The principles, competencies, and curriculum for educating dental therapists: a report of the American Association of Public Health Dentistry Panel

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Abstract

A panel of academicians was formed to develop an educational plan for dental therapists. The panel met over a 14-month period of time (2010-2011). The panel interviewed leadership from dental therapy educational programs in New Zealand, Canada, Alaska, and the University of Minnesota. The panel was structured into three subcommittees – principles, competencies, and curriculum to develop an educational plan for a 2-year postsecondary school dental therapy program. Reports from the three subcommittees are presented in this article along with introductory information and a discussion about the reports. A fourth subcommittee considered career pathways, and its report is presented as a separate article in this special issue. The final work of the panel was to consider accreditation issues regarding dental therapist programs, and its report is also presented in this issue.

Introduction

The Surgeon General's Report (1) on oral health of the nation in the year 2000 provided evidence that there was enormous improvement in the oral health of Americans during the 20th century; however, there were millions in the population that had not benefited from prevention and early intervention of oral diseases and were in poor health. Low-income individuals, people of color, and racial/ethnic minorities suffer from the worst oral health, especially those living in remote locations or in inner cities. The disparity in oral health in the population has been attributed to a lack of access to dental care, as well as to complex cultural and socioeconomic issues. For example, although dental care for children is required under federal Medicaid guidelines, there was only a 36 percent national utilization of any dental services by children covered by Medicaid in 2008 (2). Reasons for the small percentage of children in the Medicaid system receiving any dental services include low reimbursement rates for dental care dissuading dentist participation in treating Medicaid patients, an insufficient safety net or delivery system that reaches the underserved, a shortage of dentists in many geographical regions of the country, and a lack of awareness of the importance of seeking dental care by parents for themselves or for their children.

Concern by federal and state legislators and professional organizations to reduce and eliminate oral health disparities between those well served and those poorly served by the current oral health care delivery system have grown during the first decade of the 21st century; however, no clear consensus has yet emerged on how to improve the current delivery system to care for those presently unable to gain access to care. At least four strategies have been proposed to open up access for the underserved. They are the following: a) improve the Medicaid reimbursement rate for dental care to improve the participation rate of dentists willing to treat Medicaid patients (3); b) include dental care or expand it in community health centers and federally qualified health centers (4); c) provide incentives for dentists to practice in designated dental shortage areas (5); and d) educate and deploy new

types of dental workforce providers (6) that can reach groups not presently served in locations where they live. The first three strategies are already underway, however, with limited results. For example, while there is progress in expanding dental care in community health centers and increasing the oral health workforce in those centers (7), only 3.4 million patients are reached by those centers (8), but there are 49 million people who live in 4,230 federally designated dentist shortage areas (9) and approximately 45 million Americans age 65 and younger are without any dental health insurance (10). Efforts to increase Medicaid reimbursement rates and streamline administrative procedures have improved participation in several states that have employed this strategy; however, a recent 2009 analysis by the Government Accountability Office showed that fewer than half of the dentists in 25 of 39 reporting states treated any Medicaid patients in the previous year (11). While it is important to maintain those efforts, other mechanisms must be tried to continue the effort to bring care to the underserved in order to eliminate or reduce oral health disparities in the United States.

Educating and deploying new provider types has become a strategy of intense interest by federal(12) and state consumer groups (13) and some state dental associations(14) to expand the oral health workforce to stem the tide of what the Surgeon General called the "silent" epidemic of oral disease. Integrating new providers into the delivery system to expand the workforce has been proposed and is actually progressing in two locations, one in Alaska and one in Minnesota. However, there is no agreement and, in some cases, intense opposition to the roles and responsibilities of new oral health providers. The emergence of dental therapists in the United States, a part of the dental workforce in other countries, is causing alarm because dental therapists are perceived by some as a threat to dentists, the traditional provider of oral health care. The American Dental Association, for example, opposes the creation of dental therapists whose scope of practice includes some basic dental restorative and surgical procedures heretofore only performed by dentists (15). The American Dental Association has proposed (16) and is supporting training programs at University of California Los Angeles, University of Oklahoma, and Temple University School of Dentistry for a new type of oral health community health worker limited to engaging underserved populations on preventive approaches and ways to connect into the existing dental delivery system. The American Dental Hygiene Association (17) has proposed that dental hygienists expand their scope of services to include those dental therapists are providing, rather than creating a separate dental therapist worker.

In two states, Alaska (18) and Minnesota (19), dental therapists have either recently been added to the workforce [the Alaska Tribal Health Consortium (ATHC)] or are in the educational pipeline to be deployed in the near future (Minnesota). The educational and training programs in these two states differ considerably. The ATHC decided to base the training of the dental therapists on a long-standing 2-year program offered at the University of Otago in New Zealand. In Minnesota two separate educational approaches are now underway. One is built on an expansion of an existing baccalaureate dental hygiene program and the other on a new curriculum approach offered by the state dental school. There are also several other states at various points in considering the education and deployment of dental therapists to improve access to care for underserved population groups. In the absence of education guidelines for the training of dental therapists, each state will be required to "re-invent the wheel" regarding the basic education plan for dental therapists.

The American Association of Public Health Dentistry (AAPHD) supports the addition of dental therapists to enhance the oral health workforce to reach the underserved and believes that in the absence of a set of national guidelines for the training of dental therapists, the field would differ greatly from state to state thereby confusing the public as to dental therapists' roles and responsibilities. Under the aegis of the AAPHD, therefore, a panel of expert academicians was brought together to define and outline a basic education plan for dental therapists, which could be appropriately locally modified.

Over a 2-year period, the panel (membership listed at the end of this article) came together to address the following goals:

- Outline a proposed 2-year postsecondary school curriculum for education and training of dental therapists.
- Discuss the considerations in the location and placement of such educational programs given the potential range of academic settings that could be available.
- Assess the career path implications of the curriculum to ensure that others in the oral health workforce, and the larger general health workforce, could take maximum advantage of their education, training, and experiential backgrounds in order to participate in the education to develop the dental therapist skills.
- Assess issues and opportunities regarding the accreditation of such programs.

The purpose of this article is to report out the results of the deliberations and findings of the panel on the first two of these four goals. Two additional articles in this issue separately report out the findings of the last two goals.

Methods

With funding from the W. K. Kellogg Foundation and the Josiah Macy Jr. Foundation, in 2008, a panel of twelve academicians from a variety of universities was brought together under the aegis of the AAPHD. They were asked to use their knowledge and experience to develop a 2-year postsecondary education plan for dental therapists in the United States.

The panel undertook its work by reviewing the educational programs offered in New Zealand, Canada, Alaska, and Minnesota. They reviewed the literature and decided to prepare a) a set of principles on which to base dental therapist education programs; b) the competencies for therapists that educational programs would need to prepare its graduates; and c) a general curriculum plan. Three subcommittees prepared draft reports, which the panel as a whole then debated, reviewed, and approved. An additional subcommittee prepared a report on career pathways. The career pathways report is published separately in this special issue of the *Journal of Public Health Dentistry*. The panel members and their affiliations are listed at the end of this report. The chair of the panel, drafted the Introduction and the Discussion for this paper, which was subsequently reviewed and approved by the entire panel.

The panel recognized that graduates of dental therapy programs in some states might need to be licensed practitioners. Because states require graduation from an accredited program for licensure, the panel also decided to consider how such programs could be accredited. Under a supplemental grant provided by the Kellogg Foundation to the AAPHD, an expert in the field of accreditation was funded to prepare a report, which also appears in this special issue.

This report has also been written with the following assumptions:

- The report is not intended to be an advocacy document for or against dental therapists.
- However, if dental therapists are to be educated and trained, the report advocates for both a 2-year postsecondary school level of training, or an additional year training program as part of a dental hygiene curriculum.
- Dental therapist education and training would be based on the assumption that program graduates would provide their services in geographic areas and for populations that are distinguished by issues of access to care, health disparities, and health workforce shortages.
- Dental therapists educated via the recommended curriculum would be trained to function as part of the dental team.
- Dental therapists would work under the general supervision of a dentist.
- Dental therapists would be educated and trained at a technical level of skill and not be expected to function with the full range of scientific and biological level of knowledge and skills of a dentist.

Results

Principles

These are the principles on which dental therapist programs should be based:

- Adding dental therapists to the workforce should reduce barriers to care.
- Education should occur in a professional environment to ensure graduates are prepared to work in a team setting.
- Health promotion and disease prevention will be core elements of the educational program.
- Dental therapist education should be based on the premise that they will work under general supervision of a dentist, using established protocols grounded on evidence-based procedures and practices.
- Programs will be structured to complement rather than compete with other dental professionals.
- Educational plans should identify a limited scope of practice defined by competencies.
- Educational plans should be based upon best practices and include measurable outcomes.
- Quality of the care provided by the dental therapists should be equivalent to the care provided by dentists.
- Programs that prepare dental therapists need to be accredited.
- Certificates of completion or degrees may be awarded to graduates, allowing professional development and career growth.
- Dental therapists should become part of an organized system of care where referral of patients and the responsibility of care are clearly articulated.
- Dental therapists should increase the capacity of dentists to diagnosis and manage more complex patients.

Competencies

The dental therapist is envisioned as an extension of the dental team comprising at least one dentist with a license in the practice jurisdiction and one or more dental therapists working under general supervision with dentist-approved protocol. The competencies below, once achieved, are to be practiced within a dentist-dental therapist team supervised by the dentist, and not for dental therapists to practice independently of such a team. The level of supervision assumed is understood to mean that the dentist is available physically or electronically that permits timely intervention and the dentist maintains responsibility for care provided.

Competency statements (20) are taken to mean complete sets of understanding, skills, and supporting values necessary for the dentist–dental therapist team to function in authorized settings and under general supervision. Although this set of competencies is meant to guide curriculum development, it is expected that performance of some of these tasks may be precluded by scope of practice in different jurisdictions. Supervising dentists retain the responsibility to allow only those tasks they believe dental therapists are competent to perform (21). Additionally, the dental therapist should work under established protocols as established by the

supervising dentist following evidence-based procedures and practices. The curriculum that follows these competencies, therefore, would be expected to be based on contemporary evidence-based protocols and practices.

1. Assessment and judgment
   - **1.1.** Identify conditions requiring consultation and treatment that the dental therapist is competent to provide.
   - **1.2.** Identify conditions requiring treatment by dentists, physicians, other healthcare providers, and manage referrals.
   - **1.3.** Document with existing oral conditions and care are provided (recordkeeping).
   - **1.4.** Perform and obtain commonly used tests and procedures such as radiographs, pulp vitality tests, dental impressions, caries risk assessments, etc.
   - **1.5.** Evaluate patients' oral health knowledge: healthcare professional availability and barriers to seeking and using care such as personal, family, economic, geographic.
   - **1.6.** Inform patients and recommend complete oral care.
   - **1.7.** Create and monitor comprehensive, customized long-term oral healthcare protocols for patients.
   - **1.8.** Identify and use the full range of available dental, medical, and other healthcare resources available in the community.
   - **1.9.** Provide treatment and referral based on assessment of individuals' general and dental health and social and personal circumstances.
   - **1.10.** Provide treatment and referral based on previously approved clinical protocols taking into consideration a patient's social and personal circumstances.
2. Preventive care, per protocol
   - **2.1.** Posses communication skills to provide health education.
   - **2.2.** Follow a protocol for caries prevention and therapeutic intervention based on age, risk factors, and cooperation.
   - **2.3.** Deliver customized oral homecare instruction.
   - **2.4.** Discuss substance abuse counseling, including tobacco cessation and offer appropriate referrals.
   - **2.5.** Fabricate athletic mouth guards particularly in school settings.
   - **2.6.** Place sealants and apply fluorides.
3. Therapeutic care, per protocol
   - **3.1.** Treatment of uncomplicated gingivitis.
   - **3.2.** Extract primary teeth and mobile permanent teeth.
   - **3.3.** Remove sutures and change dressings.
   - **3.4.** Replant and stabilize teeth.
   - **3.5.** Restore primary and permanent teeth with amalgam and composite restorations.
   - **3.6.** Fabricate and place temporary crowns.
   - **3.7.** Prepare and place preformed crowns.
   - **3.8.** Perform pulp therapy as necessary in an emergency setting.
   - **3.9.** Repair defective prosthetic appliances.
   - **3.10.** Re-cement permanent crowns.
   - **3.11.** Perform Interim Therapeutic Restoration procedure.
4. Pharmacological and emergency management, per protocol
   - **4.1.** Administer topical and local anesthetic.
   - **4.2.** Administer nitrous-oxide analgesia.
   - **4.3.** Dispense analgesics, anti-inflammatory agents, and antibiotics necessary for oral health under the direction of the supervising dentist.
   - **4.4.** Recognize and manage complications arising during performance of oral therapy.
   - **4.5.** Recognize and manage medical emergencies occurring during oral therapy.
5. Professional and community responsibility
   - **5.1.** Practice consistent with all applicable legal, regulatory, and ethical standards.
   - **5.2.** Pursue continuous learning, including periodic reassessment of needed training and continued competency.
   - **5.3.** Manage a dental office, including patient records, billing, inventory, equipment, and personnel, including infection control.
   - **5.4.** Participate in professional activities.
   - **5.5.** Advocate for and participate in needs assessment, oral epidemiology surveys, and establish systems to promote oral health at a community level.
   - **5.6.** Work to enhance the oral health resources available in communities.
   - **5.7.** Use telehealth and other technology to communicate with supervising dentists and other healthcare providers.

Curriculum

The content of the curriculum must be of sufficient depth and scope to ensure achievement of the curriculum's defined competencies. Foundational knowledge should be established early in the dental therapy program. Courses included in the curriculum should be at the college level. Written course descriptions, including instructional objectives, and content outlines and evaluation measures must be provided to students at the initiation of each dental therapy course.

Laboratory and clinical practice experience must assure that students achieve clinical competence and are capable of making judgment appropriate to the role of working under general supervision. Dental therapy programs also must have the capacity to provide an adequate number of patient experiences to ensure clinical competence.

It is recommended that at the conclusion of the formal coursework, a preceptorship experience course be included. The dental therapist should work under the direct supervision of the dentists chosen as preceptors. Dentists will need education and training on how to evaluate dental therapy students for competence and on how to utilize dental therapists as part of the oral health team. Currently, dentists trained in the United States are unfamiliar with the potential role that a dental therapist may provide as an extended oral health care team member. Therefore, dental therapy programs should provide or make provision for educational training to dentists specific to incorporating dental therapists into appropriate practice settings.

The curriculum must include content in the following areas (22) and at a depth consistent with that taught in dental hygiene programs. An in-depth 2-year curriculum, a 1-year curriculum that would be additional to a standard dental hygiene curriculum, and course descriptions (23,24) are in the appendices.

- Biomedical concepts include content in head, neck and oral anatomy, development of dentition, physiology, microbiology/immunology, general pathology, nutrition, and pharmacology.
- Dental sciences content includes dentition and tooth morphology, oral function, oral pathology, radiography, periodontology, cariology, pain management, and dental materials.
- Dental therapy sciences includes oral health and oral health counseling, health promotion and prevention, patient management, clinical dental therapy, infection control, community oral health, medical and dental emergencies, legal and ethical dimensions of dental therapy practice. Basic clinical education must include formal curriculum in the scientific principles of dental therapy that extends throughout the curriculum and is coordinated and integrated with clinical experience providing dental therapy care.
- General education includes oral and written communications and cultural competence.
- Telehealth communication skills include instruction and experience appropriately using electronic media to record and transmit images for the purpose of consultation and diagnosis.

Discussion

The principles, competencies, and the curriculum proposed in this manuscript are designed to assure the proposed dental therapist in the United States are prepared to provide a range of services that can extend our present dental workforce and thus improve access to care, especially in rural environments, inner cities, and public sector health facilities.

There were several principles that the panel considered essential to understanding the role of the dental therapist. General supervision of a dental therapist was felt to be a necessary component to the efficiency of this oral health provider, and was defined as supervision by a dentist either in the same physical location, or by "real time" communication via various current or developing electronic formats. It was agreed by the panel that the supervising dentists always were the responsible providers for the dental therapist's care including quality, conduct of practice, and outreach activities. The described competencies and curriculum are those judged by the panel to be required in order to prepare dental therapist to practice safely, to provide quality care and to have an impact on the oral health needs of the underserved populations. It also was a consensus that the dental therapist is one of the several "extenders" of an oral health care team that includes dental hygienists, dental therapists, dental lab technologists, dental receptionists, and dental assistants.

Those competencies listed in this article are those judged by the panel to be required in order to prepare a dental therapist to practice effectively and safely under general supervision. These understandings, skills, and supporting values include assessment and judgment, preventive and therapeutic care, pharmacological and emergency care, as well as professional and community responsibilities. Competencies for this new practitioner have been proposed by other entities (25,26). Although this set of competencies is meant to guide curriculum development, it is expected that performance of some of these tasks may be precluded by scope of practice in different jurisdictions. However, understanding the importance of health promotion, the panel included preventive care (competence 2) and advocacy to promote oral health at the community level (competence 5.5 and 5.6).

The proposed curricula are structured to facilitate two career paths to becoming a dental therapist. The 2-year curriculum is designed for student entry after high school. The 1-year curriculum is designed for registered dental hygienist or dental hygiene students to fulfill the dental therapist requirements with 1 additional year. The 1-year curriculum necessarily compresses clinical skill development, laboratory courses, and preceptorship into the 1-year time frame.

These curricula are intended to enable educational programs to meet the competencies and skills necessary for impact to the oral health care needs in the United States The 2-year curriculum structure is similar to the educational model that has been conducted successfully in other countries for over 50 years. These proposed curricula should not be considered a benchmark but rather a framework for the minimum recommended courses. Institutions will certainly find diverse approaches of instruction to carry out the curriculum. The panel also recognized that if such programs are part of a 4-year college or university curriculum, these institutions may require courses for a 4-year baccalaureate degree. In a community college, the suggested 2 years of education may satisfy the requirements for an Associate of Arts degree.

One of the areas of discussion by the panel concerned the suggested period of preceptorship under the direct supervision of a licensed dentist prior to working under general supervision of dentists. Such a period of time provides the dentist an opportunity to gain confidence on the attitudes, skills, and judgment of the therapist. The Alaska Native Tribal Consortium system requires 400 hours of such additional training after graduation. The dentist then prepares a set of "standing orders" that enumerates protocols and procedures the therapist can do under general supervision (27). It is important that attention be directed to developing educational programs for dentists to learn how to work with dental therapists as part of the oral health team and to supervise them appropriately.

The panel believes that collaborative programs between universities or community colleges with dental colleges would be the best setting to provide the educational program for the dental therapist because they would use existing resources to advantage.

The goal of this report is to suggest an organized national approach to educating dental therapists. The absence of program principles, competencies, and curriculum necessarily would result in great variation from one jurisdiction to another. The proposed programs for this new oral health provider will serve our nation by increasing the dental workforce and thus improving access to care for the underserved.

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Appendix 1

A Template for a Two-Year Post-Secondary Dental Therapy Curriculum (Trimesters)

Template for a Two-Full Calendar Year Post-Secondary Dental Therapist Curriculum

First trimester

Fundamentals of Dental Therapy, Cariology and Periodontology I (lecture and laboratory)
Oral Anatomy, Physiology, Embryology & Histology
Microbiology, Immunology & Infection Control
Radiology I
Dental Materials for Dental Therapists

Second trimester

Fundamentals of Dental Therapy, Cariology and Periodontology II (lecture and laboratory)
Clinical Dental Therapy I
Medical & Dental Emergencies, Pharmacology & Therapeutics
General & Oral Pathology
Community Dentistry and Dental Health Education
Radiology II

Third trimester

Clinical Dental Therapy II
Technical writing and communication
Nutrition in Oral Health
Dental Anesthesia

Fourth trimester

Clinical Dental Therapy III
Professionalism, Ethics and Behavioral Science for the Dental Therapist
Telehealth
Community Prevention Project

Fifth trimester

Clinical Dental Therapy IV
Dental Therapy Seminar

Sixth trimester

Clinical Dental Therapy V
Preceptorship Experience

Appendix 2

Template for a Two-Full Calendar Year Post-Secondary Dental Therapist Curriculum (Quarters)
Template for a Two-Year Post-Secondary Dental Therapist Curriculum

First quarter

Fundamentals of Dental Therapy, Cariology and Periodontology I (lecture and laboratory)
Oral Anatomy, Physiology, Embryology & Histology
Dental Materials for Dental Therapists

Second quarter

Fundamentals of Dental Therapy, Cariology, and Periodontology II (lecture and laboratory)
Microbiology, Immunology & Infection Control
Radiology I

Third quarter

Clinical Dental Therapy I
Medical & Dental Emergencies, Pharmacology & Therapeutics
General & Oral Pathology

Fourth quarter

Clinical Dental Therapy II
Community Dentistry and Dental Health Education
Radiology II
Dental Anesthesia

Fifth quarter

Clinical Dental Therapy III
Technical writing and communication
Nutrition in Oral Health

Sixth quarter

Clinical Dental Therapy IV
Professionalism, Ethics and Behavioral Science for the Dental Therapist
Telehealth
Community Prevention Project

Seventh quarter

Clinical Dental Therapy V
Dental Therapy Seminar

Eighth quarter

Preceptorship Experience

Appendix 3

Template for a One Year Curriculum as Part of a Dental Hygiene Curriculum
Template for a One Year Curriculum as Part of a Dental Hygiene Curriculum

First trimester

Dental Materials for Dental Therapists
Fundamentals of Dental Therapy, Cariology and Periodontology II (lecture and laboratory)
Clinical Dental Therapy I
Medical & Dental Emergencies, Pharmacology & Therapeutics

Second trimester

Clinical Dental Therapy III
Dental Anesthesia
Telehealth
Dental Therapy Seminar
Preceptorship Experience

Third trimester

Clinical Dental Therapy V
Preceptorship Experience

Appendix 4

Course Descriptions
Suggested Course Descriptions

Fundamentals of dental therapy, cariology and periodontology I (lecture and laboratory)

(lecture) Coursework should include an introduction to the Dental Therapy with an emphasis on patient assessment and evaluation processes, cultural competence, professionalism, and the development of basic clinical skills.

(laboratory) This course should provide the clinical application of the lecture portion. The primary emphasis should be on patient assessment and evaluation processes, cultural competence, professionalism, and the development of basic clinical skills. The dental therapy student should have an opportunity to practice these techniques on manikins and student partners in the preclinical laboratory setting.

Oral anatomy, physiology, embryology & histology

This course should focus on the structure and function of the tissues and organs of the head and neck and oral cavity including a study of the growth, development and histologic anatomy.

Microbiology, immunology & infection control

This course should focus on the principles of microbiology with emphasis on microorganisms found in the oral environment and human disease. Topics should include an overview of microbiology and aspects of medical/dental microbiology, disease transmission, host resistance, and immunity and the identification and management of pathogens. Upon completion, students should be able to demonstrate aseptic and sterile techniques as well as knowledge of oral microorganisms and disease.

Radiology I

Topics in this course should include a historical perspective of radiology, various types of ionizing radiation, X-ray production, radiation dosage and the current guidelines for radiation safety. This course should also cover theory and practice of exposing, digital processing, and interpreting dental radiographs.

Dental materials for dental therapists

This course should introduce students to the physical properties and indications for use of materials and corresponding procedures utilized in oral health care. Topics should include preventive and restorative materials appropriate for the dental therapist. Upon completion, students should be able to demonstrate knowledge and skills in the laboratory and/or clinical application of routinely used dental materials and chairside functions including prosthetic repair.

Fundamentals of dental therapy, cariology and periodontology II (lecture and laboratory)

(lecture) This course should provide didactic coursework and laboratory exercises in dental therapy concepts necessary for providing caries detection, sealants and treatment and prevention of uncomplicated gingivitis. Topics include: planning for dental therapy treatment, record keeping and appropriate preventive and treatment procedures including: patient education, oral prophylaxis and fluorides. Upon completion, students should be able to demonstrate knowledge needed to complete patient evaluation, caries detection, sealant placement, and the treatment and prevention of uncomplicated gingivitis.

(laboratory) This course should continue student skill development in providing patient evaluation, caries detection, sealant placement and the treatment and prevention of uncomplicated gingivitis. Upon completion, students should be able to demonstrate the skills needed to complete patient

evaluation, caries detection, sealant placement and the treatment and prevention of uncomplicated gingivitis.

Clinical dental therapy I

This course should provide dental therapy students with experience in providing patient services through performing the treatment and prevention of simple gingivitis, periodontal/caries assessment, exposing and processing radiographs, presenting patient education, preventive applications and charting the oral cavity.

Dental office emergencies, pharmacology & therapeutics

This course should focus on the common drugs utilized in dental therapy practice and prescribed to patients and the management of dental office emergencies. Topics should include methods of adverse outcome prevention, initial management of a variety of emergencies, legal considerations and the necessary equipment and medications to have at ready. This course should also provide basic drug terminology, general principles of drug actions, routes of administration, dosages and adverse reactions of drugs commonly used in dental therapy. Emphasis should be on developing a basic knowledge of drugs in the overall understanding of patient histories and health status including drugs utilized for premedication prophylaxis. Upon completion, students should be able to recognize that each patient's general health or drug usage may require modification of the treatment procedures and to recognize, assess and manage various dental office emergencies and activate advanced medical support when indicated.

General & oral pathology

This course should provide a general knowledge of oral pathological manifestations associated with selected systemic and oral diseases. Topics should include specific microbial and viral diseases, developmental and degenerative diseases and conditions and the associated immune and inflammatory responses with emphasis on the dental therapy student's ability to recognize abnormalities. Upon completion, students should be able to differentiate between normal and abnormal tissues and refer unusual findings to the dentist for diagnosis and follow-up.

Community dentistry and dental health education

This course should provide an overview of the principles and methods used in assessing, planning, implementing, and evaluating community dental health programs. Topics should include biostatistics and epidemiology, research methodology, preventive dental care, dental health education, program planning and the access and utilization of dental services.

Radiology II

This course should provide clinical experience on the fundamentals of oral radiographic techniques utilizing radiation safety and infection control protocols in addition to basic interpretation of radiographs. The course should include patient selection criteria and the utilization of common radiographic techniques, exposure of intra-oral and extra-oral radiographs, as well as, the identification of normal anatomical radiographic landmarks and radiographic artifacts.

Clinical dental therapy II

This course should continue the dental therapy student's preclinical skill development in providing restorative oral health care. Emphasis should be placed on the development of skills in restorative dentistry. Upon completion, students should be able to assess patients' needs and provide basic restorative dentistry treatment.

Nutrition in oral health

This course should focus on nutrition and diet as related to oral health, the utilization of nutrients and the biochemistry of digestion. Special emphasis should be placed on understanding diet as part of a patient's overall health and the role of the dental therapist in providing nutritional and dietary counseling.

Dental anesthesia

This course should prepare the dental therapy student with the necessary theory to appropriately and successfully administer topical anesthesia, local anesthesia and/or nitrous oxide analgesia to provide appropriate pain control when caring for dental therapy patients.

Technical writing and communication

This course should emphasize development of the writing and presentation skills needed by a dental therapist. Coursework should emphasize writing and presentation skill development including utilizing Word and PowerPoint software, audience assessment, topic selection, and editing. Upon completion, students should be able to produce well-developed essays and letters using standard written English and prepare and deliver well-organized presentations with appropriate audiovisual support.

Clinical dental therapy III

Under the direct supervision of dentists, this course should continue the skill development of students in providing oral health care to patients. Emphasis should be placed on the development of skills in dentistry including: taking a medical/dental history, collecting and recording clinical data, exposing and processing film and/or digital radiographs, determining and recording preliminary assessment of dental disease, providing preventive and basic restorative dentistry treatment.

Telehealth

This course should focus on current telehealth technologies which allow clinicians to conduct remote assessments and consults, as well as capture and store patient information for further evaluation and sharing with a consulting dentist or physician. Students should be able to learn how to use the telemedicine medical devices as well as collaborate with telehealth dentists, physicians and nurses as a telehealth team and understand the applicable laws with use of telehealth applications.

Professionalism, ethics and behavioral science for the dental therapist

This course should focus on professional development, ethics, and jurisprudence with applications to practice management. Topics include conflict management, state laws, abuse, and legal liabilities as health care professionals.

Community prevention project

Students in this course should have the opportunity to participate field assessments in a variety of community dental health service learning activities which require application of dental public health principles and concepts.

Clinical dental therapy IV

Under the direct supervision of dentists, this course should continue the skill development of students in providing oral health care to patients. Emphasis should be placed on the development of skills in dentistry including: taking a medical/dental history, collecting and recording clinical data, exposing and processing film and/or digital radiographs, utilizing teledentistry equipment, determining and recording preliminary assessment of dental disease, providing preventive and basic restorative dentistry treatment and uncomplicated oral surgical procedures.

Dental therapy seminar

This Evidence Based Dentistry seminar course should serve as a means of a capstone course in the dental therapy curriculum and utilize the best practices in actual patient cases that the dental therapy students have treated as an educational resource. This course should also be designed to assist in preparing dental therapy students for the written and clinical examinations required for licensure and entry into the profession.

Clinical dental therapy V

Under the direct supervision of dentists, this course should continue the skill development of students in providing oral health care to patients. Emphasis should be placed on the development of skills in dentistry including: taking a medical/dental history, collecting and recording clinical data, exposing and processing film and digital radiographs, utilizing teledentistry equipment to transmit images, determining and recording preliminary assessment of dental disease, providing preventive and basic restorative dentistry treatment and uncomplicated oral surgical procedures.

Preceptorship experience

Students are assigned to the preceptor dentist that they will work with after graduation in a 400 hour (10 week) experience. Students provide patient care under the direct supervision of the preceptor dentist. Upon completion of the experience the preceptor dentist verifies which procedures the dental therapist will be able to provide under general supervision.