Professor and Head
Oral and Maxillofacial Surgery
University of Illinois Chicago



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Rutgers School of Dental Medicine
Department of Oral and Maxillofacial Surgery
110 Bergen Street
Room B854
Newark, NJ 07103-2400



Commission on Dental Accreditation

July 15, 2024

Re: Proposal for one year post Oral and Maxillofacial Surgery Fellowship in Trigeminal Nerve Surgery and Disorders

Dear CODA

I would like to give my support to the creation of one year post OMFS residency fellowship in Trigeminal Nerve Surgery and Disorders. There are currently a few centers around the country providing this specialized service leaving patients with few local options and clearly a need for additional practitioners in this subspecialty. As a center of excellence in this area, Rutgers would have some interest in establishing a fellowship if this becomes a CODA approved and recognized fellowship. I would also have interest in making myself available to serve as a CODA site visitor for such fellowships. Thank you for your consideration and please contact me if I could be of any further assistance to you in this matter

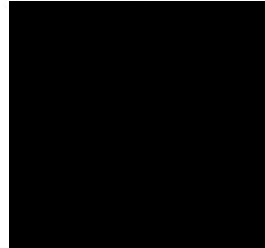
Sincerely

A handwritten signature in black ink that reads 'Vincent B. Ziccardi DDS, MD, FACS'.

Vincent B Ziccardi, DDS, MD, FACS
Professor and Chair
Chief of Service, University Hospital
Associate Dean of Hospital Affairs



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Monday, July 22, 2024
Re: Fellowship in Trigeminal Nerve Surgery and Disorders

To Whom It May Concern:

This is a strong letter of support for the proposal for a one-year Oral and Maxillofacial Surgery fellowship in trigeminal nerve surgery and disorders. This area of specialization falls within the discipline of dentistry. Peripheral trigeminal injuries are a very real national and global problem and patients who have sustained such injuries would benefit greatly from dentists who could appropriately diagnose, manage, and treat their oft times debilitating symptoms.

There is a very clear need for an increased number of surgeons who can treat these injuries since access to care and barriers to referral to a micro neurosurgery expert are currently at a critical point due to a scarcity of trained surgeons. There are currently only a handful of trained trigeminal nerve surgeons who can provide services to nerve-injured patients. As a surgeon who provides these services, I have observed a striking increase in the number of nerve-injured patients from all over the country. There are a few senior surgeons who manage nerve injuries, many of these surgeons are at or near retirement with few junior surgeons with the training to manage the nerve-injured patient since they likely had little or no exposure to nerve injuries during their oral and maxillofacial surgery residency training programs.

There is in fact no other surgical specialty that is better suited managing these disorders than Oral and Maxillofacial surgeons. Their dental and residency training provides them with a unique knowledge and familiarity with the trigeminal nerve branches, the most common etiologies of nerve injuries result from dental procedures, and the oral and maxillofacial surgeon is the one specialist who can effectively diagnose and manage these injuries.

A CODA approved Fellowship in Trigeminal Nerve Disorders would be a welcome start to begin to address the access to care issues with these patients. It would be crucial to establishing Centers of Excellence throughout the USA at regional sites that may facilitate referrals and treatment.

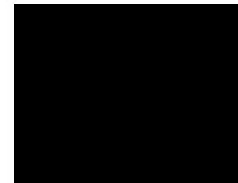
As one of the proposed clinical training sites for this Fellowship, I can say that I am fully committed to this Fellowship. We believe that this would ensure the quality of dental care within this arena and lead to quality and timely care for the public.

Sincerely,

Martin B. Steed, DDS, FACS
Professor and *James B Edward's Chair*
Department of Oral and Maxillofacial Surgery
Medical University of South Carolina

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July 15, 2024

RE: Fellowship in Trigeminal Nerve Surgery and Disorders

To whom it may concern,

I am writing to express my enthusiastic support for the establishment of a CODA accredited fellowship in trigeminal nerve surgery and disorders at the Parkland Memorial Hospital/UT Southwestern Medical Center. This one-year, post-oral and maxillofacial surgery residency fellowship stands to fill a large clinical gap in our specialty.

The initiative to develop this fellowship is timely, considering the increasing prevalence and complexity of trigeminal nerve disorders in our country and the stagnant number of surgeons willing and able to treat patients with trigeminal nerve injuries. By providing this opportunity to young surgeons, we can help train the next generation of burgeoning trigeminal nerve experts in oral and maxillofacial surgery. As it stands, there are few residency programs that provide exposure to and/or training in trigeminal nerve surgery.

As one of the few surgeons who perform trigeminal nerve surgery in my geographic region, I have a strong interest in developing this fellowship at my institution, if approved by CODA.

Sincerely,

Vikas Agarwal DDS MD
Assistant Professor
Oral & Maxillofacial Surgery
Virginia Commonwealth University



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E. POLICIES AND PROCEDURES FOR ACCREDITATION OF PROGRAMS IN A NEW
DENTAL EDUCATION AREA OR DISCIPLINE

In the initiation of an accreditation review process for programs in a dental education area or discipline, the Commission on Dental Accreditation seeks only to ensure the quality of the education programs in the area or discipline, for the benefit and protection of both the public and students/residents. The Commission's accreditation process is intended to promote and monitor the continuous quality and improvement of dental education programs and does not confer dental specialty status nor endorse dental disciplines.

Items 1 through 4 listed below provide a framework for the Commission in determining whether a process of accreditation review should be initiated for the new dental education area or discipline. Each item must be addressed in a formal, written request to establish an accreditation process for programs in an area or discipline of dentistry.

1. Does the dental education area or discipline align with the accrediting agency's mission and scope?

Elements to be addressed:

- Define the nationally accepted scope of the dental education area or discipline.
- List the nationally accepted educational goals and objectives of the dental education area or discipline.
- Describe how the area or discipline aligns with the Commission on Dental Accreditation's mission and scope.
- Describe the quality of the dental education area or discipline, and need for accreditation review of the programs, as an important aspect to the health care of the general public. Include evidence that the area of knowledge is important and significant to patient care and dentistry.
- Provide evidence that the programs are academic programs sponsored by an institution accredited by an agency legally authorized to operate and recognized by the United States Department of Education or, as applicable, by an accreditation organization recognized by the Centers for Medicare and Medicaid Services (CMS), rather than a series of continuing education experiences.
- Describe the sponsoring, professional organization/association(s), if any, and (if applicable) the credentialing body, including the following information:
 - number of members;
 - names and contact information of association officers;
 - list of sponsored continuing education programs for members within the last five (5) years; and

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- for credentialing body: exam criteria; number of candidates; and pass rate for the past five (5) years.

2. Is there a sufficient body of knowledge to educate individuals in a distinct dental education area or discipline, not merely one or more techniques?

Elements to be addressed:

- Describe why this area of knowledge is a distinct dental education area or discipline, rather than a series of just one or more techniques.
- Describe how scientific dental knowledge in the education area or discipline is substantive to educating individuals in the education area or discipline.
- Document the complexity of the body of knowledge of the education area by identifying specific techniques and procedures.
- List the nationally accepted competency statements and performance measures for the dental education area.
- Identify the distinct components of biomedical, behavioral and clinical science in the dental education area or discipline.
- Provide documentation that there is a body of established, substantive, scientific dental knowledge that underlies the dental education area or discipline.
- Document that the dental education program is the equivalent of at least one twelve-month full-time academic year in length.
- Describe the current and emerging trends in the dental education area or discipline; and
- Document that dental health care professionals currently provide health care services in the identified dental education area or discipline.

3. Do a sufficient number of established programs exist and contain structured curricula, qualified faculty and enrolled individuals so that accreditation can be a viable method of quality assurance?

Elements to be addressed:

- Document that the educational program is comprised of formal curriculum at the postsecondary or postgraduate level of education leading to a bona fide educational credential (certificate or degree) that addresses the scope, depth and complexity of the higher education experience, rather than a series of continued education courses.
- Describe the historical development and evolution of educational programs in the dental education area or discipline. Do not submit information on the history of the sponsoring organization.
- Provide a list of all the currently operational programs in the dental education area or discipline, including the following information:

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- a. sponsoring institution;
 - b. name and qualifications of the program director;
 - c. number of full-time and part-time faculty (define part-time for each program) and list the academic credentials required for these faculty;
 - d. curriculum (academic calendars, class schedules, student/resident competencies, syllabi that address scope, depth and complexity of the higher education experience, including course outlines for each course, formal approval or acknowledgment by the parent institution that the courses or curricula in the education area meet the institution's academic requirements for advanced education);
 - e. textbooks and journals, or other learning resources used within the educational program;
 - f. evidence that the program is a bona fide higher education experience that addresses the scope, depth and complexity of higher education, rather than preceptorships or a series of continuing education courses;
 - g. outcomes assessment methods;
 - h. minimum length of the program for full-time students/residents;
 - i. certificate and/or degree or other credential awarded upon completion;
 - j. number of enrolled individuals per year for at least the past five (5) years; and number of graduates per year for at least the past five (5) years. If the established education programs have been in existence less than five (5) years, provide information since its founding;
 - k. confirmation that the program in the education area would seek voluntary accreditation review, if available;
 - l. programs' recruitment materials (e.g. bulletin, catalogue); and
 - m. evidence that the programs in the discipline are legally authorized to operate by the relevant state or government agencies.
4. Is there evidence of need and support from the public and professional communities to sustain educational programs in the discipline?

Elements to be addressed:

- Provide evidence of the ability to perform a robust, meaningful peer-reviewed accreditation process including a sufficient number of peers to conduct reviews at all levels of the Commission, as needed.
- List states where graduates of the dental education area or discipline are recognized for licensure and/or practice.
- Provide evidence of the potential for graduates to obtain employment, including the following information:

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- Employment placement rates (when available);
- Documentation of employment/practice opportunities/settings; and
- Evidence of career opportunities, student interest, and an appropriate patient base.

Adopted: 8/19

(Former Policies and Procedures for Accreditation of Programs in Areas of Advanced Dental Education and Principles and Criteria Eligibility of Allied Dental Programs for Accreditation by the Commission on Dental Accreditation)