

***The TCC Graduate:
an Educational Blueprint
for the 21st Century***

Fall 2014

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INTRODUCTION

In January, 2006, a taskforce of Texas Chiropractic College (TCC) faculty and administrators initiated the TCC Graduate Project in response to a charge by the TCC Curriculum Committee to identify the essential abilities of graduates to practice effectively in a changing health care environment.

An environmental scan and literature review was undertaken to identify important trends and drivers for change.

Outcomes-Based Education

An important educational trend is the emergence of outcomes-based education which is characterized by a focus on the product (competencies) and learning outcomes. A key driver is the accountability movement in education.

Evidence-Based Care

Another trend is evidence-based care. This approach to practice integrates clinical judgment and proficiency with the best available external clinical evidence from relevant research in the context of individual patient preferences, values, and predicaments. Drivers for evidence-based care includes the business community, government agencies, consumer groups, third party payers, and the academic community.

Patient-Centered Care

An additional trend is the focus on patient-centered care which emphasizes patients' needs and feelings and provides for better understanding of the impact of health care decisions on patients' lives. Drivers for patient-centered care include patient advocacy groups and health professions educators.

Health Care Informatics

A rapidly developing trend is health care informatics. This field deals with resources, devices and methods for optimizing the storage, retrieval and management of health information for problem solving and decision making. Drivers include technology advances, third party payers, the Federal Government, the academic community and consumer groups.

Integrative Health Care

There is an emerging trend toward integrative health care which fosters interprofessional collaboration, communication and respect between and among

health professionals. Drivers for integrative health care include consumer demand, the military and Veteran's Administration, and Complementary and Alternative Medicine (CAM) clinics.

Special Populations Care

Changing trends in population demographics have identified the need for special populations care for such groups as the elderly and the underserved.

Professionalism

Professionalism refers to the ability to carry out professional responsibilities, adhere to ethical principles and be sensitive to a diverse patient population. The topic of professionalism is generating a lot of discussion among regulatory boards and in the academic community.

Quality Improvement

The environmental scan and literature review identified the importance of quality improvement in health care. Drivers for quality improvement includes consumer groups, government agencies, the business community, and the academic community.

Professional Development and Practice-Based Learning

Finally, professional development and practice-based learning are increasingly being discussed by regulatory boards and the academic community as an important issue. This includes the ability to assess one's own patient care to identify learning needs and to develop a learning plan for improvement.

Several key reports and papers have influenced trends in chiropractic education. The Institute of Medicine Report in 2003, titled "Health Professions Education: A Bridge to Quality", identified core areas of practitioner proficiency and suggested strategies for restructuring clinical education to be consistent with the principles of 21st century health care. The report from the Institute for Alternative Futures in 2005 titled "The Future of Chiropractic Revisited: 2005-2015" made a series of recommendations regarding research, standards of practice, integration with main stream health care, patient-centered care, professional unity, public health, wellness and geriatrics. The World Federation of Chiropractic Report in 2005 on chiropractic identity provided a series of attributes that Doctors of Chiropractic should possess to be considered spinal care experts. An article in the Journal Chiropractic and Osteopathy in 2005 suggested criteria for a defensible model for the profession. The 2005 "Job Analysis of Chiropractic" and the 2010 "Practice Analysis of Chiropractic" by the National Board of Chiropractic Examiners, summarized the practice of chiropractic based upon a national survey.

A key element in the success of the TCC Graduate Project is to ensure that the programmatic outcomes are met. This is accomplished by identifying and utilizing appropriate assessment methods that best measure the various learning outcomes and competencies developed. The health professions education field has yielded an ever increasing body of knowledge related to competency assessment over the last 20 years. Multiple methods of assessment related to the TCC Graduate Project have been identified as necessary to effectively monitor the success of educational initiatives. These include:

- ◆ Objective Structured Clinical Examinations (OSCE)
- ◆ Global Rating Assessments
- ◆ Standardized Patient Encounters
- ◆ Technology Based Assessments
- ◆ Written Examinations
 - Multiple Choice Questions
 - Extended Matching Questions
 - Key Features Examinations
 - Script Concordance Tests
- ◆ Direct Observation
- ◆ Multi-Source Feedback Evaluations
- ◆ Checklist Evaluations
- ◆ Learning Inventory and Survey Tools

In spring 2012 the Curriculum Committee updated the 2008 TCC Graduate Educational Blueprint to include the new CCE meta-competencies and additional TCC meta-competencies. In fall 2014 the TCC meta-competencies were revised following a Curriculum Committee review. This review included a further search for CCE/TCC meta-competency overlap and a focus on outcomes in the additional TCC meta-competencies (meta-competencies 8 and 9).

Please refer to the Glossary of Terms (pages 28-30) for the explanation/definition of key terms used in this document.

SECTION I: COMPETENCIES AND OUTCOMES

Clinical competence, as linked to professional competence, is the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served (Epstein, 2002). Clinical competence is not an achievement but rather a habit of lifelong learning. It is also contextual, reflecting the relationship between a person's abilities and the tasks he or she is required to perform in a particular situation in the real world (Epstein, 2007).

Section I.A. The Role of Identity, Philosophy and Principles of Chiropractic

TCC recognizes that the practice of any profession is influenced by the history, current philosophy and principles associated with it. A statement of this position has been established and provides the basis for the graduate's approach to practice.

Texas Chiropractic College's Philosophy of Chiropractic

These philosophical position statements have emerged from six philosophies. These statements include some limited components of the philosophies of vitalism, holism, naturalism, therapeutic conservatism, critical rationalism and humanism.

A Doctor of Chiropractic understands the following principles:

- Health is an optimal state of life.
- Optimal health is unique for every individual.
- The nervous system is central to the health and function of the entire body.
- The functioning of the musculoskeletal system is integrated with neurological function. The body's regulatory systems are integrated with neurological function.
- There is an inherent natural tendency of the body to restore and maintain health. This is accomplished by compensating homeostatic mechanisms, reparative processes and adaptive responses to genetic and acquired limitations. Any departure from this state represents a failure to adapt, or an adverse adaptation, to the internal and external environment.
- Health is an expression of biological, psychological, social and spiritual factors. "Disease" (the failure to adapt to biological, psychological, social and spiritual stresses) and "illness" (the subjective experience and behavior of the individual with the disease or injury) are multi-causal. This is a holistic philosophy of health that suggests that all factors, mind, body and spirit, influence how the body functions, maintains, and heals itself.
- Each individual must take responsibility for their own health.

- The role of a doctor of chiropractic is to assist an individual with their responsibility in attaining optimal health by enabling each person to realistically fulfill their biological, human, and social potentials.
- A doctor of chiropractic serves as a facilitator who provides hands-on treatment, patient education and who also monitors patient compliance, progress and outcomes through appropriate diagnostic and examination procedures in a cooperative venture with the patient.
- Healthcare should be focused on facilitating the body's natural restorative mechanisms with the least invasive approaches utilized first.
- Patient care should address causes and contexts in addition to the management of symptoms.
- Early intervention, timely diagnosis and treatment are of utmost importance to help the patient to regain overall health.
- Patient care should respect each patient's values, beliefs, expectations and health care needs.
- Critical rationalism should be applied to advance the knowledge and validity of chiropractic methods used in health care. As such, scientific theories and other knowledge claims pertaining to the understanding of illness, disease states, injuries and the diagnosis and treatment of these conditions along with any methods for the optimization of human health should be supported or refuted based on sound logic, reason and any valid empirical measures or tests that may apply.

Identity, Philosophy and Principles of Chiropractic Outcomes
<ol style="list-style-type: none"> 1. Describe and support a contemporary philosophy of chiropractic as it relates to the philosophical constructs of vitalism, holism, naturalism, therapeutic conservatism, humanism and critical rationalism. 2. Discuss contemporary chiropractic tenets and principles. 3. Identify current chiropractic theories and evaluate their scientific basis. 4. Apply logic and critical thinking to various opinions and claims made about the chiropractic profession and the care rendered by doctors of chiropractic. 5. Discuss the role of the doctor of chiropractic as a primary care health care provider.

Section I.B. The Role of Understanding Basic Clinical and Behavioral Sciences in the Practice of Chiropractic

The basic clinical and behavioral sciences provide the foundation for clinical competence and decision making. A strong knowledge of these sciences gives the graduate a good understanding of the human body and its functions from an anatomical, physiological, chemical and functional perspective.

Basic Clinical and Behavioral Sciences Outcomes
1. Relate each of the major organ systems to the normal structure and function of the individual.
2. Apply basic principles of biomechanics and kinesiology to the assessment and management of disorders of the locomotor system.
3. Explain the basic principles of human behavior and the social relationships between individuals, family, social groups and society at large.
4. Describe the etiology and pathological processes and alterations in the structure and function of organ systems resulting from various disorders, diseases and conditions.
5. Correlate basic science and epidemiologic knowledge with clinical reasoning.
6. Correlate the basic sciences with treatment procedures including mechanism of action and adverse reactions.

Section I.C. The Role of Clinical Competency in the Practice of Chiropractic

Current trends in health professions education are moving toward meta-competencies. The concept of meta-competence as “that which allows someone to locate a particular competence within a larger framework of understanding” (Fleming, 1991). The meta-competencies along with their required components and outcomes provide a framework to insure the TCC graduate has acquired the necessary attitudes, knowledge and skills necessary for entry into chiropractic practice.

This section includes the Council on Chiropractic Education (CCE) meta-competencies and 2 additional meta-competencies developed by the institution. Institutional requirements beyond CCE requirements are prefaced by (TCC). These meta-competencies help assure that the TCC Graduate Doctor of Chiropractic is capable of navigating the changing health care environment.

META-COMPETENCY 1 - ASSESSMENT & DIAGNOSIS

An assessment and diagnosis requires developed clinical reasoning skills. Clinical reasoning consists of data gathering and interpretation, hypothesis generation and testing, and critical evaluation of diagnostic strategies. It is a dynamic process that occurs before, during, and after the collection of data through history, physical examination, imaging, and laboratory tests.

REQUIRED COMPONENTS

- A. Compiling a case-appropriate history that involves a process focused on patients' health status, including a history of any present illness, systems review, and review of past, family and psychosocial histories for the purpose of directing clinical decision-making.
- B. Determining the need for and availability of external health records.
- C. Performing case-appropriate physical examinations that include evaluations of body regions and organ systems, including the spine and any subluxation/neuro-biomechanical dysfunction, that assist the clinician in developing the clinical diagnosis (es).
- D. Utilizing diagnostic studies and consultations when appropriate, inclusive of imaging, clinical laboratory, and specialized testing procedures, to obtain objective clinical data.
- E. Formulating a diagnosis (es) supported by information gathered from the history, examination, and diagnostic studies.

OUTCOMES

- 1) Documentation of a list of differential diagnosis (es) and corresponding exams from a case-appropriate health history and review of external health records.
- 2) Determination and documentation of the significance of physical findings and thereby the need for follow-up through a physical examination, application of diagnostic and/or confirmatory tests and tools, and any consultations.
- 3) Generation of a problem list with diagnoses after synthesizing and correlating data from the history, physical exam, diagnostic tests, and any consultations.
- 4) (TCC) Demonstrate the ability to use clinical outcome measures.

META-COMPETENCY 2 - MANAGEMENT PLAN

Management involves the development, implementation and documentation of a patient care plan for positively impacting a patient's health and well-being, including specific therapeutic goals and prognoses. It may include case follow-up, referral, and/or collaborative care.

REQUIRED COMPONENTS

META-COMPETENCY 2 - MANAGEMENT PLAN

- A. Establishing a management plan appropriate for the diagnosis and the patient's health status, including specific therapeutic goals and prognoses.
- B. Determining the need for emergency care, referral and/or collaborative care.
- C. Providing information to patients of risks, benefits, natural history and alternatives to care regarding the proposed management plan.
- D. Obtaining informed consent.
- E. Determining the need for chiropractic adjustment and/or manipulation procedures, or other forms of passive care.
- F. Determining the need for active care.
- G. Determining the need for changes in patient behavior and activities of daily living.
- H. Monitoring patient progress and altering management plans accordingly.
- I. Recognizing the point of a patient's maximum therapeutic benefit and release of the patient from corrective care, and communicating rationales for any ongoing care.
- J. Incorporating patient values and expectations of care in the management plan.

OUTCOMES

- 1) Formulation and documentation of an evidence-informed management plan appropriate to the diagnosis, inclusive of measureable therapeutic goals and prognoses in consideration of bio-psychosocial factors, natural history and alternatives to care.
- 2) Documentation of informing the patient of any need for emergency care, referral and/or collaborative care.
- 3) Documentation of informed consent.
- 4) Deliverance and documentation of appropriate chiropractic adjustments/manipulations, and/or other forms of passive care as identified in the management plan.
- 5) Deliverance and documentation of appropriate active care as identified in the management plan.
- 6) Documentation of patient counseling regarding recommended changes in life style behaviors and activities of daily living.
- 7) Documentation of modifying the management plan as new clinical information becomes available.
- 8) Documentation of end points of care.

META-COMPETENCY 2 - MANAGEMENT PLAN

9) (TCC) Assess nutritional status of patients and provide appropriate interventions or recommendations utilizing evidence based nutritional principles.

META-COMPETENCY 3 - HEALTH PROMOTION AND DISEASE PREVENTION

Health promotion and disease prevention requires an understanding and application of epidemiological principles regarding the nature and identification of health issues in diverse populations and recognizes the impact of biological, chemical, behavioral, structural, psychosocial and environmental factors on general health.

REQUIRED COMPONENTS

- A. Assessing the patient's health and determining areas of potential health improvement (e.g. disease screening, ergonomics, nutrition, fitness, posture, smoking cessation, and risk factor reduction).
- B. Addressing appropriate hygiene in a clinical environment.
- C. Coordinating health improvement strategies with other health care professionals.
- D. Identifying public health issues relevant to patients.

OUTCOMES

- 1) Documentation of management of health risks and public health issues, including reporting, as required.
- 2) Explanation of health risk factors, leading health indicators and public health issues to patients.
- 3) Provision of recommendations regarding patients' health status, behavior and life style.
- 4) Recommendation or provision of resources (educational, community-based, etc.) and instruction designed to encourage a patient to pursue change.
- 5) Recommendation of dietary habits and/or nutritional approaches designed to restore, maintain or improve the patient's health.
- 6) Implementation of appropriate hygiene practices in the clinical environment.
- 7) Communication of health improvement strategies with other treating health professionals.
- 8) (TCC) Explain the clinical responsibilities a doctor of chiropractic plays in achieving and maintaining wellness through health promotion and disease/injury prevention strategies.

META-COMPETENCY 4 - COMMUNICATION AND RECORD KEEPING

Effective communication includes oral, written and nonverbal skills with appropriate sensitivity, clarity and control for a wide range of healthcare related activities, to include patient care, professional communication, health education, and record keeping and reporting.

REQUIRED COMPONENTS

- A. Communicating effectively, accurately and appropriately, in writing and interpersonally with diverse audiences (e.g. patients, their relatives and others involved in their care; regulatory agencies, third party payers and employers; and doctors of chiropractic and other healthcare professionals).
- B. Acknowledging the existence and nature of different value systems of patients and others.
- C. Creating and maintaining accurate and legible records.
- D. Complying with regulatory ethical standards and responsibilities involving patient and business records.

OUTCOMES

- 1) Provision of accurate and understandable explanations of health issues and management options considering the patient's health care needs and goals.
- 2) Documentation of any health risks and management options considering the patient's health care needs and goals.
- 3) Consideration of the patient's ethnicity, cultural beliefs, and socio-economic status when communicating.
- 4) Generation of patient records, narrative reports and correspondences that are accurate, concise and legible.
- 5) Evidence of safeguarding the patient's protected health and financial information.

META-COMPETENCY 5 - PROFESSIONAL ETHICS AND JURISPRUDENCE

Professionals comply with the law and exhibit ethical behavior.

REQUIRED COMPONENTS

- A. Applying knowledge of ethical principles and boundaries.
- B. Applying knowledge of health care law.
- C. Applying knowledge of expected professional conduct.

OUTCOMES

META-COMPETENCY 5 - PROFESSIONAL ETHICS AND JURISPRUDENCE

- 1) Maintenance of appropriate physical, communication (verbal and non-verbal) and emotional boundaries with patients.
- 2) Maintenance of professional conduct with patients, peers, staff, and faculty in accordance with established policies.
- 3) Compliance with the ethical and legal dimensions of clinical practice
- 4) Generation of patient records and diagnostic and billing codes in compliance with federal and state law.

META-COMPETENCY 6 - INFORMATION AND TECHNOLOGY LITERACY

Information and technology literacy are manifested in an ability to locate, evaluate and integrate research and other types of evidence, including clinical experience, to explain and manage health-related issues and use emerging technologies appropriately.

REQUIRED COMPONENTS

- A. Demonstrating knowledge of relevant research methodologies and ability to critically appraise and apply the literature to clinical cases.
- B. Using health informatics to access information.

OUTCOMES

- 1) Critical appraisal of scientific literature and other information sources.
- 2) Incorporation of health care informatics into patient care.
- 3) (TCC) Demonstrate that clinical decisions are made using the best available relevant research evidence, clinical expertise, and patient needs, preferences, and values.

META-COMPETENCY 7 - INTELLECTUAL AND PROFESSIONAL DEVELOPMENT

Intellectual and professional development is characterized by maturing values and skills in clinical practice; the seeking and application of new knowledge; and the ability to adapt to change.

REQUIRED COMPONENTS

META-COMPETENCY 7 - INTELLECTUAL AND PROFESSIONAL DEVELOPMENT

A. Demonstrating knowledge of basic, social and clinical sciences sufficient to promote intellectual development and effective patient care.

B. Reflecting on and addressing personal and professional learning issues

C. Providing evidence of critical thinking skills.

OUTCOMES

1) Satisfactory performance on licensing board exams and other assessments of student learning.

2) Use of appropriate self-evaluation and other feedback for personal and professional development.

3) Incorporation of critical thinking and clinical reasoning with clinical experience into patient care.

(TCC) META-COMPETENCY 8 – BUSINESS ASPECTS OF PRACTICE

The business aspect of practice includes the development, organization, and operation of a chiropractic practice. It incorporates business law, business ethics, and sound business management and marketing principles.

OUTCOMES

1) Identify support systems and organizations important to starting and maintaining a successful business.

2) Demonstrate various strategies of personnel hiring and management.

3) Demonstrate awareness and utilization of appropriate legal documents, billing (accounting), coding, and tax forms common to the chiropractic practice.

4) Identify appropriate marketing strategies for chiropractic practice.

(TCC) META-COMPETENCY 9 – QUALITY ASSURANCE / QUALITY IMPROVEMENT

Health care quality is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (Institute of Medicine).

OUTCOMES

(TCC) META-COMPETENCY 9 – QUALITY ASSURANCE / QUALITY IMPROVEMENT

- 1) Explain how evidence is translated into best practice guidelines for patient care.
- 2) Identify examples of the three major classes of quality problems (overuse, underuse, and misuse) and understand how each does harm to the delivery of health care and cost to the patient.
- 3) Discuss how areas such as the doctor-patient relationship, organization systems, societal expectations, and the legal system may impact or lead to health care errors.
- 4) Apply quality improvement methods and tools to a chiropractic practice

SECTION II: PRIORITY HEALTH CARE ISSUES

The following is a list of conditions / disorders that may be seen in a doctor of chiropractic's office. This list was developed for the following reasons:

1. to direct curriculum content;
2. to guide the selection of conditions for the various forms of case-based learning;
3. to assist in the development of diagnostic and management protocols;
4. to provide guidance to the students for active learning; and
5. as a resource for review and critical appraisal.

This list was generated from several different sources: 2005 Job Analysis Survey conducted by the National Board of Chiropractic Examiners; an internal survey of clinical faculty conducted by TCC Graduate Task Force on priority health care conditions; and information gathered from Newble's article: Developing an outcome-focused core curriculum (Newble et al, 2005). The list of conditions includes:

1. conditions that are commonly diagnosed in a chiropractic practice;
2. conditions that are commonly treated solely and / or co-managed by a doctor of chiropractic;
3. conditions that should be referred and/or are contraindicated to a doctor of chiropractic's care;
4. conditions that are preventable; and
5. conditions that would be useful as a conceptual teaching model.

This list is not all inclusive. Each instructor may wish to add to the conditions / disorders that are taught with the associated clinical presentation. However, the identified patient presentations and conditions / disorders should be addressed in the curriculum and should include when appropriate:

Epidemiology, Etiology, Pathogenesis, Natural History, Clinical Presentation, Management, Prognosis and Prevention

Allergies
Alzheimer's
Amyotrophic Lateral Sclerosis
Anemias
Angina/Myocardial Infarction
Anxiety
Appendicitis
Arthritis - Inflammatory / Non-inflammatory
Avascular Necrosis
Bell's Palsy
Benign Prostatic Hypertrophy
Bronchitis - acute
Bursitis - Subacromial, Trochanteric, Olecranon, Patellar
Calculi
Cancer - Breast, Colon, Lung, Prostate, Skin, Reproductive, MM / Leukemia, Metastasis
Capsulitis
Cataract
Cauda Equina Syndrome
Central/Lateral Canal Stenosis
Cerebrovascular Accident
Cholecystitis / Cholelithiasis
Cirrhosis
Colitis
Common Cold
Compartment Syndromes
Concussion
Congenital Anomalies - Spinal/Extraspinal
Congestive Heart Failure
Conjunctivitis
COPD - Chronic Bronchitis, Emphysema, Asthma
Corneal Abrasions
Costochondritis
Crohn's Disease
Depression
DeQuervain's Disease
Diabetes Mellitus
Dislocation
Diverticulitis/osis
Dupuytren's Contractures
Epicondylitis
Facet Syndrome
Fibromyalgia
Fracture
Gastritis
Gastroesophageal Disease / Esophagitis
Glaucoma
Guillen-Barre' Syndrome
Headache - Cervicogenic, Cluster, Migraine, Tension
Hepatitis
Hernia - Inguinal/Umbilical
Hypertension / Hypotension
Impingement Syndrome
Influenza
Intervertebral Disc Syndrome
Irritable Bowel Syndrome
Labral Tears
Low Back Pain - Chronic
Macular Degeneration
Meningitis
Meniscal Injuries
Menopause
Multiple Sclerosis
Muscular Dystrophies
Myasthenia Gravis
Myofascial Pain Syndrome
Myositis
Neoplasia
Nutritional Disorders - Deficiencies / Excesses
Osteomyelitis
Otitis - Externa/Media/Interna
Pancreatitis
Parkinson's Disease
Patellofemoral Tracking Disorders
Peptic Ulcer Disease
Peripheral Neuropathies - Tunnel/Non-tunnel Syndromes
Peripheral Vascular Disease - Arterial/Venous
Pertussis
Pharyngitis
Plantar Fasciitis

Pneumonia	Sprains
Postural Syndromes (Upper & Lower Cross Syndrome)	Strains
Pregnancy	Subluxation/Joint dysfunction
Premenstrual Syndrome / PMDD	Systemic Lupus Erythematosus
Presbycusis	Tendinitis/Tendinosis
Radiculitis/Radiculopathy	Thyroid Disorders - Hyper/Hypo
Refractive Errors	TMJ Syndrome
Rotator Cuff Tears	Tonsillitis
Sacroiliac Joint Syndrome	Triangular Fibrocartilage Tears
Scheuermann's Disease	Trigeminal Neuralgia
Scoliosis	Tuberculosis
Senile Dementia	Urinary Tract Infection
Sexually Transmitted Diseases	Vertebrobasilar Insufficiency
Sinusitis	Vertigo - BPPV, Cervicogenic, Meniere's, Labyrinthitis
Skin Conditions	Well Patient
Spondylolisthesis	
Whiplash Associated Disorder	

SECTION III: ASSESSMENT

To ensure that the defined programmatic outcomes are met which include learning domains and clinical competencies, it is necessary to identify and utilize appropriate assessment methods. The health profession's education field has yielded an ever increasing body of knowledge related to competency assessment over the last 20 years. Multiple methods of assessment related to the TCC Graduate Project learning outcomes have been identified as necessary to effectively monitor the success of educational initiatives. The following descriptions outline the basic information related to assessment tools identified as valid, reliable measures of the domains and competencies of the TCC Graduate document. This list is not intended to be exhaustive but representative of the methods that should be employed.

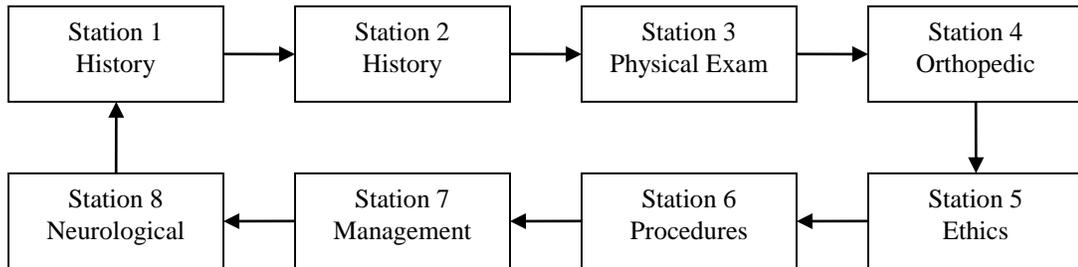
Objective Structured Clinical Examination (OSCE)

An OSCE is designed to obtain a cross-sectional sampling of a learner's competence through a series of themed encounters. Each learner rotates through stations that have various clinical scenarios represented. Most typically, stations contain a standardized patient (SP) who is an individual that has been trained to portray a specific clinical presentation, set of symptoms or other situation that may be encountered in practice. Other station options may include visual information, oral examination or a written task. Learners are usually asked to perform a specific skill or other focused aspect of clinical care.

An OSCE typically consists of 8 to 20 stations at which a learner may spend anywhere from 3 to 30 minutes. Often, this encounter is followed by a post-encounter station where written or oral feedback to or from the learner is required. This feedback can be both formative and/or summative. OSCE's are

usually scored with a standardized checklist or global rating scales. These exams are both reliable and valid for assessing many clinical skills, communication skills, diagnostic reasoning and knowledge base.

Sample OSCE Rotation



Checklist Evaluation

A checklist evaluation is often used to rate a competency, or any part of a competency, that can be broken down into component parts. The checklist contains specific elements, behaviors or actions related to the successful performance or application of a clinical ability. These evaluations can be used to insure that all necessary components of an ability are adequately mastered. Additionally, checklists can be used to determine if skills that require a specific sequence of events are performed correctly.

Checklists provide a very reliable method to assess clinical skills and processes. Care must be taken when selecting checklist items and input from multiple experts and reliable standard setting methods such as the Angoff or Hofstee methods must be employed. These evaluations are often incorporated into an OSCE as the method to score a station but can also be used effectively as a standalone assessment tool.

Sample Checklist

	Excellent (4)	Satisfactory (3)	Marginal (2)	Unsatisfactory (1)	Not Performed (0)
Interviewer used open-ended questions	✓				
Interviewer asked question one at a time		✓			
Interviewer proceeded through history in a logical sequence				✓	
Interviewer used language that was clear of medical jargon			✓		
Interviewer questioned patient to appropriate depth		✓			

Global Rating Assessment

Global rating assessments are similar to checklist evaluations except that the rater makes judgments on general categories of an ability rather than specific components. Global ratings can be of two types: 1) Ratings on a specific ability observed over a period of time (e.g. end of a clinical rotation) or 2) Ratings of an ability considering all aspects of the necessary attitudes, knowledge and skills required (e.g. rating performance of chiropractic technique, considering all the components necessary, into a single score). Global ratings are generally considered to be summary evaluations.

Certain weaknesses are inherent in these evaluations. Most notably is consistency between raters and rater bias. These weaknesses can be attenuated by recognizing potential pitfalls and conducting appropriate rater training. Global rating assessments become much more reliable when completed in a series and by multiple raters. Due to the need for direct observation of a learner's performance, global ratings also provide an opportunity for formative feedback between the learner and rater.

Written Examinations

Written examinations take on many forms and are used in varying frequency in medical education. These examinations can be classified into two categories of open response (e.g. fill in the blank or essay) and selected response (e.g. multiple choice). Open response examinations require the learner to recall knowledge rather than recognize it. These examinations are reliable if constructed and scored well. However, much time is required to score short answer and essay questions and it is difficult to create a comprehensive answer key. These factors often limit the use of open response examinations in medical education.

Selected response written examinations consists of a question, clinical vignette or other stem followed by a list of answers from which the learner can select. In general, these written examinations require the learner to recognize the answer rather than recall it. Multiple choice examinations generally evaluate a learner's knowledge related to a subject but advanced forms of selected response examinations such as extended matching, key features and script concordance examinations can be used to assess higher levels of thinking, reasoning and clinical decision making.

Multiple Choice Questions (MCQ) – Multiple choice question format examinations are one of the most common type of assessments utilized in higher education. A MCQ consists of an introductory statement or stem followed by a list of choices as an answer with only one of them being correct. This type of question is best used to assess medical knowledge or understanding. Multiple

choice questions can be reliable and discriminatory as long as rigorous psychometric standards are applied.

Sample MCQ

How many antigen binding sites does IgG possess?

- | | |
|--------|---------|
| A. One | C. Four |
| B. Two | D. Ten |

Extended Matching Questions (EMQ) – Extended matching questions are a variant of multiple choice questions. A question formatted as an EMQ has an introductory statement or stem similar to a MCQ; the stem may be in the form of a question, statement or clinical vignette. Learners are then given a list of multiple items to choose an answer from. This list is generally 10 to 20 items long and often, items in the list may be selected more than once. Multiple stems can be used for a single list of answer items as well. Unlike MCQ format examinations which are useful for measuring medical knowledge, extended matching question examinations are very useful to assess clinical reasoning and decision making which is considered a higher order of learning.

Sample EMQ

For each case described below, select the **single** most likely diagnosis. Answers may be used once, more than once or not at all.

A 41 y/o male presents complaining of intense lower back pain of two days duration. He describes a sudden onset of the pain while lifting a 75 lb. box. The patient is experiencing no pain or numbness in the buttock or leg. The pain is midline at the L4 level and the regional muscles are tender and taught to palpation.

- | | |
|-------------------------|-------------------------------|
| A. Disc prolapse | F. Primary bone tumor |
| B. Lumbar muscle strain | G. Space occupying lesion |
| C. Facet inflammation | H. Fracture |
| D. Joint infection | I. Metastasis |
| E. Disc degeneration | J. Degenerative joint disease |

Key Features Examinations – A key feature examination is a type of written assessment used to measure clinical decision making skills. A key feature is

defined as a critical step in the resolution of the problem. A key feature assessment considers two areas of clinical decision making: (1) it focuses on a step in which examinees are most likely to make an error and (2) it is a difficult aspect of the identification and management of a problem in practice. A typical key feature problem begins with a clinical vignette of sufficient length to establish the problem and its parameters. The vignette is followed by a series of questions aimed at identifying areas of common mistakes or difficult diagnostic pathways. These questions can take on various forms including fill in the blank, short answer, multiple choice or extended matching. While key feature problems have been shown to perform well when assessing clinical decision making skills, much planning and development of items and scoring criteria are required.

Sample Key Features Question

<p>Paul, a 56 y/o man consults you in the outpatient clinic because of pain in his left leg which began two days ago and has been getting progressively worse. He states his leg is tender below the knee and swollen around the ankle. He has never had similar problems. His other leg is fine.</p>	
<p>Question 1</p> <p>What diagnosis would you consider at this time? List up to three.</p> <p>1. _____</p> <p>2. _____</p> <p>3. _____</p>	
<p>Question 2</p> <p>With respect to your diagnosis, what elements of his history would you particularly want to elicit? Select up to seven.</p>	
<p>A. Activity at onset of symptoms</p> <p>B. Alcohol intake</p> <p>C. Allergies</p> <p>D. Angina pectoris</p> <p>E. Anti-inflammatory therapy</p> <p>F. Cigarette smoking</p> <p>G. Cough</p>	<p>H. Headache</p> <p>I. Low back pain</p> <p>J. Paresthesia</p> <p>K. Polydipsia</p> <p>L. Previous knee problems</p> <p>M. Recent dental procedure</p> <p>N. Wounds on foot</p>

Script Concordance Test – The script concordance test is another method to assess clinical decision making skills and clinical reasoning. The questions are preceded by a clinical vignette that is described in a few sentences. The actual questions in a script concordance test follow a certain format which has three parts. The first part includes a diagnostic hypothesis, an investigative action or a treatment option that is relevant to the situation. The second presents new information that may have an effect on the diagnostic hypothesis, an investigative action or a treatment option. The third part is a 5 point Likert type scale. Script concordance questions require development and scoring by a panel of experts. This panel can range from 2 to 10.

Script Concordance Sample

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A 22 y/o female presents with acute ankle pain of two days duration. The pain is a result of a running injury.					
If you were considering the utility of the following treatment...	...and the following new information was to become available...	...you would then consider this treatment...			
Ultrasound	Stress fracture of talus bone	-2	-1	0	+1 +2
Elevation	Ankle edema	-2	-1	0	+1 +2
Wobble board exercises	Ligament instability	-2	-1	0	+1 +2
Bracing	Ligament laxity	-2	-1	0	+1 +2
-2 Useless -1 less useful 0 neither more or less useful +1 useful +2 very useful					

Standardized Patient Encounters

Standardized patients (SP) are individuals that have been trained to portray various clinical conditions and scenarios or may be patients with actual diagnoses that have been trained to standardize their responses about their condition for assessment purposes. While an SP is not necessarily an assessment tool alone, they are a vehicle to allow an assessment of a learner's performance in many aspects of clinical competency. Often, standardized checklists, global rating scales or narrative responses are used with SP's. Most often, standardized patients are used in OSCE's but can also be effectively used as a stand-alone assessment tool.

Direct Observation

Direct observation assessments are a simple method that can be used to assess many aspects of clinical competence and ability. A great advantage of direct observation assessments is that they often take place in a real clinical environment and encompass all of the unique aspects of a particular case. To increase the validity of these assessments, standardized approaches must be employed such as the use of checklists or global rating scales.

Multi-Source Feedback Evaluations

Multi-source feedback assessments incorporate input from at least two sources, one of which is usually the learner (self evaluation). These assessments often use survey or questionnaire instruments that have items related to observable behaviors such as communication or professionalism. The various instruments are then used to provide a "picture" of the learner related to the attribute to be measured. While not greatly useful for evaluating many clinical skills, certain competencies such as communication, professionalism, doctor-patient relationship and ethics and integrity can be effectively evaluated with this tool. Multi-source feedback methods also promote and encourage self-improvement and reflection by the learner.

Technology Based Assessment

Many programs exist to provide a platform for technology based assessment. Included in these are software designed to provide computer-based testing and simulation, web-based programs designed to stimulate clinical reasoning and medical simulators designed to provide a safe alternative to practice clinical skills and procedures. The area of technology based assessment is an ever changing field. Regular advancements in technology create increasing opportunities for more advanced assessment of competency.

Summary

Applying the appropriate type of assessment methods to evaluate specific areas of competency requires knowledge of both the accurate development and correct use of the tools mentioned above. It is understood that other assessment tools that go beyond the ones outlined exist and can be used successfully in measuring the acquisition of the domains and competencies defined in the TCC Graduate document. The following table identifies the most likely use of the assessment tools discussed in this document. Other methods could be used and some of the tools could be used in areas not specifically outlined. Careful consideration should be taken when selecting an appropriate method to assess competency and a full understanding of any tool chosen is necessary to accurately evaluate ability.

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Glossary of Terms

Active Listening: A way of listening that focuses entirely on what the other person is saying and confirms understanding of both the content of the message and the emotions and feelings underlying the message to ensure that understanding is accurate.

Autonomy: Effective deliberation of an action without coercion or limitation by external constraints.

Beneficence: The duty of doing or producing good when in a position to do so.

Best Practices: A method of patient care that is patient centered, utilizes practitioner experience, and takes into account best available external evidence.

Biomechanics: The study of mechanical laws and their application to the human body and its locomotor system.

Chiropractic Principles: Fundamental tenets of chiropractic that guide how a doctor of chiropractic approaches patients in health and illness.

Chiropractic Tenets: Opinions or doctrines which the chiropractic profession believes or maintains.

Clinical Competency: The capability to perform acceptably those [duties directly related](#) to [patient care](#); the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served.

Clinical Reasoning: A problem solving process that enhances the development of clinical thinking and decision making in patient care. It involves the movement from accumulation of knowledge to the incorporation of skill, expertise and evidence leading to sound clinical judgment.

Codes of Conduct: A set of conventional principles and expectations that are considered binding on any person who is a member of a particular practice or professional group.

Codes of Ethics: A set of ethical principles that outlines the doctor of chiropractic's responsibility to the patient, the public, and the profession.

Condition: State of being, specifically in reference to physical and mental health or well-being.

Critical Appraisal: Process of systematically examining research evidence to assess its validity, results and relevance before using it to inform a clinical decision.

Critical Rationalism: Philosophical tradition that implies that the scientific method is applicable to the areas of health care and can provide the knowledge base for clinical practice.

Determinants of Wellness: Myriad of factors that contribute to health.

Disease: An abnormal condition of a patient demonstrates a deviation from normal structure and/or function that is manifested with characteristic signs and symptoms.

Disorders: A disturbance or abnormality of structure and/or function

Domain: A sphere of knowledge and clinical activity.

Health Promotion: The processes of helping people change their lifestyle to move toward a state of optimal health.

Holism: A doctrine that emphasizes the priority of a whole over its parts. Focus the whole person in its context, concentrating on the cause of the illness as well as symptoms.

Humanism: A broad category of ethical philosophies that affirm the dignity and worth of all people. An objective of humanism is to produce health care providers who will care for patients in a compassionate and humanistic manner.

Hypothetico-deductive Reasoning: An analytical approach to reasoning in which a working hypothesis is formulated and tested.

Illness: The patient-perceived state that usually accompanies disease but can exist in the absence of demonstrable disease.

Justice: The way in which benefits and burdens of society are distributed.

Kinesiology: The study of the anatomy, physiology and mechanics of body movement.

Learning Outcome: A statement of the attitude, knowledge and skills the individual student possesses and can demonstrate, upon completion of a learning experience.

Lifecycle: A series of changes a human undergoes beginning at birth and ending at death.

Naturalism: The preference for natural therapies.

Nonmaleficence: The ethical principle of doing no harm

Patient Care Plan: The framework for management of patient care.

Pattern Recognition: The skill of identifying typical or repeated characteristics of diseases or illnesses to aid in making a diagnosis

Philosophy of Chiropractic: The application of the principles and methods of philosophy to develop an understanding of chiropractic.

Prevention: Any activity which reduces the burden of mortality and/or morbidity.

Primary Prevention: Methods that are employed to avoid the development of disease.

Reflective Practitioner: Involves thoughtfully considering one's own experiences in applying knowledge to practice while being coached by professionals in the discipline.

Secondary Prevention: The activities that are aimed at early disease detection, thereby increasing opportunities for interventions to prevent progression of the disease and emergence of symptoms.

Standards of Practice: Legal or legislative criteria against which the professional procedures and practices can be evaluated.

Tertiary Prevention: The reduction of the negative impact of an already established disease by restoring function and decreasing disease-related complications

Therapeutic Conservatism: The philosophical approach to patient care which emphasizes the ability to facilitate the bodies' own healing capacity and implies that the best care is the least amount of intervention necessary.

Vitalism: A doctrine that the processes of life are sustained by a self-determining vital force which is expressed in the concept of the inherent capacity of the body to heal itself.

Wellness: A term that is generally used to mean a healthy balance of the mind, body, and spirit that results in an overall feeling of well-being.