INTRODUCTION

Medical students, residents and licensed physicians are constantly striving to do what is best for patients by providing optimal care in a timely, caring and evidence-based fashion. In many instances, the physician is limited in what he or she can provide to patients and must rely on the education, training and experiences of a wide variety of allied health care professionals who make up the interdisciplinary health care team (see Table 1). In order for physicians to make appropriate allied health care referrals, they must have a solid understanding of the roles, responsibilities and scopes of practice of the various health care professionals available to their patients.

However, there is growing concern that medical school curricula lack appropriate education regarding the roles, responsibilities and expertise of other health care professionals. In fact, evidence from research done in the last 20 years has suggested that interdisciplinary education within medical curricula is either weak or absent altogether. In 1982, a survey examining the incorporation of ‘inter-professional education’ in Canadian and American medical curricula found that fewer than 30% of the 105 responding schools had incorporated formal interdisciplinary training into their programs. Furthermore, only 15% of those training programs were mandatory.

Unfortunately, no current comparable literature exists. However, in April 2000, the Ontario Chairs of Family Medicine and the Council of Ontario University Programs in Nursing issued a statement that “some programs have tried to bring together students in their first year of professional training, but the difference between student profiles can prevent effective integration.” They also concluded that “the current practice system fragments the education of health care professionals and does little to engender collaboration when students progress into the working environment...students have never experienced the benefits of collaborative care.”

With the increase in patient care complexity, the aging population and lack of time and resources, physicians must become familiar with the various health professionals available to assist them, but there has been much controversy as to when interdisciplinary education should be introduced to the health professional. Hall and Weaver – researchers from the University of Ottawa with an interest in inter-professional education – suggest there is no optimal time for interdisciplinary education to begin. Conversely, the Ontario Chairs of Family Medicine and the Council of Ontario University Programs in Nursing suggest that, “interdisciplinary education should be mandatory for all professional education programs before practice.”
dance with this statement, one can assume that education early on in a physician’s training will enhance that physician’s familiarity with the allied health professions. Regardless of timing, knowledge and familiarity on the part of physicians of how these professionals contribute to patient care are essential. This article will discuss the utility of five of the most commonly encountered allied healthcare professionals; physiotherapy, occupational therapy, speech-language pathology, dietetics and social work. It will also provide a brief review of their roles, as well as general guidelines suggesting when it may be appropriate for medical students, residents and practicing physicians to refer for consultation.

**OVERVIEW OF SELECTED ALLIED HEALTH PROFESSIONALS**

**Physiotherapists**

Physiotherapists are registered health care professionals who are experts in movement and rehabilitation. The *Physiotherapy Act* (1991) states that physiotherapy practice is “the assessment of physical function and the treatment, rehabilitation and prevention of physical dysfunction, injury or pain; to develop, maintain, rehabilitate or augment function; or to relieve pain.” Physiotherapy practice is generally focused on treating dysfunction in three main body systems: the musculoskeletal system, the nervous system and the cardio-respiratory system. More specifically, sub-disciplines in physiotherapy include neurology, burns, pediatrics, geriatrics, orthopedics, ergonomics, sports medicine and amputee rehabilitation.

In order to practice physiotherapy in Canada, the therapist must hold a university level Bachelor’s degree.7 However, existing regulations regarding the required entry-level education are changing. In June 2001, the National Physiotherapy Advisory Group issued a statement expressing that the preferred entry-level education for physiotherapy practice in Canada was a Master’s level degree. By 2010, the Advisory Group predicts that Canadian universities will only offer physiotherapy education at the Master’s level, and that this will become the required level of education for entry to practice.7

Regardless of the specialty in which the physiotherapist chooses to work, the accompanying responsibilities are fairly standard. The therapist takes an appropriate history and performs a physical examination. Following this, an assessment of the patient’s condition is made based on the physical examination and relevant laboratory tests. Finally, a plan and appropriate treatment is initiated. Treatment options usually include electrical modalities, exercise, manual therapies and education. By using these treatments, the physiotherapist’s role is to “improve quality of life through maximizing a patient’s movement and functional ability.”6 Whether it is a child with cystic fibrosis needing respiratory conditioning or a geriatric patient living with arthritis, the physiotherapist facilitates independence and confidence in a patient’s ambulatory and functional abilities.
Physiotherapy is an autonomous profession, meaning that a patient usually does not require a physician’s referral in order to be treated by a physiotherapist. However, there are some cases when a physician’s referral is necessary; for instance, if the patient is in hospital or is being treated in an OHIP-funded outpatient clinic.9 Regardless of how a referral should take place, physicians should be encouraged to consult a physiotherapist when they believe a patient may benefit from their services (see Table 2).

Due to the diverse nature of physiotherapy practice, it is impractical and beyond the scope of this paper to summarize the effectiveness of each area of physiotherapy practice. The Cochrane Collaboration has published a number of meta-analyses clearly outlining the effectiveness of physiotherapy as a beneficial adjunct to primary care in a wide variety of patient populations such as those with cystic fibrosis, cerebral vascular accidents, stress incontinence as well as a variety of musculoskeletal disorders.8,9,10 Physiotherapy has been shown to be effective in clearing lung secretions, improving independence in activities of daily living, as well as reducing stress incontinence in the aforementioned populations. Although physiotherapy as a profession is grounded in evidence-based practice, more methodologically sound data is required to demonstrate the unequivocal value of the various physiotherapy specialties.

Table 2. When do I refer to a Physiotherapist (PT)?

- Restoration of muscle strength and joint mobility after injury, surgery or neurological disease
- Education regarding pre-natal and post-natal care and activity
- Pelvic floor strengthening for urine incontinence
- Mobilizing patients after periods of inactivity or de-conditioning
- Manual chest therapy to aid in secretion clearance in patients with lung pathology such as pneumonia.
- Respiratory therapy to increase strength of respiratory muscles and increase ability to breathe in patients with chronic lung diseases.
- Education and exercise training for patients following cardiac diseases such as myocardial infarction in order to increase functional capacity.
- Movement and motor control re-education after traumatic brain injury, spinal cord injury or stroke.
- Education regarding the use of mobility devices such as walkers, canes, crutches and wheelchairs.
- Assessment of physical readiness for work or sports
- Osteoporosis prevention via exercise training
- Pain relief via modalities, exercise and mobilizations.

Table adapted from the Ontario Physiotherapy Association (2004), http://www.opa.on.ca

Occupational Therapists

Occupational therapists (OTs) are registered health care professionals who assist their patients in "developing or maintaining life roles and activities at home and in the community, when one's ability to function independently has been challenged by accident, handicap, emotional problems, developmental difficulties or disease."11 Typically, the main areas of focus for OTs and their patients are self-care, productivity and leisure, with emphasis on the interaction between the person, their environment and their occupation.12 The World Federation of Occupational Therapy (WFOT) defines occupational therapy as "the treatment of physical and psychiatric conditions through specific activities to help people reach their maximum level of function and independence in all aspects of daily life."13

In order to practice as an OT in Canada, one must have graduated from either an occupational therapy educational program accredited by the Canadian Association of Occupational Therapists (CAOT), or a non-Canadian occupational therapy educational program recognized by the World Federation of Occupational Therapists. Candidates must also successfully pass the CAOT Certification Examination upon graduation. Most university programs across Canada are now at a Master’s level, requiring an honours undergraduate degree from any discipline with some prerequisites, prior to commencing a Master of Science in Occupational Therapy. As of 2008, CAOT has mandated Masters level entry for all new graduates.14

Occupational therapists work in a wide variety of settings, with patients of all ages and abilities. In hospitals, schools, outpatient clinics and treatment centres, private practices, long-term care facilities, community-based settings and industry, OTs use a “variety of assessment and treatment techniques to address goals developed with the client.”11 OTs are concerned with the ‘occupation of all individuals in society’ and use the term ‘occupation’ to refer to the activities one does on a daily basis,12 whether that involves a premature, 30 week-old neonate in the NICU with feeding difficulties, a 76 year-old gentleman with Parkinson’s Disease who lives in a nursing home, or a 42 year-old administrative assistant with Carpal Tunnel Syndrome who is struggling to meet her deadlines.

‘Occupation’ is what clearly guides occupational therapy practice. Ultimately, the goals of assessment and treatment involve maximizing occupation, overall function and improvement of quality of life of both individual and groups.12 Over the past several decades, the scope of practice of the OT has greatly expanded to provide a more valuable contribution to overall patient care (see Table 3).

Table 3. When do I refer to an Occupational Therapist (OT)?

- Assessment and training regarding activities of daily living (ADLs) (i.e., bathing, dressing, feeding) or instrumental activities of daily living (IADLs) (i.e., banking, groceries, driving)
- Prescription of assistive devices to assist with ADL’s, IADL’s, walkers, wheelchairs
- Discharge planning for transition from hospital or care facility to home
- Prescription of mobility devices, such as walkers & wheelchairs
- Evaluation and modification to physical environments such as a client’s home, work or school
- Counseling regarding work and return to work issues and ergonomic assessments
- Design and fabrication of hand splints/foot orthoses
- Issues regarding chronic medical conditions, which may have an impact on day-to-day function
- Psychosocial integration & life skills teaching in those with mental illness or developmental delay
- Issues regarding positioning, feeding in infants and children
- Assessment and treatment of children with school-related issues &/or developmental delay
- Cognitive and perceptual rehabilitation in acquired brain injuries
Occupational therapists worldwide are responding to the need for evidence-based literature to evaluate outcomes of interventions they provide. The Cochrane Collaboration has published numerous meta-analyses which have demonstrated the value, contribution and efficacy of occupational therapy services to a variety of diverse populations ranging from those with a mental health condition, to those living with physical and/or cognitive disabilities. There is a continuous call for further methodologically sound research involving randomized controlled trials in order to continue to evaluate specific occupational therapy interventions.

### Speech-Language Pathologists

The ability to convey thoughts and emotions is a crucial aspect of human culture. A lack of proper attention to communication as well as swallowing disorders can lead to serious long-term consequences with respect to socialization, literacy, academic achievement, and overall development. Speech-language pathologists (SLPs) work to alleviate these problems in patients and comprise an integral part of the allied healthcare team. The Audiology and Speech-Language Pathology Act (ASLPA) (1991) describes the scope of practice for speech-language pathology as the “assessment of speech and language functions; the treatment and prevention of speech and language dysfunctions or disorders; and the development, maintenance, rehabilitation or augmentation of oral motor or communicative functions.”

In order to practice, speech-language pathologists must complete professional training at the Master’s or Doctoral level. Following this, provincial certification requirements must be met. The College of Audiologists and Speech-Language Pathologists of Ontario (CASLPO) has developed a Quality Assurance Program ensuring that SLPs are regulated professionals who are held accountable to CASLPO. Further, it is mandated under the Regulated Health Professions Act (1991) and the Audiology and Speech-Language Pathology Act (1991) that SLPs are required to deliver safe, competent and ethical services.

In general, a speech-language pathologist diagnoses and treats ‘communication disorders’, a term encompassing speech, language, voice, fluency, hearing, and cognitive-communicative disorders. SLPs assess language disorders with the goal of improving the individual’s ability to understand as well as convey messages, both oral and written. With other professionals such as OTs, speech-language pathologists assess and treat cognitive-communication disorders. This involves helping patients improve reasoning, problem solving, memory and organizational skills so that the individual is able to interact in social situations. SLPs can also improve articulation and fluency in those who stutter, and with respect to dysphagia, the SLP assesses whether a person is at risk for choking or aspiration. Overall, SLPs are responsible for providing counseling to patients about their condition, as well as how to best cope with it. From a research standpoint, speech-language pathologists have the opportunity to participate in the development of new approaches in the treatment of communication and swallowing disorders. SLPs also play an important role in the lives of those who are non-verbal through the development and prescription of communication methods and devices. Due to the diverse nature of their clientele, from infants to the elderly, SLPs work in a variety of different settings such as hospitals, child development centres, rehabilitation centres, as well as home care and governmental agencies.

As evidenced by the speech-language pathologist’s scope of practice, there are many opportunities for physicians and physicians-in-training to integrate the services of SLPs into the care of a patient (see Table 4). Children who are slow to speak or patients with declining communicative abilities due to a progressive neurological disease, for instance, can benefit from the services of a speech-language pathologist. Additionally, patients with receptive (comprehension) or expressive language difficulties can be referred to SLPs. SLPs can also provide care to address the specific concerns of the individuals who are deaf or have developmental disabilities. By closely working with the patient’s school teacher(s), SLPs can help create appropriate classroom programs. SLPs can also initiate voice restoration procedures, or introduce alternative forms of communication for the patient who has undergone a laryngectomy due to cancer.

### Table 4. When do I refer to a Speech-Language Pathologist (SLP)?

<table>
<thead>
<tr>
<th>Condition/Disability</th>
<th>When to Refer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons requiring augmentative and alternative communication</td>
<td></td>
</tr>
<tr>
<td>Child/adult who has a chronically hoarse voice, or who loses his/her voice for periods of time</td>
<td></td>
</tr>
<tr>
<td>Child/adult with swallowing difficulties</td>
<td></td>
</tr>
<tr>
<td>Persons/Community groups etc. needing education on coping with communication and swallowing disorders</td>
<td></td>
</tr>
<tr>
<td>Adult who has expressive and/or receptive disorders following a stroke or other brain injury</td>
<td></td>
</tr>
<tr>
<td>Child/adult who is hard-of-hearing or who may be deaf</td>
<td></td>
</tr>
<tr>
<td>Persons with developmental or learning disabilities</td>
<td></td>
</tr>
<tr>
<td>Child/adult with delayed language skills</td>
<td></td>
</tr>
<tr>
<td>Child/adult with expressive or receptive communication difficulties</td>
<td></td>
</tr>
<tr>
<td>Adult with expressive and/or receptive disorders following a stroke or other brain injury</td>
<td></td>
</tr>
</tbody>
</table>

Table adapted from Canadian Association of Speech-Language Pathologists and Audiologists (2004). http://www.caslpa.ca

It is evident that SLPs can contribute greatly to the scope of care offered by the allied health care team. To further establish the necessity for including SLPs in the care and management of patient, there are ongoing evidence-based evaluations of speech and language therapy interventions. Recently, a study by Law et al (2003) examined the efficacy of speech-language interventions for children with primary speech language delays and disorders. This meta-analysis revealed that the interventions resulted in a positive effect for those with expressive language difficulties. Other researchers are currently investigating the efficacy of direct speech and language interventions aimed at improving communication skills of children with cerebral palsy. Thus,
the results of these and other studies should encourage physicians to include SLPs in the care of patients who have language and communication issues.

**Registered Dieticians**

Registered dietitians are allied health care professionals who are “highly educated in the sciences related to foods and human nutrition and are trained to apply their knowledge in a variety of settings.” More specifically, the Dietetics Act (1991) clearly defines the scope of practice of the registered dietician as, “the assessment of nutrition and nutritional conditions and the treatment and prevention of nutrition-related disorders by nutritional means.” The American Dietetics Association (ADA) refers to the services provided by a registered dietician as medical nutrition therapy.

In order to practice as a registered dietitian (RD), one needs to successfully complete an undergraduate university program in food and nutrition followed by an accredited internship of at least 35 weeks in duration. Following formal education and internship, RDs must pass a competency exam in order to practice in Canada. As with other regulated healthcare professions, only those who are registered with the College of Dietitians of Ontario can use the titles Dietitian, Registered Dietitian, or other abbreviations. The title ‘Nutritionist’ is not a protected title by Ontario law; therefore only those who use the designation ‘Registered Dietitian’ are regulated and have achieved standards set forth by the College of Dietitians of Ontario.

Registered dietitians work in a wide variety of settings, similar to other allied health care professionals. Registered dietitians and physicians work closely together in the neonatal intensive care units, nurseries, pediatrics, and both medical and surgical wards. RDs can commonly be found in hospital wards, where their responsibilities center around the ongoing assessment of an individual’s nutritional and metabolic status through the monitoring of fluids, electrolytes and overall health status. Premature neonates, individuals with eating disorders, the elderly, and those with both acute and chronic diseases are a few of the patient groups who can benefit from the services of a registered dietitian (see Table 5). Health promotion and disease prevention are also a large part of dietetic practice. Registered Dietitians are commonly consulted for primary prevention regarding healthier dietary choices in order to decrease the risk of heart disease, cancer and diabetes. Dietitians can also be found in the community through Community Care Access Centres (CCACs) and public health units in Ontario. They offer healthy eating information and resources, run various nutritional programs for both groups and individuals, and devise public health protocols regarding health and nutrition. Industry and businesses employ dietitians to assist with the development of food products and to manage food preparation and distribution.

Over the past several years, there has been an increased call for evidence-based practice within the dietetics community in order to justify the value and contribution of the profession to patient care. In 1998, the ADA formed a Health Services Research Task Force to examine both the effectiveness and outcomes of medical nutrition therapy provided by registered dietitians. Much literature has been published, however “inadequate specification of the nutrition care process and the lack of common definitions for nutrition care and its outcomes” have been major barriers. In the Journal of the American Dietetics Association, Ron Smith a registered dietitian, states that “anecdotal summaries of patients’ responses to medical nutrition therapy are no longer sufficient to justify the benefit. Everyone understands that a proper diet is critical to good health.” The development of a model for effective nutrition care has been put forth with the aim of “linking nutrition care to positive outcomes.” Currently, the profession is working on demonstrating and justifying that registered dietitians are the best providers of medical nutrition, that services provided by RDs improve the quality of life of patients, and that RD services are cost efficient.

**Table 5. When do I refer to a Registered Dietician (RD)?**

| • Assessment and treatment of nutrition and nutrition-related conditions |
| • Ideal body weight recommendations |
| • Caloric and dietary needs advice |
| • Recommendations of foods that facilitate swallowing |
| • Need for special diets (i.e. renal, cardiac and diabetic patients) |
| • Specific dietary modifications that need to be made as a result of a disability or general medical condition |
| • Total Parenteral Nutrition (TPN) formulas and schedules for patients who are unable to eat by mouth |


**Social Workers**

While it is difficult to define social work, the concepts underlying social work are easier to explain. A key component of social work is the “person-in-environment” perspective, which highlights the need for the care of a person in the context of environmental influences such as support networks, personal beliefs, social customs and societal laws. The idea of a bi-directional relationship existing between a person and society is termed ‘social functioning’. Social work is a framework that is concerned with the social well-being and functioning of individuals at the individual, family, community, national and international levels.

The education required to become a social worker is strictly regulated. The 4-year Bachelor of Social Work (BSW) degree at a university accredited by the Canadian Association of Schools of Social Work is required for generalists. However to practice in different sub-specialties, a Master of Social Work (MSW) is usually required. Those interested in teaching, research, or social policy administration can pursue post-graduate study leading to a Doctorate degree. There are regulations and a code of ethics, guiding the conduct and practice of social work, and these principles are an important aspect of the social worker’s education.
Understanding the components of social work helps one appreciate the specific roles and responsibilities of the practitioners in this field. Though social workers are commonly viewed as those who work with the homeless, the unemployed and street youth, this perception is only partly true. For example, social workers can influence community and social planning, such as unemployment insurance, old age pension, and other large scale programs. Moreover, social workers are capable of working in a wide variety of settings such as family services agencies, psychiatric hospitals, school boards, welfare administration agencies, federal departments, and even private practice. In essence, social workers empower individuals, via certain practice methods, to identify and use problem-solving skills to improve their social situation (see Table 6).

Since physicians also strive to educate and empower their patients, there are many opportunities for collaboration between the two professions (see Table 7). As a physician, if one suspects child abuse or neglect, a social worker employed by a child welfare agency can be called in to investigate the case. In such a situation, the social worker has the ability to take immediate, protective action, such as recruiting foster parents or placing the child in protective care. As a physician, one may also encounter, for instance, an aggressive and truant student. In this case, social workers, with their expertise in mediation and management, may add much-needed skills to the healthcare team. Though it may sometimes seem as though social workers are only consulted in dire cases such as abuse, this is certainly not true. Social workers can be enlisted when there is a need for interventions such as parent-child counseling or marriage counseling. Older adult patients, as well as individuals with physical or mental illnesses, may also benefit from having a social worker acting as a link between them – the individual – and community resources, often as a transition from hospital to home or to a long-term care facility. This allows the individual to become integrated into the social structure of his or her community, and ensures that the individual has access to necessary healthcare resources.

There have been studies investigating the benefits of social work practice methods. For example, researchers have evaluated the positive effects of case management for people with severe mental disorders, and have compared the benefits of counseling therapy over medication therapy of patients in a primary care setting, and have assessed the increased effectiveness of group-based teenage parenting programs in improving psychosocial outcomes of the parents and their children. However there is a serious need for methodologically sound projects to firmly establish the need for including social workers in the allied health care team.

**Table 6.** Common practice methods used by Social Workers

<table>
<thead>
<tr>
<th>Case management</th>
<th>Psychosocial therapy</th>
<th>Community resource co-ordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child protection assessments*</td>
<td>Psychotherapy*</td>
<td>Developmental social welfare</td>
</tr>
<tr>
<td>Client-centered therapy</td>
<td>Social casework</td>
<td>Grassroots mobilization</td>
</tr>
<tr>
<td>Clinical social work*</td>
<td>Social group-work</td>
<td>Neighborhood and community organizing</td>
</tr>
<tr>
<td>Crisis management</td>
<td>Client advocacy</td>
<td>Political and social action</td>
</tr>
<tr>
<td>Discharge planning</td>
<td>Network skills training</td>
<td>Social planning</td>
</tr>
<tr>
<td>Family and marital therapy*</td>
<td>Class action social work</td>
<td>Social policy analysis and development</td>
</tr>
</tbody>
</table>

*Restricted practice activities – practice methods that are exclusive to social workers who have received specialty training, and who are regulated by provincial statutes

Adapted from original table published in the National Scope of Practice Statement, Canadian Association of Social Workers, [http://www.casw-acts.ca](http://www.casw-acts.ca)

**Table 7.** When do I refer to a Social Worker (SW)?

<table>
<thead>
<tr>
<th>Situation</th>
<th>Which social worker do I refer to?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Possibility of domestic violence, child abuse, or child neglect</td>
<td>Social worker associated with a child welfare agency</td>
</tr>
<tr>
<td>• Adoption issues</td>
<td>Social worker associated with a child welfare agency</td>
</tr>
<tr>
<td>• Young or adult offenders</td>
<td>Social worker specializing in the correctional field; Classification officers; Probation officers; Parole officers</td>
</tr>
<tr>
<td>• Marital problems; parenting problems</td>
<td>Social worker in private practice, or, social worker in health and community service centers</td>
</tr>
<tr>
<td>• Social-welfare problems</td>
<td>Social worker in private practice, or, social worker in health and community service centers</td>
</tr>
<tr>
<td>• Rehabilitation of the elderly, or those with physical or mental disabilities</td>
<td>Social worker associated with a general or psychiatric hospital</td>
</tr>
</tbody>
</table>

Adapted from Canadian Association of Social Workers (2002), [http://www.casw-acts.ca](http://www.casw-acts.ca)
this by emphasizing the importance of “getting the right mix of skills from an integrated team of healthcare providers to deliver the comprehensive approaches to health care that Canadians expect.”

Unfortunately, many medical schools fail to adequately educate future physicians on the various roles and responsibilities of other health care professionals, and how they can serve as adjuncts to contemporary medical practice. Recognizing this, the preceding discussion has served to highlight the value, contribution and scope of practice of five key health care professions which are commonly involved in the management of patients in both hospital and community settings. The professions of physiotherapy, occupational therapy, speech-language pathology, dietetics and social work have been described and general guidelines for physician referral have been outlined. Ultimately, it falls to physicians to familiarize themselves with the wide variety of professionals who are available to them, in order to ensure that their patients are receiving holistic and comprehensive health care. Clearly, the trend is now moving towards inter-professional teamwork and collaborative practice in order to optimize outcomes and improve the quality of life of current and future patients.

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