



**ARTHRITIS COMMUNITY RESEARCH &
EVALUATION UNIT (ACREU)
University Health Network**

A CLIENT-CENTRED HEALTH SERVICE MODEL OF PRIMARY HEALTH CARE AND REHABILITATION FOR ARTHRITIS

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Prepared by:

Cheryl Cott
Rachel Devitt
Rosalind Wong
Leslie Soever
Crystal MacKay

*Address for correspondence:

**Arthritis Community Research &
Evaluation Unit (ACREU)
Toronto Western Research Institute
399 Bathurst Street
MP-10th Floor, Suite 316
Toronto, ON M5T 2S8
Tel: (416) 603-6269
Fax: (416) 603-6288
www.acreu.ca**

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University Health Network
Toronto General Hospital Toronto Western Hospital Princess Margaret Hospital

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EXECUTIVE SUMMARY

Background

Rehabilitation services in primary health care (PHC) settings are important for the treatment of chronic musculoskeletal conditions such as arthritis. However, a number of studies point to an underutilization of rehabilitation services for persons with arthritis by PHC physicians and an unmet need for rehabilitation services reported by persons with arthritis. There is no known cure for arthritis; thus, care for and management of this condition is important early in, and over, the course of the disease. PHC rehabilitation professionals offer non-pharmacological interventions that have both a preventive and therapeutic role in the management of arthritis. However, explicit service delivery models are lacking that operationalize a PHC and rehabilitation approach to arthritis care where rehabilitation professionals are working with the client, as well as collaborating and communicating with the other members of the PHC team. Such models are needed to ensure that persons with arthritis receive rehabilitation interventions early in the disease process and that their needs and preferences are considered in the continuum of care. Explicit service delivery models would also ensure that rehabilitation services are integrated into PHC and that the role of PHC rehabilitation is clearly defined in the continuum of care for chronic diseases such as arthritis.

Purpose

The purpose of this project is to present a framework for the delivery of comprehensive PHC rehabilitation services for adults with arthritis in Ontario.

Methodology

Literature review - Academic literature, grey literature, and practice guidelines relating to arthritis and rehabilitation, both at the individual/service level and at the system/societal level, were examined.

Key informant interviews - Key informant interviews were completed with 25 individuals who were known experts and in a position to inform our study about key elements of a multidisciplinary model for arthritis care. Key informants were selected to represent various professions, practice sectors, and geographic areas (i.e. rural vs. urban). The interviews followed a semi-structured format. Data were analyzed using content analysis and a constant comparative approach.

Results

Literature Review

Relevant information from the literature review is presented according to Starfield's (1992) health services system model of structure, process, and outcome. It is important to note that there is conceptual overlap between structure and process for this report in the areas of client-

centred care and multidisciplinary collaborative care. Topics addressed under structure include client and team members; utilization/access; and funding; as well as the process of client-centred care and the process of multidisciplinary collaborative care. Topics addressed under process relate to the management of arthritis and include rehabilitation best practices in the areas of education, exercise, joint protection, orthoses, modalities, assistive devices, and work/employment. Topics addressed under outcome are presented at both the level of the individual client and the system.

1. Structure

Client and Team Members

Positive outcomes have been reported in a team approach to care, especially with diverse and complex problems that may arise with a chronic disease such as arthritis. Working as a team is thought to be more productive than working as individuals in isolation. Team structure is reflected by the range of skills of its members with there being no optimal team size or composition. Physiotherapists and occupational therapists are among the more common members of the arthritis care team. Teams may designate one of their members as leader or champion. Teams should consider multiple factors in the care of clients with arthritis including biopsychosocial needs.

Utilization/Access

Many client-level factors contribute to the use of health care and rehabilitation services including physical (e.g. mobility, pain) and sociodemographic (e.g. age, sex, education), as well as the presence of comorbidity and psychosocial well-being. It is important to understand the determinants of use of services by persons with arthritis in order to identify strategies to improve or minimize barriers that prevent the utilization of important services. Individuals with chronic diseases such as arthritis require a range of comprehensive health care services. However, services are not consistently available resulting in unmet needs for services (e.g. rehabilitation services, educational programs, assistive devices, home modifications).

Funding

Because patients with chronic conditions such as arthritis are more likely to receive rehabilitation services in publicly-funded compared to privately-funded practice settings, the shift to private sources of payment for rehabilitation services is expected to further reduce access to much needed services for persons with arthritis.

Client-Centred Care

Important components of client-centred rehabilitation include: individualization of programs to the needs of the client for a smooth transition between rehabilitation programs and the community; sharing of information and education that is appropriate, timely, and according to clients' wishes; family and peer involvement in the rehabilitation process (e.g. emotional support); coordination and continuity within and across sectors (e.g. access to rehabilitation through more than one door, follow-up as a continuum of access); and outcomes that are meaningful to the client (i.e. understanding the consequences of the disease and disability should be based on the perspectives of those living with the disease).

Multidisciplinary Collaborative Care

The structure of the team is linked to what services are provided by its members and how services are received by the client. The provision and receipt of services should be client-centred and involve ongoing communication among team members as well as communication among teams within the different rehabilitation settings. The goals of a collaborative care team for arthritis care may include control of the clients' symptoms, prevention of disease progression, education of the client to perform self-care, and assisting the client to accept and cope with the functional limitations associated with arthritis.

2. Process

Rehabilitation Best Practices in the Management of Arthritis

There is conclusive evidence in the literature for the following rehabilitation interventions for persons with RA and OA: client education, exercise (aerobic and strengthening), joint protection instruction, and assistive devices. Indicative evidence exists for the use of orthoses (hand/wrist splint and foot orthosis) in RA. Limited or emerging evidence exists in the literature regarding the effectiveness of the following interventions: vocational/work rehabilitation and physiotherapy modalities. However, the Ottawa Panel supports and recommends the use of TENS, low-level laser therapy, ultrasound, and thermotherapy for RA. Recent RCTs have shown that acupuncture for OA of the knee is effective.

Persons with arthritis should receive these rehabilitation interventions early in the disease process. However, all interventions should be optimally timed based on client receptivity and need. An educational-behavioral approach appears to be an effective manner in which to deliver rehabilitation interventions for persons with arthritis.

3. Outcome

International Classification of Functioning, Disability, and Health (ICF)

Arthritis has an impact on all three levels of functioning in the ICF framework: body function and structure (e.g. pain, muscle weakness), activity (walking), and participation (e.g. work and leisure). It therefore follows that any interventions for arthritis should target these same three levels of functioning in the ICF framework. However, the majority of rehabilitation best practice evidence for arthritis has focused on outcomes at the level of body function/structure and activity. For example, at the body function and structure level, education interventions have resulted in outcomes of decreased pain and decreased morning stiffness. Similarly, at the activity level, exercise interventions have resulted in improved functional status of individuals with arthritis. Although further research aimed at all three levels of functioning in the ICF framework is warranted, it is especially lacking at the participation level.

Cost

There are several cost-effective rehabilitation treatments for arthritis including group exercise, splinting, assistive devices, and home modifications. All of these treatments could be provided by an appropriately trained arthritis health professional (e.g. occupational therapist, physiotherapist, nurse specialist).

Key Informant Interviews

Emergent themes from the interviews included feasible options for models of care for arthritis. Three models of care for arthritis were most commonly identified by participants:

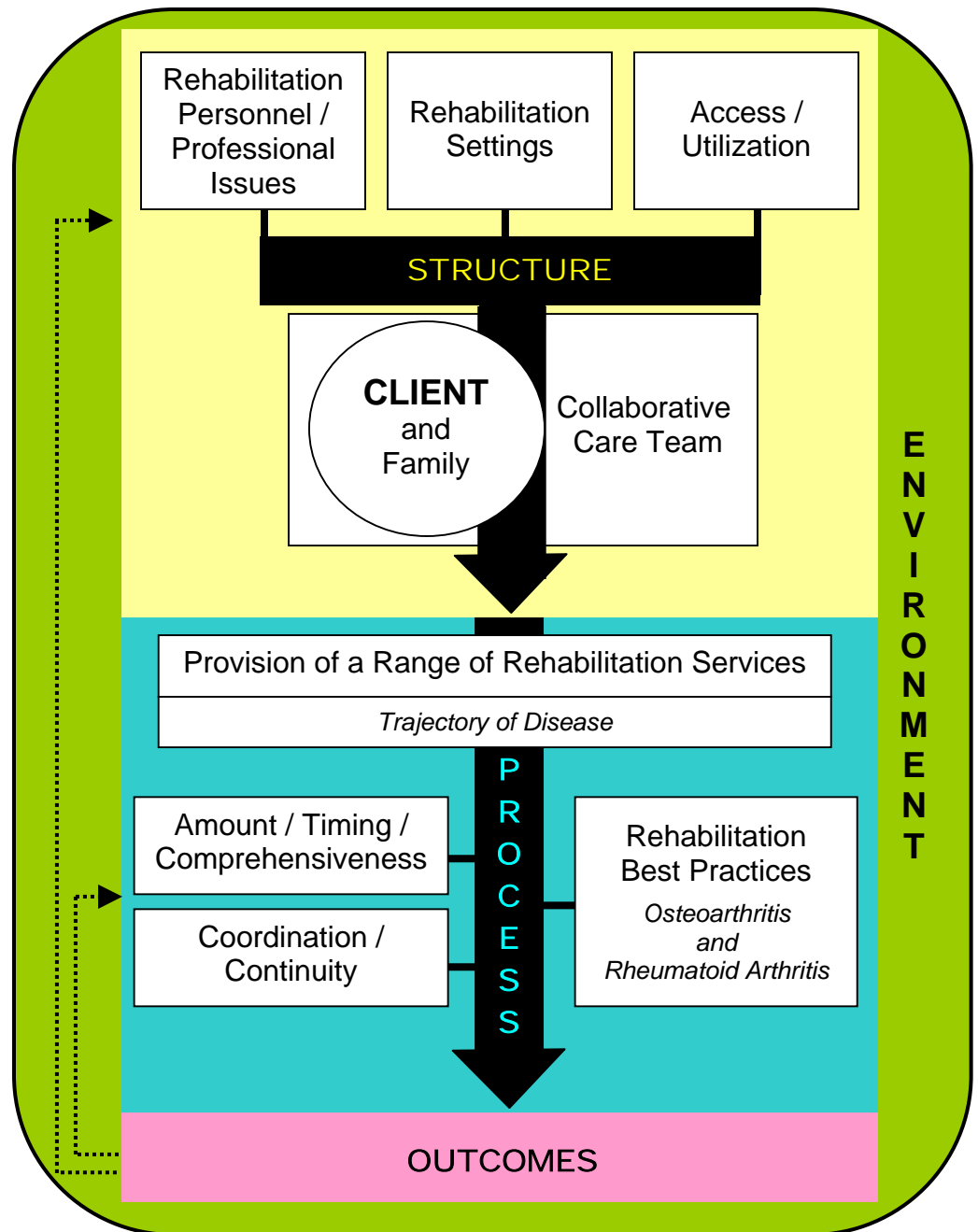
- 1) Multidisciplinary team care (collaboratives);
- 2) Allied health professionals in advanced clinical roles; and
- 3) Telemedicine.

The following 10 components of models of care for arthritis were identified as important in any model of care for arthritis:

1. Collaborative, multidisciplinary teams
2. Provider skill, education, and awareness and client education/awareness
3. Stable and predictable funding
4. Continuity of care across the continuum
5. Regulation to support rehabilitation professionals in the management of arthritis
6. Conceptual approaches/frameworks such as self-management and client-centredness
7. Primary and secondary prevention strategies
8. Timely access to services early in the disease process
9. Community action and development initiatives
10. Methods for evaluation

Conclusions and Recommendations

Elements of a PHC and rehabilitation model, *A Client-Centred Health Service Model of Primary Health Care and Rehabilitation for Arthritis*, are presented as a framework for the delivery of comprehensive rehabilitation services for adults with arthritis in Ontario (see Figure



3, page 43). The key elements of the model include structure, process, and outcome as outlined in Starfield's (1992) model of health services system. Structure is defined as elements that enable the provision of PHC services for persons with arthritis. Process encompasses activities related to the provision of care by the health care providers and the receipt of care by the client. The structure should be in place for the process to occur. Outcomes are reflected in the health status of individuals with arthritis as well as at the system level.

The client and family are central to this model, with the client and family being key members of the collaborative PHC team. Also incorporated into our proposed model for PHC and rehabilitation are several important components including client-centredness, collaborative health care teams, the social determinants of health, self-efficacy and the stages of change, community action, and the ICF. Longitudinal continuity of care, for persons with arthritis, considering the trajectory of the disease, is another critical factor highlighted in this model. Care for, and management of, persons with arthritis is important early in, and over, the course of the disease. At various stages of the disease trajectory clients with arthritis need to access the services of the 'right' health care provider at the 'right' time. Although this model focuses on arthritis, it highlights important factors that are relevant to the management of many chronic diseases.

1.0 BACKGROUND

1.1 Primary Health Care

Primary health care (PHC) is an approach to providing care that emphasizes health promotion and illness prevention, includes diagnosis and treatment, and provides a link to more specialized care (e.g. secondary or tertiary care). PHC is intended to be the foundation of the health care system with a sustainable, long-term relationship between the interdisciplinary health care team and the client (1). In Canada, many different health care professionals provide PHC services in a variety of settings. However, physician-centred private practice continues to be the dominant model of PHC delivery (2).

The challenge of how to organize and deliver PHC services is one of the key issues facing Canadian health policy (2). Factors such as an aging population, an increase in the prevalence of chronic diseases, a shift in the delivery of health care from hospital to the community, and an acute shortage of family physicians are placing increased demands on Canada's PHC system. In order to meet these demands and to strengthen Canada's PHC system, policy makers, together with providers and clients, are looking at ways to enhance the delivery of interdisciplinary and collaborative PHC services. For example, one current initiative, the Enhancing Interdisciplinary Collaboration in Primary Health Care (EICP) Initiative is focused on developing a framework that describes how PHC providers in Canada can work together effectively in every setting to provide the best outcomes for clients (3).

1.2 Rehabilitation and Primary Health Care

Rehabilitation services (i.e. physiotherapy and occupational therapy) are based on a philosophy that interdisciplinary teamwork and a holistic, client-centred approach are key to successful outcomes in disabling conditions (4). Eldar (2000) argues that PHC teams need to integrate rehabilitation into their day-to-day work, offer rehabilitation services in the PHC environment, and coordinate disability services at the community level (5). Indeed, research suggests that establishing rehabilitation services in PHC settings could result in several positive outcomes including, increased levels of satisfaction with service among clients and PHC physicians (6-8); decreased waiting times for services (8-10); lower costs than for services offered at hospitals or large health care clinics (5); reduced referral rates to specialists (11); greater continuity of care for people with disabilities (5); and improved client-related outcomes such as quality of life, exercise tolerance, and health status (6-8;12).

Although the literature does not provide any concrete evidence regarding the number of rehabilitation therapists that are needed in PHC, implicit in much of the peer-reviewed work is a call for an increase in rehabilitation services in PHC settings. In particular, literature suggests rehabilitation services in PHC settings are important for the treatment of chronic musculoskeletal conditions such as arthritis and low back pain (8;12-15). However, a number of studies point to an underutilization of rehabilitation services for persons with arthritis by PHC physicians (16-19) and an unmet need for rehabilitation services reported by persons with arthritis (20-24).

1.3 Arthritis

Osteoarthritis (OA) and rheumatoid arthritis (RA) are two forms of arthritis that share symptoms of pain, swelling, or stiffness in or around the joints. OA is the most common type of arthritis caused by the breakdown of cartilage. OA may be uniarticular or multiarticular, usually affecting the knees, hips, hands, and spine. RA can also affect any joint, usually affecting multiple joints, but most often the hands or feet. A distinguishing feature of RA is the inflammation that may occur in the lining of the joints and/or other internal organs. If left untreated, both forms of arthritis can affect the structure and functioning of the joints, leading to increased pain and disability (25;26). Arthritis-related pain and disability affects everyday activities, but also the wider aspects of life including travel, leisure, and social activities; labour force participation; and even everyday activities (27). Increased health care utilization and expenditure, as well as loss of productivity due to increased morbidity all become a challenge to the individual, the family, and society as a whole.

There is no known cure for arthritis; thus, management of this condition is important early in, and over, the course of the disease. Care strategies may differ at different points during the disease process. However, a comprehensive approach for optimal health outcomes involves both pharmacologic and non-pharmacologic treatments. PHC rehabilitation professionals offer non-pharmacologic interventions that have both a preventive and therapeutic role. A multidisciplinary approach with rehabilitation specialists working with the client, as well as collaborating and communicating with the other members of the PHC team, ensure that clients' needs and preferences for treatment are considered in the continuum of care, disability and dependence are minimized, and independence for individuals with arthritis is maximized.

1.4 Conceptual Models

The utilization of explicit conceptual models in health care service delivery and research informs the structures and processes of a system of health care and leads to a more comprehensive awareness of factors that influence outcomes at both the level of the individual and the health system. Conceptual models also contain ideas to inform the development and improvement of research, theory, policy, and practice. Section 4 of this report briefly outlines conceptual models in three main areas: PHC, rehabilitation, and arthritis care. Key elements of models in these areas are presented with the aim of developing a preliminary conceptual model for the delivery of client-centred PHC and rehabilitation services for adults with arthritis. This conceptual model is also informed by the review of the literature on rehabilitation best practices in the management of arthritis and by key informant interviews.

1.5 Purpose

The purpose of this project is to present a framework for the delivery of comprehensive PHC rehabilitation services for adults with arthritis in Ontario using evidence from the literature and knowledge of experts (i.e. key informants) in the field. For the purpose of this project, rehabilitation refers to two regulated health care professions: physiotherapy and occupational therapy.

Primary research objectives are:

1. To describe best practice approaches in the area of PHC rehabilitation for adults with arthritis.
2. To describe system-level factors that influence the delivery of PHC rehabilitation for adults with arthritis.

1.6 Structure of the Report

Elements of Starfield's (1992) health services system model of structure, process, and outcome (28) are used as an organizational framework for the literature review in Section 2 of this report. Section 2 provides an overview of the methodology for the review and summarizes the key findings. It is important to note that there is conceptual overlap between structure and process for this report in the areas of client-centred care and multidisciplinary collaborative care. As such, Section 2 presents results according to both i) structure (i.e. client and team members, utilization/access, and funding) and process (i.e. client-centred care, multidisciplinary collaborative care) elements. Section 2 also describes processes in the management of arthritis including rehabilitation best practices in the areas of education, exercise, joint protection, orthoses, modalities, assistive devices, and work/employment; and outcomes at both the level of the individual client and the system. Section 3 summarizes the methodology and results for the key informant interviews. Section 4 provides an overview of conceptual models in three areas: PHC, rehabilitation, and arthritis care. Section 5 proposes a conceptual model for the delivery of client-centred PHC services for persons with arthritis, integrating findings from the literature review, key informant interviews, and elements from the conceptual models reviewed in Section 4.

2.0 LITERATURE REVIEW

2.1 Methods

2.1.1 Search for Published Literature

The OVID and CSA search portals were used to access medical and psychosocial databases. These databases included: MEDLINE, Cumulative Index to Nursing and Allied Health (CINAHL), EMBASE, PsychINFO, AgeLine, Social Services Abstracts, Sociological Abstracts, and ERIC. Other relevant databases included: PEDro, OTDbase, and the Cochrane Library of Systematic Reviews.

Two main search strategies were applied to and modified in each database when necessary:

1. Individual/service level in the area of adult rehabilitation and arthritis
2. System/societal level in the area of adult rehabilitation and arthritis

Key words were employed in the searches involving four main categories: disease, intervention, individual/service level, and system/service level, as depicted in Figure 1 below.

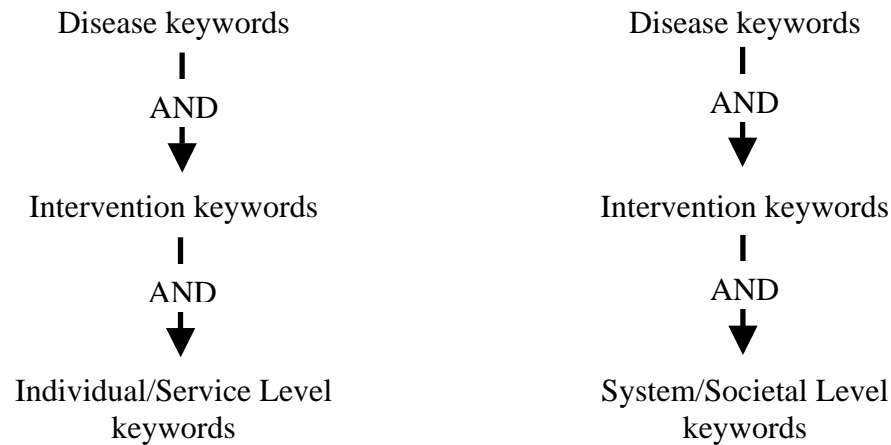


Figure 1. Key words for database search

Key words included under each of the four main categories were as follows:

Disease

Arthritis, psoriatic arthritis, rheumatoid arthritis, ankylosing spondylitis, Reiter's disease, lupus, scleroderma (other common terminologies for these conditions were also applied). The combination of these key words with the 'or' conjunction varied for particular databases. Several truncated keywords were also used (i.e. arthr* or rheuma* or osteoarthr* or lupus or spondy* or sclerod*) when possible.

Intervention

Rehabilitation, exercise, occupational therapy, occupational therapist, physiotherapy, physiotherapists, physical therapy techniques (such as balneotherapy, cryotherapy, electric stimulation therapy), exercise therapy, hydrotherapy (which induced hyperthermia), orthopedic manipulation, massage, phototherapy (other common terminologies for these interventions were also applied). The combination of these key words with the 'or' conjunction varied for particular databases. Several truncated keyword were used (i.e. rehab* or (occupational therap*) or (physical therap*) when possible.

Individual/Service Level

Care* (capturing both home and primary care) and community* were applied to several database searches. These truncated keywords (care* or community*) combined with the disease and intervention keywords were used in the CSA database searches to obtain literature relating to the individual/service level.

System/Service Level

Preventive health care, community health services, home health care, health care delivery, health resource utilization, health services accessibility, direct access, gatekeeping, emergency service, client admission and readmission, client discharge, health care outcomes, referral and

consultation, multidisciplinary care team, disease management, continuity of client care (other common terminologies for these system-related key words were also used). The combination of these key words with the 'or' conjunction varied for particular databases. Several truncations to these keywords occurred (i.e. community* or care or wait* or refer* or readmission* or admission* or emerg* or discharge* or navigat* or manage* or utiliz* or access* or consult* or multidisciplin* or communicat* or continuity or continuum) when possible. These key words were combined with the disease and intervention to obtain literature relating to the system/service level.

Limits were applied to searches where applicable and when necessary that included language (English), population (human, adults 18 or 19 years or older), research type (systematic reviews and reviews), and dates (1980 to 2004).

Titles and abstracts were screened and eligible articles were retrieved. Abstracts were excluded if it was apparent from the provided information that the following inclusion criteria were not met:

- Subjects receiving the intervention had a clinical diagnosis of arthritis (as described by the authors of the studies)
- Intervention was administered by a rehabilitation therapist (i.e. physiotherapist, occupational therapist)
- Interventions occurred in a community-based setting (e.g. outpatient clinic, home, community centre, etc.)

Systematic reviews, quantitative studies, and narratives for physiotherapy modalities and exercise therapy were retrieved and examined. For occupational therapy, systematic reviews, quantitative studies, and narratives were retrieved and examined; however, where evidence was lacking from these reviews, primary studies were also included.

2.1.2 Search for Unpublished Literature

A search was conducted on the Internet using the Google search engine to find relevant grey literature relating to rehabilitation models in PHC. Search words included “rehabilitation in primary care” and arthritis; “primary care rehabilitation” and arthritis; “community-based rehabilitation” and “arthritis management”; “community-based rehabilitation” and “arthritis model”; “community rehabilitation” and “arthritis management”. Several key documents led to recent publications (reports and books) that were relevant for this report. A search was also performed in the Arthritis Community Research and Evaluation Unit’s database for additional unpublished literature relating to arthritis and rehabilitation. Practice guidelines that were known to the authors of this report and available through the Internet were also obtained and examined.

2.1.3 Critical Appraisal Process

Studies meeting the criteria were retrieved and a systematic process to critically appraise the literature was undertaken. Standardized critical appraisal forms based on the work of Law (2002) were used to guide the appraisal process (29). All articles were graded according to Excellent, Good, Average, Poor, and Very Poor based on a scoring system.

Levels of evidence were determined for each subject area. For intervention studies, or studies that examined the outcomes/effectiveness of specific interventions/strategies, levels of evidence were based on the following definitions:

Conclusive evidence: Systematic review(s) and/or guideline(s) and/or 1 randomized controlled trial (RCT) that are graded “Good” or “Excellent” according to our criteria for appraisal.

Indicative evidence: Consistent findings among multiple high quality studies other than RCTs (e.g. cohorts, case control studies, qualitative studies) and/or high quality (“Good” or “Excellent”) review(s) that is/are not systematic.

Emerging/Limited evidence: 1-2 studies other than RCTs that are graded as “Average” or above according to our criteria for appraisal or 1 RCT that is graded “Average” according to our criteria for appraisal

2.2 Results

2.2.1 Literature Review Characteristics

Table 1 provides a detailed summary of the total number of intervention-level (i.e. best practice) studies used in this report by practice area (i.e. occupational therapy, physiotherapy, and exercise), arthritis condition (i.e. OA, RA or non-specified), type of research (i.e. quantitative, qualitative, systematic review, narrative, grey literature), and quality of evidence (i.e. excellent, good, average). A total of 49 intervention level studies were reviewed with 32.7% in the area of occupational therapy, 24.5% in the area of physiotherapy modalities, and 42.9% in the area of exercise therapy. Overall, 36.7% of the studies were specific to OA, 49.1% to RA, and 16.3% were either OA and RA combined or arthritis non-specified. The majority of articles reviewed were systematic reviews (40.8%). Overall, the quality of evidence was excellent for 83.7% of the articles reviewed.

Practice guidelines such as the Ontario Program for Optimal Therapeutics (OPOT), European League Against Rheumatism (EULAR), American College of Rheumatology (ACR), and BMJ Clinical Evidence were used in this report; however, they were not included in Table 1 because these guidelines included a wide range of interventions. Only guidelines developed by the Ottawa Panel and the American Geriatrics Society Panel have been included in both the table and the report because they are specific for exercise and/or physiotherapy modalities for OA and/or RA. For acupuncture, two recent RCTs have been described in the report (but, not documented in the table) in order to show that evidence in this area is emerging. Moreover, both reviews and guidelines for client education in arthritis were examined; however, most documents were not specific to rehabilitation and thus were not included in Table 1.

Table 1. Literature Summary for Individual Intervention-Level Studies

LITERATURE CHARACTERISTICS		PRACTICE AREA		
		Occupational Therapy Interventions	Physiotherapy Modalities	Exercise Therapy
Total number of studies		16	13	21* *7 include PT
Condition	Osteoarthritis	2	5	11
	Rheumatoid arthritis	10	8	6
	Arthritis non-specified (or OA/RA combined)	4	0	4
Type of Research	Quantitative	10	0	3
	Qualitative	0	0	0
	Systematic Review	2	12	6
	Narrative	4	1	12
	Grey Literature	0	0	0
Quality of Evidence	Excellent	11	13	17
	Good	3	0	2
	Average	2	0	2

System-level literature was also reviewed in the areas of client-centred care, multidisciplinary and collaborative approaches to care, access to and utilization of rehabilitation services, funding for and costs of rehabilitation services, and models of care. However, this literature is not presented using the same methodology as the intervention-level studies in Table 1 as the majority of articles were narratives and some were not specific to arthritis.

It should be noted that our literature review includes results of various types of studies including systematic reviews, randomized controlled trials, quantitative studies, clinical practice guidelines, and narratives. It was considered important to include a variety of types of studies to address the rehabilitation management of arthritis because information that is needed for making clinical decisions in the day-to-day management of chronic diseases like arthritis, such as psychosocial factors and personal preferences of the client, are seldom included in controlled trials. Vliet Vlieland's work (2002) supports our finding that randomized controlled trials in the area of chronic disease management are rare (30).

2.3 Structure and Process of Care

The key structural elements of a health service delivery model are the client and the health care team. This structure is influenced by a number of system-level factors such as access to and utilization of services as well as funding of services. Client and team process are also discussed

in this section including the concept of client-centred care and multidisciplinary collaborative approaches.

2.3.1 Client-Centred Care

2.3.1.1 The Client and the Environment

Individuals living with arthritis have to manage day-to-day activities with the challenges of functional losses associated with their conditions and no hope for cure of the disease. Household and job obligations of persons with arthritis, as well as their sociocultural environments, often dictate the type of arthritis care that they are able to access and the management strategies that they are able to use (31). Consideration of multiple factors that include the clients' biopsychosocial needs, as well as their economic and political environments, become important in treatment options and care plans (31-33). A client-centred and holistic philosophy takes into account the goals and expectations of the client and should be put into context with the individual's broader life circumstances (31).

Client-centred care has become an increasingly important health care concept in recent decades. The shift toward addressing client-centred care has been influenced by factors including a rise in client expectations, changing culture, availability of information to the general public, the rise in consumerism, and the feminist movement (34). Moreover, the emphasis on client-centred care reflects current Western societal beliefs about independence, the rights of individuals, and the importance of access to information (32). The Canadian Arthritis Bill of Rights highlights the importance of ensuring that the rights and responsibilities for those with arthritis are identified and considered in the continuum of care (35).

2.3.1.2 Definition and Benefits of Client-Centredness

In a rehabilitation setting, client-centredness has been defined by the Provincial Rehabilitation Reference Group (2000) as an approach to care that facilitates responsive, individually appropriate, functionally-based goal-setting involving the active and informed participation of the client (34;36). This approach promotes clients and health care providers as equal partners in the management of the client's health care and rehabilitation process with an understanding of and respect for the clients' individual needs. Moreover, adopting a client-centred approach strives to incorporate clients' perspectives into the provision of services at the system level and to maximize the chance of a successful transition between rehabilitation programs and the community.

Efforts to build client-centredness into the delivery of health and rehabilitation services are based on the assumptions that client-centred care leads to client satisfaction and improved clinical outcomes. Studies of health care outcomes have found both subjective benefits (i.e. client-practitioner communication, client comfort and control) and objective improvements (i.e. blood sugar levels, blood pressure, overall health status) to a client-centred approach (34). Another potential benefit identified is an increase in efficiency that may contribute to cost-effectiveness (34).

2.3.1.3 Components of Client-Centred Rehabilitation

The Picker Institute categorizes patient concerns into eight dimensions of patient-centred care: respect for a patient's values, preferences, and expressed needs; access to care; emotional support; information and education; coordination of care; physical comfort; involvement of friends and families; as well as continuity and transition. However, Picker's work has been mostly acute care hospital-focused (32). Rehabilitation differs from acute care because clients accessing rehabilitation services often have chronic illnesses such as arthritis that they must learn to manage, and live with, in the long-term. Thus, understanding the importance of the consequences of disease and disability (i.e. what constitutes a 'good outcome' in the field of rehabilitation) should rely on the perspectives of those living with the disease, who have to adapt or learn to function as best as they can in their homes and communities within the limits of their condition.

Reactions to long-term disability and how individuals respond to and manage variability in chronic illnesses may differ within and among individuals. Some factors that may affect response to long-term disability or acceptance of strategies for managing arthritis include age, level of physical functioning, and acceptance of illness or self-efficacy (37;38). McPherson et al. (2001) examined outcomes from the perspectives of clients with arthritis and found that being able to 'take charge' of their illness and adapting to or accepting, rather than overcoming restrictions, were important to these clients. Taking charge emerged as an overarching theme in terms of being the 'ultimate' outcome desired, but also as a potential determinant of experience in relation to the other emerging themes. Other emerging themes included: the impact of personal and intrinsic factors as well as future issues that have an impact on matters related to perception of normality, which then ultimately affects the individual's position in relation to taking charge (39).

A more recent study examined the important components of client-centred rehabilitation from both the perspective of the client and the health care professional. Important components of client-centred rehabilitation from the client's perspective include: i) individualization of programs to the needs of each client in order to prepare them for life in the real world; ii) mutual participation with health care professionals in decision-making and goal-setting; iii) outcomes that are meaningful to the client; iv) sharing of information and education that is appropriate, timely, and according to clients' wishes; v) emotional support; vi) family and peer involvement throughout the rehabilitation process; and vii) coordination and continuity across the multiple service sectors (32). Similarly, the components important to client-centred rehabilitation from health care professionals' perspectives include: i) family involvement; ii) client as 'equal'; iii) goal ownership; iv) client as team member; v) philosophical shift in health care professionals approach to care; vi) information sharing; vii) emotional support provision; viii) decision-making; ix) access to rehabilitation through more than one door; x) follow-up as a continuum of access; and xi) environmental and organizational considerations (40).

2.3.1.4 Barriers to a Client-Centred Approach

Barriers to implementing a client-centred approach have been identified and include client barriers, clinician barriers, client-clinician relationship barriers, and contextual or environmental

barriers. These barriers to client-centredness often arise when client preferences conflict with health care professionals' perceptions of what they think the client wants and needs, but also constraints imposed by what the health care system will allow (40). Thus, the provision of an effective continuum of service requires high levels of collaboration not just among professionals and clients on a single health care team but also among multiple professionals on several teams and often across organizational boundaries (32).

2.3.2 Multidisciplinary Collaborative Care

Literature related to health care teams in general, and health care teams specializing in arthritis care, was reviewed. Many concepts that emerged from the general literature regarding health care teams are important to consider when developing models of care for health care teams specializing in arthritis. Key concepts from the general literature regarding health care teams are outlined followed by a summary of findings from the literature specific to arthritis and health care teams.

2.3.2.1 Health Care Teams

Teams exist in various organizational settings, including health care, because teams are thought to be more productive than individuals working in isolation (41). Various descriptions of teams exist in the literature including multidisciplinary, transdisciplinary, and interdisciplinary (42;43). For this report, the majority of literature reviewed addresses multidisciplinary teams and the concept of collaborative care teams. As such, these terms will be used throughout the report. Effective teams are comprised of three main components including structure, leadership, and process (44).

The structure of the team is reflected by the range of skills, with there being no optimal number of team members (44;45). However, it has been suggested that team size needs careful management (46). Small teams may not have a range of ideas, skills, experience or "clout" that is sufficient enough to accomplish a job, while large teams may incur increased costs of coordination and communication. Conflict and related disadvantages of a larger size are additional considerations (46).

Team leaders must possess certain personal attributes as well as sufficient theoretical knowledge and practical experience in the field and relevant specialties (44). The literature supports the notion that team leaders could be from any number of professional backgrounds (42). However, attending physician's leadership and involvement is statistically correlated with client-centred rehabilitation team cohesiveness (43). The concept of a team champion has also been highlighted as important to greater team effectiveness (46). Champions provide motivation, encouragement, and work on behalf of the team to acquire resources and support (46).

Team process refers to the type of team model that is adopted and includes decision-making processes and communication. More specifically related to team process and arthritis, it has been noted that ongoing communication between therapy facilities and physicians, especially with respect to waiting lists is critical (18).

2.3.2.2 Health Care Teams for Arthritis

Effective teams are important for improving quality of care for patients with chronic illness such as arthritis (46). The goal of a multidisciplinary team includes control of patient symptoms; prevention of disease progression; and education of the client to perform self-care and to build and maintain a satisfactory and fulfilling lifestyle (47). The literature review considered various combinations of team composition. Most literature examined the effectiveness of team work with respect to specific outcomes such as overall health, patient satisfaction, and ability to perform activities of daily living (ADL).

A prospective study that compared ongoing involvement of a coordinated team of health professionals in the management of clients with mild RA with episodic care by health professionals found that generally, a team approach had favourable outcomes on disease activity, functional ability, and psychosocial adaptation (48). A team approach in a day care rehabilitation setting has also shown favourable results for clients with RA (49). A literature review specifically compared outcomes of clients that had undergone inpatient treatment using a multidisciplinary approach with those cared for in an outpatient multidisciplinary setting (50). Findings remain inconclusive as to whether an inpatient or an outpatient multidisciplinary approach is more efficacious.

Team composition was described as various combinations of the following groups: rheumatologist, physiotherapist, occupational therapist, orthopaedic surgeon, nurse, social worker, podiatrist/orthotist, dietitian, public health nurse, psychologist/mental health specialist, family doctor, physiatrist, pharmacist, peer counselor, laboratory technician, social network, and client. However, the client and his or her family have been identified as the most important member of the multidisciplinary team (47). The roles and contributions of some of the more common members of the team (rheumatologist, physiotherapist, occupational therapist, registered nurse, dietitian, and social worker) are documented in the literature and are shown to improve client outcomes (17;51;52). Optimal longitudinal treatment requires a comprehensive, coordinated, and shared vision of care, as well as a team of health care providers who understand the diversity and complexity of the client problems that may arise with a chronic condition (47).

Several positive outcomes have been demonstrated in the literature with a team approach to care of clients with arthritis (48;50;53-55). These benefits include decreased pain, decreased tenderness, decreased swelling, decreased disease activity, increased ability to perform ADLs, overall increased function, increased psychosocial adaptation, decreased disability and perceptions of disability, and increased overall health.

2.3.3 Access/Utilization

Individuals with chronic diseases such as arthritis require comprehensive health care services; however, research indicates that such care is not consistently available (20) and that people with arthritis frequently report unmet needs for services (23). Research has found that most unmet needs are for rehabilitation services (i.e. occupational therapy and physiotherapy) (20;21); other allied health services such as chiropody, home nurse care, and social work (23); education programs (24); assistive devices (20;22); and home modifications (22). These findings raise

concern about access to allied health services and education programs for persons with arthritis. Findings also stress the importance of obtaining clients' perspectives on unmet health care needs in order to identify deficits in care and to examine more specifically why and for what specific problem, persons with arthritis report unmet needs (23). For example, a recently developed needs assessment tool, the Southampton Needs Assessment Questionnaire (SNAQ) (56), could be used to obtain perspectives on unmet needs. The SNAQ is not disease-specific and identifies levels of met need and satisfaction with services in order to encourage clients to think about their unmet needs.

It is also important to understand determinants of use of health care services by persons with arthritis to identify the extent to which the use of services can be improved and to identify factors that detract from optimum use (21). Bercanovic et al. (1991) used Andersen's behavioural model of health services utilization to explain the use of health services (e.g. physiotherapy visits, physician visits) among persons with RA. Factors related to physical function (e.g. mobility, pain, ADL) accounted for most of the explained variance in the use of the services that were examined. Sociodemographic factors (e.g. age, sex, education) and factors related to income and health insurance accounted for less of the explained variance. Other factors that were not measured in the Bercanovic et al. study that might affect use of services include the presence of comorbidities and psychological well-being.

With regard to the presence of comorbidities, one study found that 54% of participants with RA reported at least one chronic condition in addition to their RA (21). Other research demonstrates that middle-aged persons living with RA acquired age-related chronic diseases and impairments in greater numbers and earlier in life than those without disabilities (22). Aging with a chronic condition such as arthritis could have an impact on access to, and utilization of, rehabilitation services, particularly if a focus of such services is on reducing the risk of accelerated aging. With regard to psychological well-being, studies have found that arthritis has a significant impact on the psychological condition of the person and on the consumption of health care services. For instance, Ethgen et al. (2002) found that individuals with poor psychological well-being, as measured by the mental health scale of the SF-36, consume more health services such as occupational therapy, physiotherapy, and social work than those not experiencing a negative effect on their psychological well-being (57).

2.3.4 Funding

In Canada, the payment of PHC rehabilitation services is being shifted from governments to individuals and private insurers (58;59). The recent delisting of community-based physiotherapy from the Ontario Health Insurance Plan (OHIP) in March 2005 is an example of the shifting of costs for rehabilitation services from public to private sources. This shift is also highlighted by recent research, which indicates that 67% of physiotherapists' caseloads in PHC settings in Ontario are currently covered for services by private (e.g. out of pocket) and quasi-private (e.g. Workplace Safety and Insurance Board) sources (16). In the case of occupational therapists, because there are less private sources of coverage for occupational therapy services compared to physiotherapy services (43.2% compared to 67%) (16), it is anticipated that there also will be fewer avenues to access publicly-funded PHC occupational therapy in the future.

Because clients with chronic conditions such as arthritis are more likely to receive rehabilitation services in publicly-funded compared to privately-funded practice settings (16;16), this shift to private sources of payment will further reduce access to much needed services for persons with arthritis. In fact, evidence from the United States suggests that a lack of public funding for arthritis care can hinder elderly peoples' abilities to receive necessary care including physiotherapy, occupational therapy, home care, and assistive devices (60). In Canada, although research is lacking on the impact of funding on receipt of rehabilitation services specifically for persons with arthritis, the delisting of publicly-funded physiotherapy services in British Columbia in 2002 resulted in an increase in waiting times within public sector institutions, a 28% decrease in the number of clients accessing community-based care, and reports of clients ending treatment prematurely due to cost constraints (61).

2.4 Process - Rehabilitation Best Practices in the Management of Arthritis

Process elements of a health service delivery model include the provision and receipt of a wide range of interventions that are based on best practices. The following section summarizes the evidence on rehabilitation best practices in the management of arthritis in seven areas: education, exercise, modalities, joint protection, assistive devices, orthoses, and work/employment. For the purpose of this report a best practice is a process or method that, through experience and research, has proven to reliably lead to a desired result. In the field of rehabilitation, best practices involve integrating information from clients and/or family members and individual clinical experience/expertise with the best available evidence in making decisions about the care of individual clients (62-64).

2.4.1 Education

Client education is an important component of effective arthritis rehabilitation and has varying benefits on both physical and psychosocial outcomes. The aim of client education is to enable persons with arthritis to develop the skills and strategies that are required to manage and live with a chronic condition. Evidence exists in practice guidelines for client education in the nonpharmacologic management of OA and RA (65-69). Educational approaches may include the provision (68;70) and communication (65;71) of information about the disease and its therapies, counselling (70;72) or instruction (73) on how to adapt to living with a chronic disease, and cognitive-behavioural approaches (70) that enhance self-efficacy in coping with the symptoms and the functional limitations associated with the disease. Learning self-management techniques (67;71;74;75) are also important for the client in coordinating their own care and managing their disease. Benefits of different educational techniques/therapies have been observed in both OA and RA. The benefits of these interventions included decreased pain and enhanced coping (68;73;76;77) as well as reduced psychological disability (66;69;71). A study involving community-based physiotherapy intervention (education and exercise) emphasizing self-management strategies found improved self-efficacy, disease management knowledge, and morning stiffness in people with established RA (75). Currently, a Cochrane protocol exists that will examine the effects of client education interventions on health status in OA (78).

2.4.2 Exercise

2.4.2.1 Physical, Functional, Physiological, and Behavioural Effects

Strong evidence exists supporting the benefits of exercise in the nonpharmacologic treatment of arthritis in practice guidelines for OA (65;67-69;79) and RA (66;67) as well as systematic reviews for OA (72;80;81) and RA (82). Exercise has various physiological benefits in reducing the risk of chronic diseases (83) and also has positive effects on physical, functional, and behavioural outcomes in arthritis. These benefits are important especially when the interplay of factors such as a sedentary lifestyle, a deconditioned state, and an increase risk of comorbidity (e.g. arthritis and cardiovascular disease) are considered. For example, functional benefits observed with exercise (e.g. improved postural and gait stability) have implications for falls prevention in the at-risk population, and similarly on muscle weakness as a risk factor for the progression of disability (66;69;84-87). Moreover, some evidence exists to support weight loss for clients who are overweight or obese (65;67;69;84) in both OA of the knee (68;87) and hip (65;68). However, the Arthritis, Diet, and Activity Promotion Trial (ADAPT) (88) and other researchers (40;69;89) emphasize the importance of combining weight loss and exercise, rather than weight loss alone, as interventions for clients with OA of the knee.

2.4.2.2 Disease Activity

Participation in exercise has demonstrated beneficial effects on pain, muscle strength, and functional status for clients having low-to-moderate disease activity for OA (66-69;79-81;90;91) and RA (82;92). Most studies have also shown beneficial effects of exercise for individuals with active (92) or chronic RA (93), as well as those having minor limitations (82) or fragile bones (92). For example, no detrimental effects were observed on disease activity or joint symptoms in clients with OA and RA (69;82;84-86;89;93). However, some negative effects of physical activity compared to bedrest were identified for RA (94). More research is needed to examine the long-term effects of exercise therapy on radiological progression, bone mineral density, and functional capacity in RA (82;93;95).

2.4.2.3 Exercise and Specific Joints

The knee has been the focus of exercise research in OA. Evidence for the effect of exercise on other joints including the hip is scarce for the OA population. For RA, evidence to recommend strengthening exercises for muscles surrounding the knee is available. However, evidence is lacking for muscles surrounding the shoulder and hand (94).

2.4.2.4 Parameters of Exercise

Literature examined various types and forms of exercises. An operational definition of exercise was lacking in most studies. Only two of the reviews examined, defined exercise therapy as “a range of activities intended to improve strength, range of motion, endurance, balance, coordination, posture, motor function, or motor development that is performed actively, passively, or against resistance” (72;81). Canada’s physical activity guide (83) promotes a

variety of choices within three main activity categories: endurance, flexibility, and strength (with balance activities for older adults) to obtain the most health benefits.

Studies often involved mixed training methods and lacked consistency in exercise prescription (i.e. intensity, frequency, duration). Programs included endurance, flexibility, strength, and balance activities and often were implemented in a variety of settings (i.e. clinic-, community-, and home-based). These exercise programs also occurred with supervision or were self-directed, on land or in water. However, Fransen (2004) indicates that the provision of non-clinical community-based exercise classes targeting older persons with specific chronic musculoskeletal disease such as RA and OA are limited (74).

There is no optimal exercise regime for all people with OA (69;72;74;80;81;84;85) or RA (74;92;94;95) reported in the literature and guidelines examined for this review. However, several papers provided general recommendations for exercise for OA and RA (72;84;90;92;93;95). Exercise guidelines that were cited in the literature included the U.S. Surgeon General's recommendation for physical activity (40;89;96) and the American College of Sports Medicine Position Stand (97) for the quantity and quality of exercise for developing and maintaining fitness in healthy adults (71;74;92). These guidelines are for healthy adults and should be modified for individuals based on their arthritis condition and limitations associated with their disease. Consensus practice recommendations for exercise prescription for older adults with OA are available (84). For adults with RA, the Ottawa panel (2004) has conducted a comprehensive systematic review for the development of evidence-based clinical practice guidelines for therapeutic exercises in the management of this condition (94).

A combination of types and forms of exercises is recommended for OA because different types (e.g. isotonic strength training that is progressive in nature, low-to-moderate intensity aerobic exercise, specific and whole-body functional strength training exercises) and forms (e.g. cycling, running, walking, swimming, aerobic dance) of exercise have varying benefits in terms of specific joint mechanisms and general health (85;87;90;91). However, for an inflammatory disease such as RA, the Ottawa Panel (2004) recommends a low-intensity exercise program for reducing pain and improving functional status as compared with a high-intensity exercise program (94). In addition, preliminary data supports the use of low-intensity aerobic exercise when examining long-term effects of exercise for OA since higher intensity programs often have higher attrition rates (90). Fransen (2004) recommends a regular graded therapeutic exercise program that avoids exacerbating symptoms and general fatigue while increasing muscle strength, joint range of motion, and general aerobic fitness (74).

2.4.2.5 Factors Affecting Exercise Prescription

The treatment approach or exercise therapy program for individuals often depends on an interplay of factors (74;80;89;98) that may affect acceptance and response to the intervention. Some individual factors include age, comorbidity, degree of disease severity affecting response to exercise, and presence of joint deformity. Some societal factors include availability and accessibility of programs within the community, cultural perceptions towards exercise, and socioeconomic status. Other factors to consider for exercise adoption also include self-efficacy for performing exercise, previous experience or preferences with exercise (74), social support

(85;87), as well as practicality and cost issues (74;99). Fransen (2004) identified four client characteristics as plausible potential predictors of treatment responsiveness, which included age, body mass index, symptom duration, and radiographical disease severity (74). It is important for clients to understand their disease and to have the skills to modify their exercise routines for accommodating their individual patterns of disease (i.e. daily fluctuations of symptoms). The physiotherapist as well as the physician and client should work as a team to re-evaluate the physical components of the therapy and demands on the body as the disease evolves or flares up. Assisting the client in perceiving the greater benefits and fewer barriers to exercise are important. A client-centred approach in creating an individualized exercise program (e.g. determining the individual's stage of readiness to exercise, individual goal-setting, mutual planning) is an important consideration.

When preparing an individual with arthritis for successful participation in a community-based or self-directed exercise program, referral to a physiotherapist and/or occupational therapist may be necessary to evaluate and reduce pain and impairments (71) that may affect response to exercise. Physiotherapy should be initiated in the early stages of arthritis (66;69) and may include early screening and preventive exercise therapy for the management of the disease (98). Early OA of the knee was defined by the extent of joint space width loss and not by symptom duration (74).

2.4.2.6 Individual Versus Class-Based Exercise Programs

Supervised exercise classes appeared to be as effective as treatment provided on a one-to-one basis (80). A home-based exercise regime (81) or the addition of a home exercise element to a program (75;85) showed favourable results. Exercise in a group setting (87) is also advantageous because a social context with peers having similar disease-related symptoms may improve attendance (74). On the other hand, learning to exercise in the home could improve self-efficacy for participating in self-directed physical activity and exercise adoption for a longer time period. Monitoring (74;80;85) or periodic re-training (98) by a physiotherapist, exercise trainer, or kinesiologist may promote adherence. The provision of support and counselling (72) as clients adopt exercise behaviour and become more physically active are also important considerations. Adherence to, and adoption of, exercise therapy as part of a healthy lifestyle are critical for achieving short-term and maintaining long-term health benefits. Long-term goals of physiotherapy (e.g. encouraging participation in physical activity and ongoing fitness) increase the probability of attaining or maintaining a healthy body weight and therefore reducing the risk of various comorbidities associated with obesity and a sedentary lifestyle (74).

Currently, Cochrane protocols exist that will examine the effectiveness of aquatic therapy for treating RA compared to land exercises or no intervention (100), the effectiveness of exercise therapy for RA of the hand (101), as well as the effectiveness of comprehensive physiotherapy interventions in improving outcomes based on the ICF (102).

2.4.3 Modalities

Physiotherapists have available a variety of modalities that could be used as adjunct interventions to other nonpharmacologic and pharmacologic treatments. For individuals with arthritis, disease symptoms such as pain and joint stiffness may limit motion and prevent

participation in exercise. Modalities that can be administered by the physiotherapist as palliative therapy include electrophysical agents (i.e. diathermy, ultrasound, transcutaneous electrical nerve stimulation (TENS), low level laser therapy, faradic baths), thermotherapy (i.e. heat packs, paraffin wax), and cryotherapy (i.e. ice packs, massage with ice) for OA (74;103-107) and/or RA (74;108-113).

Many guidelines examined in this review do not support the use of these modalities in the management of OA or RA (65;66;68;71;79;114). Scientific evidence for these modalities in both OA and RA is sparse or inconsistent due to poor methodological quality of the studies, inadequate reporting and analysis, heterogeneous outcome measures, as well as varying characteristics of the therapeutic application, study population, and disease state. However, despite the lack of evidence, some of these modalities (e.g. balneotherapy, acupuncture, thermotherapy, cryotherapy) have been used for centuries and in the medical practice of specific cultures (103;111;113;115). Some simple modalities (e.g. TENS) have the added advantage in that the client can use them in a self-directed mode (74).

The Ottawa Panel (2004) concludes that there is insufficient evidence to recommend or not recommend the use of several modalities and physical agents in certain clinical circumstances (116). Despite the lack of evidence, the Ottawa Panel (2004) supports the use of low-level laser therapy alone; ultrasound alone (i.e. continuous); thermotherapy as an adjunct (i.e. wax combined with exercise); and transelectrical nerve stimulation (i.e. acupuncture-like TENS) for the management of RA symptoms (e.g. pain, stiffness) in the foot, knee, wrist and/or hand. Conversely, there is no support for cryotherapy or electrical stimulation of the muscles as interventions for RA (116).

Currently, a Cochrane protocol exists that will examine the efficacy of acupuncture compared to standard medical treatment and sham acupuncture, as well as acupuncture plus standard medical treatment compared to standard medical care alone for OA of the knee (117). However, recent randomized control trials have shown that acupuncture may have an important role as a complementary therapy (118) or as an adjunctive therapy as part of a multidisciplinary integrative approach (119) to reduce pain and improve physical function in clients with knee OA.

2.4.4 Joint Protection

Joint protection and energy conservation are self-management approaches that aim to maintain functional ability in persons with arthritis through altering patterns of joint movements, practising proper joint and body mechanics, planning and pacing activities, regular rest, and the use of assistive devices (70;120). There is conclusive evidence supporting the effectiveness of joint protection instruction for persons with RA (65;71;121;122) and OA (65;71). Because joint protection strategies are a fundamental way to provide preventive joint care, persons with arthritis should receive instruction on joint protection early in the disease process; however, instruction should be optimally timed based on client receptivity and need (120). With regard to the most effective method to provide instruction on joint protection, an educational-behavioural approach has been found to be more effective than a standard information-oriented approach (i.e. information, demonstration and short supervised practice) in facilitating behaviour change in persons with RA (69). An educational-behavioural approach includes strategies such as skills

practice, problem solving, self-efficacy and adherence enhancing strategies, and structured teaching methods to enhance recall with the setting of weekly goals to practise methods at home (69).

2.4.5 Assistive Devices

Assistive devices (e.g. jar openers, walkers, raised toilet seats) and environmental modifications (e.g. stair rails, wall bars in bathroom) are prescribed by rehabilitation professionals to improve function, enhance safety, and protect joints in persons with arthritis (70;120;123). Assistive device provision is typically combined with joint protection and exercise training strategies to maximize function and independence in the performance of daily activities. Conclusive evidence exists in practice guidelines for the use of assistive devices in the treatment of OA and RA (65;69). A systematic and comprehensive approach to assistive device service delivery is required, including proper evaluation of the need for assistive devices, appropriate training in the use of assistive devices, and adequate follow-up post prescription (123;124). Information on assistive devices should be provided early in the disease process to protect joints even before a person has difficulty with daily activities because of pain or decreased range of motion (123;125).

2.4.6 Orthoses

An orthosis is an apparatus used to support, align, prevent, or correct deformities or to improve the function of movable parts of the body. Hand splints and foot orthoses such as shoe inserts are common types of orthoses. These interventions are designed to relieve pressure; reduce shock and shear; accommodate, correct, and support deformities; and control or limit painful motion of joints. There is indicative evidence for the effectiveness of resting splints in RA (122;126) and for the use of foot orthoses (65;127) (i.e. extra-depth shoes with or without semi-rigid insoles to relieve pain on weight-bearing). Research in the area of OA and splinting is scarce. However, preliminary evidence suggests that conservative treatment consisting of splinting the first carpometacarpal joint may delay or prevent the need for surgery (128).

2.4.7 Work/Employment

Work loss occurs in persons with OA and RA. However, loss tends to occur early in the course of RA. It is therefore important that persons with arthritis receive rehabilitation services aimed at retaining employment or enabling return to employment. According to Backman (2004), many of the factors associated with work disability or work retention are modifiable with rehabilitation interventions (129). However, studies reporting on the effectiveness of vocational rehabilitation programs for persons with arthritis are limited. Nevertheless, several authors argue that family physicians and rheumatologists require further knowledge of the benefit and availability of vocational rehabilitation services for persons with arthritis (70;129). A conceptual framework, suggested by Backman, which considers the following factors may be useful for health care professionals to plan and evaluate programs to help people with RA retain employment or return to work: characteristics of the person (age, functional status, motivation), demands of the work (physical and psychological requirements), and barriers or supports

(physical work space, policies related to sick leave and work accommodation, and interpersonal relationships) (77).

2.5 Outcomes

The outcomes of a health service delivery model include both individual-level outcomes such as those operationalized by the ICF (130) as well as system-level outcomes such as cost.

2.5.1 The International Classification of Functioning, Disability, and Health

The aim of rehabilitation with persons with arthritis is to enable an optimal level of function within each of the three levels of consequences of disease as defined in the World Health Organization's ICF (130). The ICF operationalizes outcomes at the level of body function and structure, activity, and participation in life situations. Arthritis has an impact on all three levels of functioning in the ICF framework. For example, a person with arthritis may experience pain, muscle weakness, and fatigue at the body function and structure level; difficulties with walking and carrying or handling objects at the activity level; and restrictions in performing work and leisure activities at the participation level. Although there is evidence supporting positive outcomes of rehabilitation in the treatment of arthritis at all three levels of the ICF framework, the majority of evidence is focused on outcomes at the level of body function/structure and activity. Outcomes at the level of participation have received less attention in the rehabilitation literature across all diagnostic groups. This is partly because of a lack of availability of measures at the level of participation.

Hammond (2004) recommends the use of the ICF as a common framework for outcome evaluation (120). One of the strengths of the ICF is that it provides a common language for health care professionals, particularly for those working in collaborative care teams. Because collaborative approaches are required for the management of chronic diseases like arthritis, models are needed that function across professional boundaries and that can manage differences in health perspectives (131). For instance, the ICF supports collaborative care teams by providing a clear, visual representation of aspects of a disease like arthritis as well as showing the relationships between the various outcomes and personal and environmental factors. The ICF also uses non-technical terms to describe the components, which is useful for explaining and interpreting outcomes of interest and their relationship to clients and their significant others in a collaborative and client-centered manner.

2.5.2 Cost

When examining service delivery models for arthritis it is important to evaluate outcomes at the system level, such as the cost-effectiveness of specific services and treatments. Research shows that holistic outpatient arthritis care (including education, joint splints, adaptive equipment, and home adaptations) provided by a single health care professional with expertise in arthritis (e.g. an occupational therapist, physiotherapist, nurse specialist) is the most cost-effective way of delivering arthritis care (i.e. more cost-effective than inpatient care, outpatient multidisciplinary care, and home care) (132;133). Inpatient care is the least cost-effective way of delivering care for patients with RA (133).

Cost-effective rehabilitation treatments include self-care education, group exercise, walking programs, strength training, hydrotherapy, splinting, adaptive equipment, postural training, and home adaptation (133-136). All of these treatments could be provided by an appropriately trained arthritis health professional (e.g. occupational therapist, physiotherapist, nurse specialist). In particular, client-education has been found to be cost-effective. For example, Mazzuca et al. (1999) found that the costs of providing self-care education (30 to 60 minutes plus at least two follow-up calls) for people with knee OA were offset within one-year by decreased frequency and cost of physician primary care visits (134).

2.6 Literature Review Summary

The following provides a brief summary of key points from the literature review organized according to the structure, process, and outcome framework.

1. Structure

Client and Team Members

Positive outcomes have been reported in a team approach to care, especially with diverse and complex problems that may arise with a chronic disease such as arthritis. Working as a team is thought to be more productive than working as individuals in isolation. Team structure is reflected by the range of skills of its members with there being no optimal team size or composition. Physiotherapists and occupational therapists are among the more common members of the arthritis care team. Teams may designate one of their members as leader or champion. Teams should consider multiple factors in the care of clients with arthritis including biopsychosocial needs.

Utilization/Access

Many client-level factors contribute to the use of health care and rehabilitation services including physical (e.g. mobility, pain) and sociodemographic (e.g. age, sex, education), as well as the presence of comorbidity and psychosocial well-being. It is important to understand the determinants of use of services by persons with arthritis in order to identify strategies to improve or minimize barriers that prevent the utilization of important services. Individuals with chronic diseases such as arthritis require a range of comprehensive health care services. However, services are not consistently available resulting in unmet needs for services (e.g. rehabilitation services, educational programs, assistive devices, home modifications).

Funding

Because patients with chronic conditions such as arthritis are more likely to receive rehabilitation services in publicly-funded compared to privately-funded practice settings, the shift to private sources of payment for rehabilitation services is expected to further reduce access to much needed services for persons with arthritis.

Client-Centred Care

Important components of client-centred rehabilitation include: individualization of programs to the needs of the client for a smooth transition between rehabilitation programs and the

community; sharing of information and education that is appropriate, timely, and according to clients' wishes; family and peer involvement in the rehabilitation process (e.g. emotional support); coordination and continuity within and across sectors (e.g. access to rehabilitation through more than one door, follow-up as a continuum of access); and outcomes that are meaningful to the client (i.e. understanding the consequences of the disease and disability should be based on the perspectives of those living with the disease)

Multidisciplinary Collaborative Care

The structure of the team is linked to what services are provided by its members and how services are received by the client. The provision and receipt of services should be client-centred and involve ongoing communication among team members as well as communication among teams within the different rehabilitation settings. The goals of a collaborative care team for arthritis care may include control of the clients' symptoms, prevention of disease progression, education of the client to perform self-care, and assisting the client to accept and cope with the functional limitations associated with arthritis.

2. Process

Rehabilitation Best Practices in the Management of Arthritis

There is conclusive evidence in the literature for the following rehabilitation interventions for persons with RA and OA: client education, exercise (aerobic and strengthening), joint protection instruction, and assistive devices. Indicative evidence exists for the use of orthoses (hand/wrist splint and foot orthosis) in RA. Limited or emerging evidence exists in the literature regarding the effectiveness of the following interventions: vocational/work rehabilitation and physiotherapy modalities. However, the Ottawa Panel supports and recommends the use of TENS, low-level laser therapy, ultrasound, and thermotherapy for RA. Recent RCTs have shown that acupuncture for OA of the knee is effective.

Persons with arthritis should receive these rehabilitation interventions early in the disease process. However, all interventions should be optimally timed based on client receptivity and need. An educational-behavioral approach appears to be an effective manner in which to deliver rehabilitation interventions for persons with arthritis.

3. Outcome

International Classification of Functioning, Disability, and Health (ICF)

Arthritis has an impact on all three levels of functioning in the ICF framework: body function and structure (e.g. pain, muscle weakness), activity (walking), and participation (e.g. work and leisure). It therefore follows that any interventions for arthritis should target these same three levels of functioning in the ICF framework. However, the majority of rehabilitation best practice evidence for arthritis has focused on outcomes at the level of body function/structure and activity. For example, at the body function and structure level, education interventions have resulted in outcomes of decreased pain and decreased morning stiffness. Similarly, at the activity level, exercise interventions have resulted in improved functional status of individuals with arthritis. Although further research aimed at all three levels of functioning in the ICF framework is warranted, it is especially lacking at the participation level.

Cost

There are several cost-effective rehabilitation treatments for arthritis including group exercise, splinting, assistive devices, and home modifications. All of these treatments could be provided by an appropriately trained arthritis health professional (e.g. occupational therapist, physiotherapist, nurse specialist).

3.0 KEY INFORMANT INTERVIEWS

3.1 Methods

3.1.1 Sampling

A sample of 29 individuals who were known experts and in a position to inform our study about key elements of an interdisciplinary model for arthritis care were invited to participate as key informants. Key informants were selected to represent various professions (e.g. medicine, nursing, physiotherapy, occupational therapy), practice sectors (e.g. community-based, hospital-based) and geographic variation (i.e. rural vs. urban). Prospective key informants were primarily identified through existing contacts from a dissemination event and workshop in March 2004, “Improving Access to Effective Care for Arthritis in Ontario”, organized by The Arthritis Community Research and Evaluation Unit. Key informants were also identified using a snowball technique whereby the key informants were asked to recommend other individuals who could inform our study.

3.1.2 Procedure

Potential participants were initially contacted by telephone or electronic mail to enquire regarding interest in participation in the study. Those individuals who expressed an interest in involvement in the study were sent an information letter and consent form that described the purpose of the study. After the letter was sent, potential participants were contacted by a research associate to answer any questions they might have about the study and to arrange an interview time. The interviews were held at a time and location that was convenient for the participant. All interviews were carried out by one of two research associates in person or by telephone. Prior to each interview, the interviewer emphasized the confidential nature of the interview.

The key informant interviews were guided by the research objectives. The interviews followed a semi-structured format. Interviewers followed an interview guide, which addressed the following questions/topics :

1. Briefly describe your position and experience related to arthritis care.
2. Please describe your approach to provision of services/programs for arthritis care.
3. In your experience, what are the barriers that need to be addressed in a model of care for arthritis?
4. Please describe your perspective on ideal elements of an interdisciplinary care model for arthritis.

5. Based on the ideal elements, what do you believe is feasible using current/available health care resources?
6. Interviewers utilized probes to encourage participants to elaborate on information and provide further discussion.

3.1.3 Analysis

Data were analyzed using content analysis for questions one and two. Questions three through five were analyzed using a constant comparative approach (Strauss & Corbin, 1990). Interview data were categorized to identify key findings from each question posed to the key informants, including the key elements of a comprehensive interdisciplinary care model for arthritis.

3.2 Results

3.2.1 Sample Characteristics

Key informant interviews were completed with 25 consenting participants. One interview was a group interview with four individuals. Reasons for non-participation included lack of time to participate in a one-hour interview and non-response to the request for participation. Table 2 summarizes the professional backgrounds of the key informants.

Table 2. Characteristics of Key Informants

Profession	N (%)
Physiotherapist	11 (44)
Occupational Therapist	3 (12)
Physician	4 (16)
Registered Nurse	2 (8)
Other*	5 (20)

*psychologist, volunteer, social worker, coordinators

The participants had a mean of 13.7 years experience working in arthritis care, with a range of experience from one to 28 years. Eleven of the participants worked in a hospital setting (e.g. outpatients department in a hospital), while 14 were worked in a community setting (e.g. The Arthritis Society (TAS)). Although almost half (n=12) of participants worked in the Greater Toronto Area, there were representatives from the North (n=5), South-west (n=3), South-central (n=2), and East (n=3) regions of Ontario. The participants represented rural, remote, and urban settings in Ontario.

3.2.2 Approach to Service Provision

Participants described their experiences related to service provision, including:

- target populations;
- referral and communication processes;
- interventions/services; and
- methods of evaluation.

The common findings regarding each of these aspects of service provision are described. In some instances, specific examples of practices described by participants are presented in order to illustrate processes of care across the province.

3.2.2.1 Target Populations

The majority of participants provide services to clients with OA and RA. Less commonly, participants reported clients with other types of arthritis including scleroderma, psoriatic arthritis, ankylosing spondylitis, lupus, and seronegative disease. A few participants also reported working with clients with osteoporosis and/or fibromyalgia.

Most participants provide services to adults across all age groups. However, a few participants also work with children with juvenile RA (e.g. TAS, The Hospital for Sick Children). The majority of participants reported that caseloads consisted of: more women than men; clients with both stable and complex diseases; and clients with arthritis at different stages of the disease trajectory, from early onset to chronic and/or late stages of the disease.

3.2.2.2 Referral and Communication Processes

Referral Processes

Referral sources that were commonly reported by participants working in arthritis programs or as solo practitioners included:

- Rheumatologists
- Family physicians
- Rehabilitation therapists
- Surgeons
- Homecare/Community Care Access Centers (CCAC)/Case managers
- Client self-referral (however, most programs prefer clients consult physician first to get appropriate diagnosis)

Participants reported that in order to attend many group programs a confirmed rheumatological diagnosis, by a family doctor or rheumatologist, is required. Many participants also reported referring or linking clients to other providers and/or community resources (e.g. homecare/CCAC, TAS, and community facilities such as pool programs).

Exhibit 1. Examples of Communication Processes

Communication Amongst Providers

*A letter is provided to the client's primary care physician after initial assessment by a physiotherapist, using the form letter developed by the *Getting a Grip on Arthritis* program. If the client goes back to see the primary care physician or consultant, the physiotherapist provides them with a letter for the doctor regarding their physiotherapy treatment.

*A group arthritis program provides letters to employers for individuals who work outside of the home in order to inform the employer that a client has been prescribed treatment that requires time off work.

Communication Between Provider and Client

*A team meets once a week for 1 hour at "rounds" to discuss each client case. Each client is then invited in to dialogue with the team regarding the treatment plan (program includes 6 clients in total).

* An "internet clinic site" was reported as a communication tool. After clients complete the program they are given a password and can log onto the internet clinic where clients can ask questions and responses will be posted in a FAQ area. The site also includes a chat room whereby clients can ask each other questions.

Communication Processes

Most participants described the use of both internal (within organizations) and external methods of communication. However, it was frequently noted that there was insufficient communication amongst providers. Internal communication methods reported by participants included:

- Face-to-face interaction/one-to-one interaction within a clinic
- Voice mail/phone
- Teleconference
- E-mail
- Formal or informal team meeting/round
- Formal and informal case consultation
- Newsletter

External communication methods reported by participants include: sending discharge/progress notes to referring physicians via fax, hand delivering notes, or providing a carbon copy of notes.

Some participants also reported having formal methods in place for communicating with clients. Exhibit 1 presents examples of communication processes 1) amongst providers, and 2) between providers and clients that were described by participants.

3.2.2.3 Interventions/Services

Participants described the interventions and services that were provided by them as an individual professional or by the programs they represented. Many programs/services were structured according to specific conceptual models or frameworks, including:

- Arthritis best practices (e.g. use of Getting a Grip on Arthritis best practices)
- Adult education models using self-management/self efficacy approaches
- Cognitive behavioural approach
- Motivational interviewing techniques based on stages of change theory. This approach is specifically designed to move people across the stages of change; it focuses on listening to people and helping them make decisions.

Group Services/Programs

Some of the participants described the services and programs delivered to clients in a group setting. In most multidisciplinary team settings, participants reported that the arthritis team presented the program to clients. Most programs offered services in a group format for the program with

Exhibit 2. Examples of Group Program Initiatives

*One of the programs developed a maintenance program “Arthritis Supervised Exercise Program” offered 3 days/week with 3 different session times following the completion of the program. This is a pool-based program supervised by a lifeguard, where participants follow a video-tape led by a physiotherapist.

*Another program has a wellness library on site, which can be accessed for free by clients, family, and volunteers. The library is run by a volunteer and people have access to CDs, videos, relation tapes, books, brochures, and a computer.

opportunity for one-to-one intervention depending on the needs of the client. The type of health professionals delivering the programs varied depending on the needs of the group and type of arthritis (e.g. OA versus inflammatory arthritis). In other instances, volunteers were involved in the direct delivery of some of the programs (e.g. self-management programs). Examples of group program initiatives are described in Exhibit 2.

Participants reported that education is primarily delivered to clients using an interactive approach, although there are components that are delivered in a didactic manner. The intention of the education programs is to get clients to apply what they learn and to develop problem-solving skills. Most of the programs also include goal-setting or developing action plans as a key component. Programs are often limited to clients who can speak English and who have adequate cognition for the group education component. In several programs, caregivers and family members attended the education sessions at no additional cost. Many participants reported exercise as a key component of their program. A list of topics commonly addressed in education programs is presented in Exhibit 3.

Exhibit 3. Topics addressed in group and/or one-on-one educational sessions

- What is arthritis
- Healthy eating/nutrition
- Exercise (theory and practical)
- Coping with arthritis
- Footwear
- Joint protection
- Assistive devices
- Energy conservation
- Home management (ADL and IADL); sleeping positions
- Communicating with health providers
- Medications
- Pain management
- Community resources
- Alternative therapies
- Fall prevention

The frequency and duration of group programs and services varied widely, from daily sessions for 2 consecutive weeks to 2 hours per week for 10 weeks. The size of the groups also varied, but most groups were restricted to 6 to 15 individuals.

Individual Services/Interventions

Participants described a number of interventions that were delivered to individuals on a one-to-one basis. These interventions varied depending on the professional background of the participants. Interventions included: modalities (ice, heat, TENS, acupuncture, massage); splinting and foot orthoses; counseling and education; medications; exercise (active range of motion exercises, strengthening exercises, isometric exercises, general fitness/maintenance, postural and core strengthening exercises); Assistive Devices Program assessment and authorization; and total joint replacement.

3.2.2.4 Methods of Evaluation

Outcome Measurement

Several participants reported that they do not use any formal method of measuring outcomes. However, participants acknowledged the importance of using outcome measures. Participants

cited several challenges to using outcome measures including a lack of monetary support, lack of time, and an inability to administer repeated outcomes measures (i.e. 2nd time) as clients do not always return for follow-up visits after program completion. The following are examples of outcome measures used by some programs/participants:

- Joint count
- Grip strength
- Disease activity score
- Health Assessment Questionnaire (HAQ) and Personal Impact Health Assessment Questionnaire (PI HAQ) (measures readiness to interact in functional tasks)
- SF-36 (use Mental Health subscale score as determinant of whether depression is present)
- Chronic Pain Coping Inventory
- Multidimensional Pain Inventory
- Depression scale (CES-D)

Program Evaluation

Several participants reported using client satisfaction and knowledge surveys to evaluate outcomes during the development of the program, throughout the program, and at end of the program. Several programs reported using a multidisciplinary approach to evaluation by obtaining feedback on the various group sessions regarding knowledge gained, approach of program, and comfort accessing the program. Examples of the use of outcome measures and tools for program evaluation are presented in Exhibit 4.

Follow-up

Most participants who worked within arthritis programs reported having no formal mechanisms for follow-up in place. One program that did have formal follow-up mechanisms performed assessments at six-weeks post program completion for OA and inflammatory arthritis and at one-year post program completion for fibromyalgia. Another program had follow-up appointments at one-year following program completion.

Follow-up by solo practitioners varied, whereby some participants managed the client's care throughout the course of the disease as needed and other participants were involved in the client's care for a short duration of time with no formal follow-up mechanisms in place.

Exhibit 4. Examples of Outcome Measurement and Program Evaluation

*A program classified outcome measures using the International Classification of Impairments, Disabilities and Handicaps (ICIDH) (now ICF). For example, the physical exam was classified at the impairment/body function/structure level; the HAQ was classified at the disability/activity level; and the PI HAQ was classified at the handicap/participation level.

*A program uses a database of information containing results of clients' clinical assessments, which can be used to generate a report card for the client.

*A program conducts focus groups at the completion of the program where a staff member external to the program obtains feedback from clients regarding the program. This information is then used to make ongoing changes to the program.

3.2.3 Barriers to Interdisciplinary Models of Care for Arthritis

Participants described the barriers and constraints that exist when delivering care to individuals with arthritis. Six domains emerged from the interviews regarding barriers that need to be addressed in a model of care for arthritis. Within each domain, a number of key themes emerged. The domains with their respective themes are presented in Table 3.

Table 3. Emergent Domains and Themes

Domain	Access to Care	Funding	Education, Knowledge, and Awareness	Communication and Coordination of Care	Professional Issues	Chronic Disease Management
Themes	Geographic Variation	Funding for Providers	Academic Education	Provider-Provider Communication	Scope of Practice	Medical Model
	Physical	Funding for Programs/ Services	Provider Knowledge and Awareness	Provider-Client Communication	Professional Regulation	
	Cost		Client and Public Knowledge and Awareness	Coordination and Continuity of Care		
	Health Human Resources					
	Waiting Times					

1. Access to Care

Four themes related to accessing care for arthritis emerged from the interviews. Overall, participants described a number of challenges that need to be overcome in order to ensure individuals with arthritis are able to access the interventions, programs, and services they need in a timely manner.

- a. Geographic variation
Participants recognized that access to specific interventions, programs, and services varied across the province. Most commonly, rural communities were identified as not having the same resources (e.g. equipment) and services (e.g. ASMP programs) as urban settings, resulting in the need to travel to access providers.
- b. Physical
Physical barriers to accessing care were also recognized and included inaccessible buildings, sidewalks, and public transit in communities.
- c. Cost
The cost of services (e.g. private physiotherapy services), programs (e.g. pool programs), and interventions (e.g. equipment) was identified as a barrier to accessing services.

d. Health human resources

This theme refers to the impact that shortages of health professionals throughout the province have on access to care. Participants identified shortages of orthopaedic surgeons, rheumatologists, primary care physicians, physical therapists, occupational therapists, and social workers.

e. Waiting times

Participants reported that long waiting lists posed an obstacle to timely access to care (e.g. long wait times for total joint replacement).

2. Funding

a. Funding for providers

Funding for health care providers emerged as a theme from the interviews. Participants raised the issue of payment structures and remuneration for physicians. Participants also identified lack of funding for the emerging role of allied health advanced practitioners as a barrier to this model of care.

b. Funding for programs/services

Participants identified lack of funding for specific programs and services as a barrier. This included lack of publicly-funded rehabilitation services and insufficient increases in funding for established programs (e.g. TAS programs) over time. Other examples of barriers described by participants included funding for equipment and funding for clients to travel to access services.

3. Education, Knowledge, and Awareness

a. Academic education

Participants identified deficits in current academic curricula as barriers to the provision of optimal arthritis care, including the following examples:

- scarcity of academic medical programs for rheumatology;
- lack of interprofessional learning opportunities in university programs;
- a fragmented undergraduate curriculum for medical students with insufficient emphasis on rheumatology; and
- lack of post-graduate educational opportunities in rheumatology for allied health professionals.

b. Provider knowledge and awareness

Participants recognized an overall lack of knowledge and awareness of arthritis of health care providers contributing to a lack of expertise and skills. This includes lack of access to information on arthritis (e.g. web based information not accessible to all providers), lack of information on services available in the community, and misinformation or misperceptions of arthritis (e.g. ‘arthritis as a disease of the elderly’). A number of participants felt that primary care physicians were not adequately equipped to diagnose arthritis and did not appropriately recommend rehabilitation services for clients with

arthritis. Finally, participants identified the transfer of information among providers as a barrier to models of care (e.g. dissemination of clinical guidelines).

c. Client and public knowledge and awareness

Client and public knowledge and awareness also emerged as a theme in barriers to care. Lack of publicly-available information on arthritis was cited as an example of barriers to client and public education. Participants recognized that access to information via the internet is not universal. Another example cited by participants was poor medication compliance of clients with arthritis and the concern that this is related to client education.

When participants referred to lack of knowledge of arthritis in the public, they also referred to groups such as employers and insurance companies having a poor understanding of arthritis. This included public beliefs and myths regarding arthritis, including the perception of arthritis as a ‘disease of the elderly’, implying it is a normal part of aging to cope with arthritis.

4. Communication and Coordination of Care

a. Provider-client communication

This theme refers to the lack of provider-client communication where participants identified that providers do not always communicate options to clients effectively.

b. Provider-provider communication

A lack of communication amongst the team of health care providers was commonly identified as a barrier to care (e.g. communication between allied health professionals and physicians).

c. Coordination and continuity of care

Lack of coordination and continuity of care emerged as a theme from the interviews. Examples cited by participants included lack of continuity of care due to limited provider resources and use of locum positions to provide services.

5. Professional Issues

a. Scope of practice

Issues around professional scope of practice emerged from the interviews. Participants identified scope of practice issues such as territorial behaviour of providers and politics amongst professional groups, where professionals may have difficulty accepting the expertise of other professionals.

b. Professional regulation

Related to scope of practice is professional regulation. In particular, participants discussed the expanded roles of allied health professionals (e.g. advanced therapist practitioners) in managing arthritis care. These providers have the skills to practise in a capacity that may extend beyond the competencies regulated by their professional bodies. Participants described professional regulation for allied health professionals (e.g.

occupational therapists and physical therapists) as a barrier to expansion of roles for advanced allied health practitioners. Specifically, this refers to lack of support from the professional regulatory bodies for expansion of scope of practice for allied health professionals. This also relates to the lack of recognition of specialization by the regulatory bodies for physiotherapy and occupational therapy.

Due to issues in regulation for advanced practitioners, there are no accredited programs for advanced practitioners. Allied health professionals that are trained in-house to enhance skills and competencies are unable to easily transfer their services to other institutions. As a result, participants identified that currently there is a lack of recognition and compensation for these roles.

6. Chronic Disease Management

a. Medical Model

Participants described the medical model as an inappropriate model to meet the needs of people with a chronic disease such as arthritis. Where primary care physicians were seen as ‘gatekeepers’ of care, this was identified as a barrier to receiving other services, such as appropriate referral to rehabilitation. As a result of the predominant medical model of care, participants also felt that there was a lack of focus on the psychosocial issues that need to be addressed in a model of care for arthritis.

3.2.4 *Enhancing Models of Care for Arthritis*

Participants were asked to describe the ideal elements of models of care for arthritis. These elements are the ideal structures and processes required to sustain models of care for arthritis. Ten key elements emerged from the interviews. Three of the key elements have been further divided into categories that describe the element. Table 4 presents the ten key elements of models of care for arthritis with categories describing each element presented, where applicable.

Table 4. Key Elements of Models of Care for Arthritis

Key Elements			
1. Multidisciplinary Team			
<i>Team members</i>	<i>Team Function</i>	<i>Communication</i>	<i>Referral</i>
2. Skill, Education, and Awareness			
<i>Provider skill and education</i>		<i>Client/public awareness</i>	
3. Funding			
4. Continuity of Care Across the Continuum			
<i>Coordination and follow-up</i>		<i>Linkages</i>	
5. Regulation			
6. Conceptual Framework			
7. Primary and Secondary Prevention Strategies			
8. Timely Access			
9. Community Action			
10. Evaluation			

1. Multidisciplinary Team

a. Team members

Participants identified a range of key members of a multidisciplinary team for arthritis care, including the following:

- Consultant (e.g. rheumatologist)
- Occupational therapist
- Pharmacist
- Physiotherapist
- Primary care physician
- Registered dietitian
- Registered nurse
- Social worker

However, the composition of the multidisciplinary team may vary depending on the type of arthritis individuals have.

b. Team function

Participants identified the need to define the roles of team members ensuring that the skills of each team member are utilized effectively. Some participants felt that it was important to have overlapping boundaries of health professional roles, where professionals are able to perform some skills traditionally performed by other professions. The primary therapist model of care used by TAS is an example of this, where physiotherapists and occupational therapists are cross-trained in the skills of the other profession (e.g. physiotherapists are trained to do splinting). Participants identified the importance of building relationships among team members to develop team cohesion. Other participants identified processes to improve teamwork including:

- providing incentives to physicians to refer to rehabilitation professionals;
- rotating staff between organizations in the hospital and community setting;
- providing mentorship to staff working in the field; and
- establishing linkages between providers to facilitate joint specialist clinics among professional groups (e.g. joint clinics for orthopaedic surgeons and rheumatologists).

Depending on geography and accessibility of resources, there was variation in participants' descriptions of the ideal means of delivering care by a multidisciplinary team. Some participants described the ideal delivery of care by team members as 'one stop shopping' where care from different professionals is accessed in one setting. Other participants described a team of professionals that travelled together in order to provide care to people with arthritis living in more remote settings. The concept of team included creating networks of professionals throughout the community.

c. Communication

Participants identified both formal structures for communication and informal processes for communication as being important elements of a model of care. Technology to facilitate communication amongst providers was also identified by participants (e.g. listserves). The use of technology in communication also included communicating client information across the continuum of care, using electronic medical records.

d. Referral

Some participants identified the need for refined referral mechanisms among providers in order to improve the referral process. The importance of appropriate referrals also emerged from the interviews where participants identified the importance of the ‘right’ clients seeing the ‘right’ provider at the ‘right’ time.

2. Skill, Education, and Awareness

a. Provider skill and education

Participants identified the importance of providers having the necessary skills to identify arthritis and manage clients with arthritis. Provision of improved education for professionals regarding arthritis care was viewed as important to facilitating skills and knowledge (academic and continuing education). This means ensuring the training resources are available for providers to access. Some participants felt that specialization in arthritis care through training was also important.

Participants also identified having access to information on arthritis services in the community as important (e.g. awareness of resources such as TAS). This relates to communication processes to share information amongst providers.

b. Client/public awareness

Regarding clients, participants identified the need for improved awareness of services available for people with arthritis in their communities. Client education regarding the disease itself (e.g. education classes) was also felt to be important. On a population level, it was suggested that strategies to improve public awareness of the disease are key.

3. Funding

The need for stable and predictable funding for programs and services was identified as a key component of any model of care. Participants also described the need for funding emerging models of care, such as the therapist practitioner model.

4. Continuity of Care Across the Continuum

a) Coordination and follow-up

Participants identified integration and coordination of services across the continuum of care as an important element of care for people with arthritis. As arthritis is a chronic disease, participants felt that access to ongoing follow-up and treatment across the disease trajectory was important. Some participants felt that multiple entry points to accessing the health care system should be available to clients; there should be multiple paths to reach the same outcomes.

b) Linkages

Linkages among providers and teams of providers across the continuum of care were identified as important, including linkages between hospitals and community organizations.

5. Regulation

Related to the emerging roles of allied health professionals as advanced practitioners, participants identified the need for support from the professional regulatory bodies to expand roles of physiotherapists and occupational therapists in arthritis management.

6. Conceptual Approaches

Participants identified a number of conceptual approaches they felt to be important frameworks to be incorporated into models of care. These approaches included:

- Client-centredness
- Adult learning
- Self-management/self-efficacy
- Psychosocial

By a psychosocial approach, participants referred to a need for a focus on psychosocial issues within models of care and provision of support to assist with coping with arthritis.

7. Primary and Secondary Prevention Strategies

Some participants also identified specific strategies and interventions as paramount to any model of care. This included both primary and secondary prevention strategies. For example, participants identified strategies to target children in the school setting with the aim of increasing physical activity. Secondary prevention strategies, such as programs and interventions that delay or prevent further disability were also identified (e.g. programs that prevent or delay the need for total joint replacement). Related to this, some participants identified exercise as a key component of any model of care.

8. Timely Access

As client outcomes are related to timing of many interventions, participants felt that access to services early in the disease process was key (e.g. early referral to rehabilitation services or rheumatologist). Access should not be dependent on costs of services or geographical location.

9. Community Action

Participants recognized the importance of the community in arthritis prevention and management. This included community development through promotion of community initiatives and facilitation of community ownership of such initiatives. Within the role of the community, the importance of champions to lead initiatives within a community was highlighted. Finally, participants recognized the role of people with arthritis in a model of care. As an example, one participant suggested the use of peer mentors and client advocates within a model of care. Peer mentors are individuals with arthritis acting as a mentor to another individual with arthritis in order to provide support throughout the course of the disease.

10. Evaluation

Evaluation emerged as a theme from the interviews with participants. This included the use of outcome measures for evaluation of clients and programs. Some participants identified the need for standardization of outcome measures whereby there is consistent use of the same outcomes measures. Participants reported the benefits of collecting data for program planning and evaluation (e.g. workload statistics) and surveillance (e.g. Ontario Joint Replacement Registry (OJRR)). At the system level, the creation of performance standards was suggested to be a key element of a model of care. An example presented was development and implementation of performance standards for total joint replacements using data collected from the OJRR.

3.2.5 Models of Care for Arthritis

The emergent themes from the interviews included feasible options for models of care for arthritis. Throughout the key informant interviews, three models of care for arthritis were most commonly identified by participants, including multidisciplinary team care (collaboratives), care using allied health professionals in advanced clinical roles, and telemedicine.

3.2.5.1 Multidisciplinary Collaborative Care

Participants identified the multidisciplinary team or collaborative as an ideal and feasible model of care. Several participants recognized the potential of Family Health Teams to facilitate team care. They expressed the importance of these teams including allied health professionals in order to provide truly multidisciplinary care. Participants also identified the need for one individual to act as a main contact and coordinator of client care within the team, acknowledging the central role of the client in coordinating their own care. It was also suggested that it is important to consider using the skills of other health care providers in arthritis care. For example, participants considered using kinesiologists to deliver the exercise component of care for some clients.

The key message regarding multidisciplinary collaboratives was that the processes for delivering care may vary depending on resources available within a community (e.g. human resources, geography). However, the key elements of multidisciplinary collaboratives should be maintained in any model of care (e.g. team members, communication etc.).

3.2.5.2 Use of Allied Health Professionals in Extended Clinical Roles

Several participants identified models of care using allied health professionals in extended roles (e.g. therapist practitioner model) as a viable model of care. Participants felt that this option was a model of care that could capitalize on using the skills of all health professionals to their potential and allow professionals to manage the clients that most require their expertise. Some participants recognized the value of non-physician health professionals specifically in the assessment of clients; hence reducing the time required of the consultant to assess clients. In order to facilitate further introduction of this model of care into Ontario, recognized training programs and support from professional regulatory bodies for these specialists are necessary.

3.2.5.3 Telemedicine

Participants identified telemedicine as a model of care that is feasible for delivering services to rural or remote communities with consultant shortages, particularly in Northern Ontario. Some participants indicated that this model was most appropriate for the follow-up of clients while recognizing the benefits of an initial face-to-face meeting between the client and consultant.

3.3 Key Informant Interview Summary

The models of care delivery being utilized to care for individuals with arthritis in Ontario vary widely. These include group programs for people with arthritis, where care is delivered by multidisciplinary teams over a short duration of time. Alternatively, there are also individual professionals working in solo practice who may (or may not) manage the care of a client throughout the course of their disease. Emerging models of care, such as telemedicine and therapist practitioner models, have also been developed and implemented in the province. However, emerging models of care, such as the use of allied health professionals in extended clinical roles warrant further evaluation as well as the development of strategies for training, professional regulation, and implementation across settings in Ontario.

The results of the key informant interviews can be used to inform the development of a health service model of PHC and rehabilitation for arthritis. In particular, the following 10 key components of models of care for arthritis are important to address:

1. Multidisciplinary Teams

- Composition of team members; team function and teamwork (e.g. defined roles, relationship building); formal and informal processes for communication (e.g. technology to facilitate communication); refined and appropriate referral mechanisms.

2. Skill, Education, and Awareness

- Provider skill and education to identify and manage clients with arthritis; improved education for professionals regarding arthritis; specialization in arthritis care; access to information on arthritis; client education and public awareness of arthritis.

3. Funding

- Stable and predictable funding for programs and services.

4. Continuity of Care Across the Continuum

- Integration and coordination of services across the continuum of care; access to ongoing follow-up and treatment across the disease trajectory; multiple entry points to accessing the health care system; linkages among providers and teams (e.g. between hospitals and community organizations).

5. Regulation

- Support from the professional regulatory bodies to expand roles of physiotherapists and occupational therapists in arthritis management.

6. Conceptual Approaches

- Important frameworks to be incorporated into models of care for arthritis include client-centredness, adult learning, self-management/self-efficacy, and psychosocial approaches.

7. Prevention Strategies

- Primary (e.g. target children) and secondary (e.g. prevent or delay the need for total joint replacement) preventions strategies.

8. Timely Access

- Access to services early in the disease process.

9. Community Action

- Community development initiatives; peer mentors and client advocates.

10. Evaluation

- Use of outcome measures for evaluation of clients and programs.

4.0 MODELS OF CARE

4.1 Models of Primary Health Care

4.1.1 *Professional and Community Models in Canada*

A recent report, “Choices for Change: The Path for Restructuring Primary Healthcare Services in Canada” (2003), identified research on trends and transitions in PHC in Canada and examined models of PHC that have been, and are, used across the country and around the world. The report investigated models of PHC involving physicians and grouped these models into four categories:

- Professional contact model
- Professional coordination model
- Integrated community model
- Non-integrated community model

The *professional contact* model is the dominant form of PHC in Canada. Examples of this model include private practices and medical clinics. The *professional co-ordination* model is uncommon in Canada in its purest form. The closest example of the professional contact model is Ontario’s health service organizations (HSO’s). In HSO’s continuous service is provided to clients who register with an organization to receive care. The *integrated community* model is focused on cooperation and interaction with the community to ensure a range of services. The *non-integrated community* model offers similar services to the integrated community model, but the services are provided directly by the health centers with no significant collaboration or integration with other parts of the health care system. A CLSC (local community healthcare centre) in Quebec is an example of a community model in which the integrated model is

followed in rural settings, whereas in urban areas most CLCSs follow a non-integrated model (137).

Although findings from the report indicated that no single model is best in all circumstances, the integrated community model was recommended as the preferred model. However, the authors suggest that a combination of the integrated community model and the professional contact model is the optimal combination to achieve the desired objectives of PHC (137). Some of these desired objectives include: effectiveness, quality, access, continuity, productivity, and responsiveness (137).

4.1.2 Health Services System Model

In a book entitled, “Primary Care: Concept, Evaluation, and Policy”, Starfield (1992) presents a health services system model for PHC (28) based on Donabedian’s (1966) structure, process, and outcome model. The individual characteristics within the structure, process, and outcome components differ in Starfield’s model depending on contextual factors such as time and place. However, Starfield notes that each health services system consists of structures that enable it to provide services, processes that involve activities by the providers as well as the recipients of care (i.e. clients and populations), and outcomes as reflected in various aspects of health status (28). A key principle of the model is that the resulting outcome of the health system is influenced by individual behaviour, aspects of the social and physical environment, as well as the system itself.

4.2 Models of Rehabilitation

4.2.1 The International Classification of Functioning, Disability, and Health

The ICF is developed by the World Health Organization to provide a framework for understanding and communicating health states and the experiences of health. It is perhaps the most widely used framework for research on disability. The ICF also can be used for social policy development, education, treatment planning, statistics, and program evaluation or quality assurance (138). Figure 2 includes the main components of the ICF framework (130) and illustrates their relationship to each other. The framework shows the interaction of personal factors (e.g. age, gender, education) and environmental factors (e.g. physical, social, attitudinal barriers/facilitators) and their impact on body function/structures, activities, and participation. The arrows depict the dynamic interaction among the components of the framework, implying that a change in one component will result in a change in another component. Functioning is the umbrella term encompassing body function/structures, activities, and participation. Disability is the umbrella term referring to abnormalities in these areas and encompasses impairments, activity limitations, and participation restrictions. As mentioned in Section 2.5.1 the aim of rehabilitation is to enable an optimal level of function within each of the three levels of the ICF (i.e. body function/structures, activities, and participation).

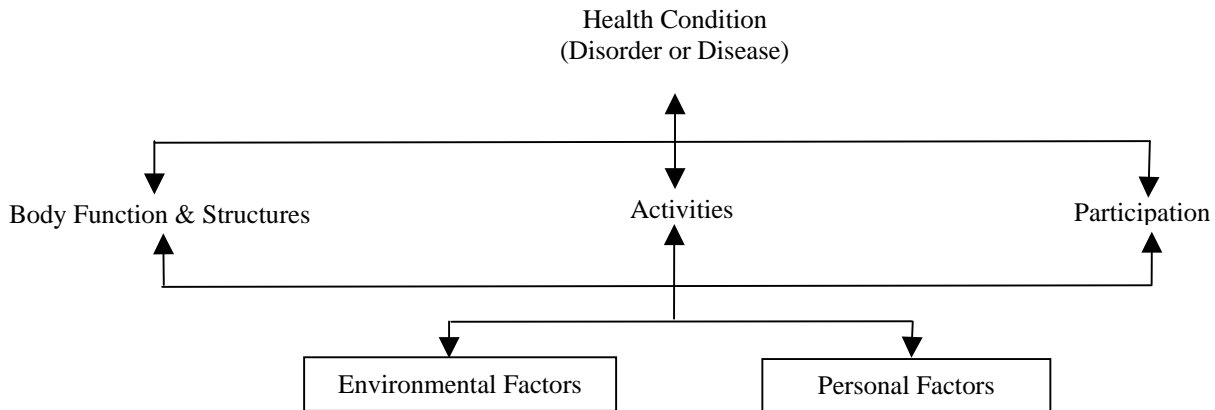


Figure 1. Interactions between the components of the ICF (130)

4.2.2 Model of Client-Centred Rehabilitation Service Delivery

A Model of Client-Centred Rehabilitation Service Delivery was put forth in the Provincial Rehabilitation Reference Group’s 2000 report, “Managing the Seams: Making the Rehabilitation System Work for People”. The model that emerged from the report was based on the following principles: achieve a client-centred approach; put in place formal support structures and referral processes; recognize the need for physical, social, psychological, vocational, and environmental service strategies; understand the importance of environmental, economic, social, cultural, and spiritual factors in determining health outcomes; recognize the role of primary and secondary prevention strategies; provide a continuum of services across the lifespan; provide a continuum of services that reflect local and regional resources; offer access to both traditional and alternative rehabilitation approaches; ensure multiple access points into the rehabilitation system; ensure a set of core services is available to all communities; provide services in a timely manner; provide evidence-based programs/services; offer programs/services supported by research and education; make effective and accountable use of resources; and utilize data collection and information management tools. A key purpose of generating the model was to provide communities with a common framework that they could use to develop detailed, locally-relevant rehabilitation service delivery models and implementation plans that reflect the unique needs of communities.

4.3 Models of Arthritis Care

The following provides a brief review of the literature on three models of arthritis care that were highlighted in the key informant interviews in Section 3.2.5.

4.3.1 Extended Clinical Role for Allied Health Professionals

Although published research in the area of alternative models of care utilizing allied health professionals in the assessment and management of arthritis is scarce, there is evidence that physiotherapists and occupational therapists are increasingly working in extended roles in

rheumatology, internationally (139). This strategy is being utilized to improve access to care for clients with arthritis in the United Kingdom, where 14% of physiotherapists reported extended clinical roles that involve full clinical assessment and most aspects of disease management. These extended activities include reading x-rays, recommending treatment changes to the rheumatologist and primary care physician, and teaching (139).

A few studies have found positive outcomes of clients managed by therapists working in extended roles. For instance, specially trained physiotherapists have been shown to assess inflammation and function in clients with rheumatoid arthritis as capable as rheumatologists would do (140). In another study, waiting times for care were significantly less for therapist-run clinics (monitoring clients with drugs and physiotherapy with an emphasis on education) and the therapists spent a longer time consulting with their clients than those managed by follow-up (141).

In Canada, there is also evidence that extended clinical roles for physiotherapists and occupational therapists have emerged in rheumatology. The therapist practitioner model of sharing responsibilities among health professionals was developed at a Toronto children's hospital. A one-year comprehensive academic and clinical program was described in the literature following the pilot phase of this program (142). In this model, the therapist practitioner is expected to discuss medication options with the client and family although they can not prescribe medications. The clinic aims to decrease the number of professionals who assess a client during clinic, facilitate timely and comprehensive reviews, and alleviate the heavy physician burden.

Research has found that the therapist practitioner model of care generates the same rating of overall satisfaction as physician clinics. Specifically, in a group of clients who saw either therapists or physicians rather than both, therapist practitioners rated higher in the domains of access and communication, but were lower for continuity (143). This suggests that therapist practitioners can deliver standards of care reflective of traditional physician clinics from the clients' or families' perspectives. Other outcomes relevant to arthritis care, including function, pain, and fatigue, have not been documented in the literature.

4.3.2 Primary Therapist Model

Case management is a model of service delivery in which the case managers play a key role in coordination of services and linking clients to their communities (144). The Arthritis Society Consultation and Rehabilitation Service (CARS) program is a case management model of service delivery (primary therapist model) in which assessment, treatment, and case management is provided by multi-skilled therapists in consultation with, or referral to, other providers as necessary (145). The first available therapist becomes the primary therapist or service coordinator for a client. All physiotherapists and occupational therapists receive the same specialized training in the assessment of polyarthritis during orientation to the program (146). Reported advantages of this model are a holistic approach to care, an opportunity to expand skills, less duplication of services, and appropriate referrals to other professionals or community agencies. Reported disadvantages include discomfort with increased responsibility, concern about 'watered down' treatment, and isolation from colleagues (147).

A pilot study was conducted to evaluate the outcomes of clients with RA receiving treatment from a primary therapist and to assess the feasibility of a research protocol. A randomized control trial design with a sample of 24 clients was utilized, where clients were randomized to receive usual medical care or to receive treatment from a primary therapist as well as usual medical care (experimental group). The researchers found a trend toward improvement in the experimental group in all clinical measures at 6 weeks and 6 months from baseline. The usual care group showed deterioration in pain and in disease-specific knowledge. The authors concluded that the study suggests improvement in outcomes of clients in the primary therapist model and that a study protocol is feasible for a full-scale trial to evaluate outcomes of care in this model (145)

4.3.3 Telemedicine

Telemedicine is another emerging model of care being used to improve access to care for people living with arthritis in more remote locations. Telemedicine or telehealth is a means of sharing health information and providing health care services using telecommunications (148). It allows health care professionals to provide a service to clients regardless of location. A systematic review of the literature regarding telemedicine and client outcomes found that there is relatively convincing evidence supporting telemedicine in some areas of medicine including teleradiology, teleneurosurgery, and telepsychiatry. Although the literature examining telemedicine and arthritis is more limited, one Canadian telehealth program examined the feasibility and acceptability of providing telehealth consultations in rheumatology by doing a prospective review of new consults from a rural area assessed by a rheumatologist in an urban area. The authors concluded that telehealth rheumatology consultations were feasible, acceptable, and cost/time effective in locations where services are not readily available (148). Legget et al. (2001) also found that televisual consultations in rheumatology were highly accurate and acceptable to clients, general practitioners, and specialists (149).

These findings suggest that telehealth rheumatology is a viable model to promote equitable access to care. However, more research may be needed to determine the benefits, costs, and delivery of these programs.

5.0 CONCLUSIONS AND RECOMMENDATIONS

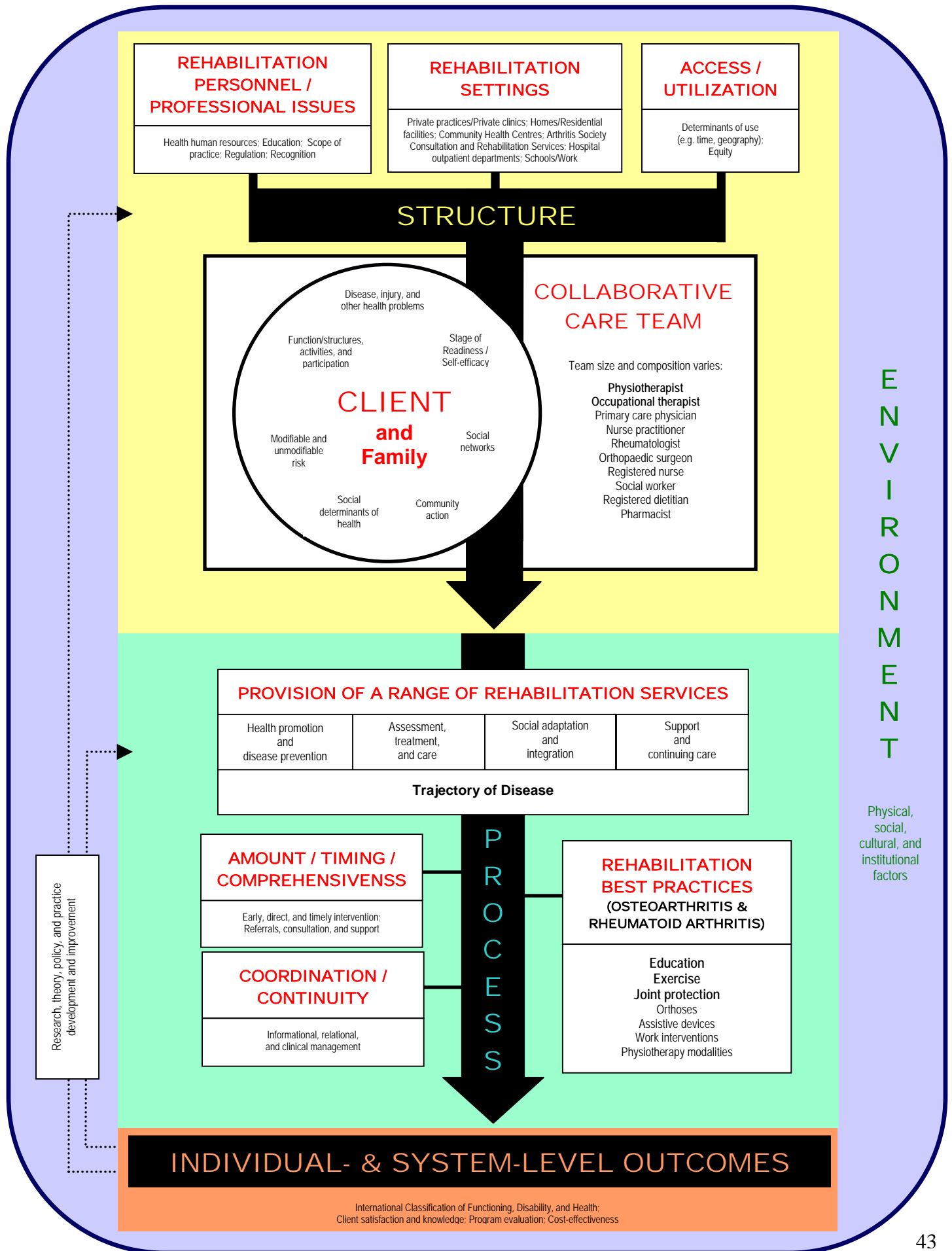
This section integrates and summarizes findings from the literature review and key informant interviews, as well as recommends elements of a PHC and rehabilitation model for arthritis. Figure 3 shows a diagrammatic representation of this model, *A Client-Centred Health Service Model of Primary Health Care and Rehabilitation for Arthritis*. A brief description of various elements of the model is also included in this section. The key elements include structure, process, and outcome elements as outlined in Starfield's (1992) model of the health services system. It is important to note that there is conceptual overlap between structure and process for the client and team elements of the model in this report. Also incorporated into the model are various concepts, frameworks, and other models such as client-centredness, collaborative health care teams, the social determinants of health, self-efficacy and the stages of change, community action, the ICF, the "Model of Client-Centred Rehabilitation Service Delivery", and models of arthritis care. Although this model incorporates elements from existing models such as Starfield's, it addresses several gaps including:

- A focus on arthritis, although it highlights important factors that are relevant to the management of many chronic diseases
- A focus on rehabilitation as an important component of PHC service delivery
- A focus on client-centred care

Moreover, this model closely follows the concepts of the integrated community model (137), which includes:

- Integration of rehabilitation with other components of the health care system
- Longitudinal continuity of care from the collaborative care team in the trajectory of disease
- Interaction between the client and a variety of health care providers to facilitate the availability of a range of services
- Processes that highlight the importance of coordination and communication of information for managing arthritis

A CLIENT-CENTRED HEALTH SERVICE MODEL OF PRIMARY HEALTH CARE AND REHABILITATION FOR ARTHRITIS



International Classification of Functioning, Disability, and Health;
Client satisfaction and knowledge; Program evaluation; Cost-effectiveness

5.1 Structure

Structure is defined as elements that enable the provision of PHC services for persons with arthritis. These elements include the client, the family, and members of the collaborative care team. In addition, system-level factors that ideally need to be in place to support the structure and process include rehabilitation personnel and professional regulations, the rehabilitation setting in which services are offered, as well as access and utilization characteristics.

5.1.1 The Client and Family

The client and the family are key members of the collaborative PHC team. The family is a critical part of the client's informal care and support network. However, when informal care and support (e.g. family, friends) is lacking, formal support structures become more important in the ongoing care of clients with arthritis. For example, peer mentors and client advocates in the community are important for encouraging community action in the prevention and management of arthritis. Reducing the risk of arthritis and other chronic diseases involves modifiable risk factors and making healthy lifestyle choices (e.g. maintaining a healthy body weight via healthy eating and regular physical activity). Care strategies for clients with arthritis should consider impairments, activity limitations, and participation restrictions as well as the influence of the determinants of health on health status and outcome. Moreover, self-efficacy (i.e. one's self-judgments of personal capabilities to initiate and successfully perform specified tasks) and stage of readiness for change (i.e. precontemplation, contemplation, preparation, action, maintenance) should be taken into account when developing the client's rehabilitation goals.

5.1.2 Collaborative Care Team

A team approach to PHC and rehabilitation brings together different health care providers to coordinate the highest possible quality of care for the client. Core members of a PHC team for arthritis may include the physiotherapist, occupational therapist, primary care physician, and nurse practitioner. Other health care providers that play an important role in the continuum of care for individuals with arthritis include the rheumatologist, orthopaedic surgeon, registered nurse, social worker, registered dietitian, and pharmacist. Additional team members such as kinesiologists may also play a role in delivering the exercise component of care. Identifying a team champion in the collaborative care team may enhance team effectiveness and improve quality of care. It is important to note that the size and composition of team members will differ depending on factors such as practice setting, geographic location, type of arthritis, and availability of health human resources. In addition, formal structures such as technology and telemedicine for enhancing cooperation, coordination, and communication between teams and amongst team members are also important components of a collaborative care team.

5.1.3 Rehabilitation Personnel/Professional Issues

Personnel/professional issues include features such as health human resources, scope of practice, regulation, education, and recognition. Human resources include people and their potential as a source of knowledge, skill, and judgment. Often the presence of individuals from different disciplines, working collaboratively, provides opportunities to learn about and from each other,

including their experiences with arthritis care and management. However, the identified shortage of health care providers, including orthopaedic surgeons, rheumatologists, primary care physicians, physiotherapists, occupational therapists, and social workers is a barrier to accessing arthritis care.

Educational/interprofessional training opportunities for allied health care providers in ongoing arthritis management may enable them to use their professional skills to their fullest scope of practice (e.g. the primary therapist model of care used by TAS). However, territorial behaviour, politics, professional regulation, and lack of compensation may interfere with the capacity or incentive to practise beyond the competencies identified for a discipline. Thus, the recognition of expanded roles of allied health care providers by regulatory bodies and other professionals, as well as utilizing human health resources to the fullest potential, can reduce the workload of specialists and improve access to care for clients who have chronic diseases such as arthritis.

5.1.4 Rehabilitation Settings

Common and less defined health problems are often presented in PHC, generally in community settings such as offices, health centers, schools, or homes. Arthritis is most often managed in PHC settings. Clients often seek care as close to home as possible; thus, it is important to have direct access to appropriate sources of care that continues over time for a variety of health problems including preventive services. Recent research shows that the large majority (over 80%) of PHC rehabilitation in Ontario is delivered in private practice/clinic and home care settings with less than 20% of services delivered in settings such as Community Health Centres, the Arthritis Society Consultation and Rehabilitation Services, and hospital outpatient departments (16).

5.1.5 Access/Utilization

Accessibility has been defined by Lamarche et al. (2003) as the ability to make contact with health services without distinction based on characteristics such as age, socio-economic status, and ethnic origin (137). Individuals with chronic diseases such as arthritis require access to a range of comprehensive health care services. However, services such as rehabilitation are not consistently available resulting in unmet needs for rehabilitation services. Minimizing disparities across population subgroups such as arthritis to ensure equal access to rehabilitation and other health care services within the community is an important consideration. Several factors should be considered when examining accessibility to arthritis care, which include overall accessibility to programs, services, and equipment; physical (e.g. inaccessible buildings, sidewalks), geographic (e.g. adequacy of public transportation) and psychosocial (e.g. language and cultural barriers to communication) accessibility; costs; waiting lists; availability based on regional variation (e.g. urban versus rural); and time (e.g. hours of availability). It is important to note that many factors contribute to the use of rehabilitation services for persons with arthritis including physical factors (e.g. mobility, pain), sociodemographic factors (e.g. age, sex, education), as well as the presence of comorbidity and psychosocial well-being. A better understanding of the determinants of use of services by persons with arthritis will help identify strategies to minimize barriers that prevent the utilization of rehabilitation services.

5.2 Process

Process encompasses activities related to the provision of care by the health care providers and the receipt of care by the client. The structure should be in place for the process to occur. The client, family, and health care providers as team members have been discussed in the above section as structural elements in the model. However, client-centred and multidisciplinary collaborative care are included as process element in the following section. Clients with arthritis that access care will need to understand the services offered by the various providers, decide whether or not they will accept the providers' instruction or recommendations, and consider the extent to which they will participate in the process of care. Thus, process elements include the provision and receipt of a wide range of rehabilitation services; interventions that are based on best practices; as well as care that is timely, comprehensive, coordinated, and ongoing throughout the trajectory of disease.

5.2.1 Client-Centred Care

The concept of client-centred care is a key element of the model. Client-centred care ensures responsive, individual, appropriate, and functionally-based goal setting that involves the active and informed participation of the client (36). Respect for the client's autonomy, dignity, values, and preferences are important in the process of arthritis care. A client-centred approach aims to incorporate client needs and preferences in the provision of services at the system level and maximizes successful transition between services across the continuum of care. Thus, building client-centredness into the delivery of health and rehabilitation services may lead to improved client satisfaction and clinical outcomes. Client-centred rehabilitation entails programs that are individualized to reflect client values, preferences, and needs; mutual participation of the client and health care providers in setting goals and making decisions in the client's care; outcomes that are meaningful to the client; access to information and interventions that is appropriate and timely; emotional support and involvement of family and peers throughout the rehabilitation process; and coordination and continuity across the multiple service sectors, including rehabilitation through more than one door and follow-up as a continuum of access (16). It is important to ensure that the structures and processes in the system minimize barriers and maximize mechanisms that enable multiple providers to offer effective and efficient multidisciplinary and collaborative care; to understand, advise, and guide clients and their family in the rehabilitation and care processes; and to provide advocacy when needed.

5.2.2 Multidisciplinary Collaborative Care

Independent of size and composition, members of any care team should have complementary skills and defined roles when working together to enable the best possible care, as close to the client's home as possible. It is also important for one individual within the team to act as the main contact and coordinator of client care while acknowledging the central role of the client in coordinating his/her own care. Positive outcomes of a team approach to care for arthritis has been demonstrated at the level of body function and structure, activity, and participation.

5.2.3 Provision of a Range of Rehabilitation Services

With the recent changes in demographics and rise in both comorbidities and chronic illnesses that result in disability, the field of rehabilitation becomes an important component of integrated PHC for persons with arthritis. A continuum of care should exist for the delivery and coordination of a range of services that encompasses rehabilitation, health promotion, disease prevention, assessment and treatment, social adaptation and integration, as well as support and continuing care. Bridging gaps and avoiding duplication ensure that the changing needs of the client are met during the rehabilitation process and over the continuum of care. Similarly, it is important that a range of services is available to enable optimal health and independence within the community through the role of prevention. Client education and awareness, including access to information, are important for considering healthy behaviours and lifestyle choices in chronic disease prevention and management.

5.2.4 Rehabilitation Best Practices for Osteoarthritis and Rheumatoid Arthritis

The development of chronic diseases including arthritis are influenced by risk factors, some of these factors are modifiable (e.g. obesity, muscle weakness) while others are not modifiable (e.g. age, gender, genetic predisposition). Thus, nonpharmacologic interventions that have a preventive and therapeutic role (e.g. exercise and joint protection) are important considerations for arthritis care and management. Nonpharmacologic interventions that have shown conclusive evidence in the rehabilitation and management of OA and RA include education, joint protection and energy conservation, and assistive devices. There is indicative evidence supporting the use of orthoses (i.e. hand and wrist splints and foot orthoses) in RA. Those interventions with limited evidence include work (e.g. vocational rehabilitation) interventions and a variety of modalities. It is important to determine the client's self-efficacy in managing arthritis and the daily challenges that are associated with the disease (i.e. functional limitations). Thus, self-efficacy is one mechanism through which self-management programs demonstrate success in achieving rehabilitation outcomes.

5.2.5 Amount/Timing/Comprehensiveness

Comprehensiveness has been defined as the ability of the PHC team to handle problems arising in the population that it serves (28). Handling the spectrum of problems (e.g. physical, functional, social) that a client with arthritis may present in PHC involves eliciting information to elucidate the client's health conditions in relation to the social and environmental impacts on these conditions. Timely information is needed for appropriate assessment, referral, and subsequent care. For optimal arthritis care and management, rehabilitation interventions should be initiated early in the trajectory of the disease and include comprehensive prevention and management strategies in the areas of education, exercise, joint protection, orthoses, modalities, assistive devices, and work/employment. Multiple, readily-identifiable access points into the rehabilitation system should also exist and their existence should be clearly communicated and promoted to the clients and providers (36). Where feasible, clients should also be given a choice of access points (36). Referral and consultation processes should also occur among and between team members when necessary (i.e. primary, secondary, tertiary preventive activities). These activities necessitate the 'right' client seeing the 'right' provider at the 'right' time.

Arthritis disease prevention and management targets the whole population in order to reduce disease incidence as well as the consequences, complications, and disability of the disease. The provision and receipt of arthritis care occurs across a continuum from the well and at-risk population (primary prevention) to the early asymptomatic or symptomatic (secondary prevention/early detection) and established disease stages (disease management and tertiary prevention). Although the trajectory of the disease is important in a model of care for arthritis, research does not address what type of rehabilitation intervention is most appropriate and effective at a particular stage of the disease process and the optimal amount of intervention (e.g. dosage, duration) with the least amount of pain and adverse effects.

5.2.6 Coordination/Continuity

The coordination or integration of care that a client may require involves constant communication or information flow between all health care providers (i.e. provider-provider communication) and between the client and the providers of care (i.e. client-provider communication). Building relationships among health care team members to promote team cohesion and teamwork is important for coordination and continuity of care. Coordination of care entails some level of continuity; the arrangements by which services are offered as a coherent succession of events in keeping with the health needs and personal context of clients (137). For example, access to ongoing follow-up and treatment across the disease trajectory for persons with arthritis, as well as multiple entry points to reach the same potential outcome, are essential components of a client-centred model of care for arthritis. Continuity can be informational (i.e. the information on prior events used to give care that is appropriate to the client's current circumstance), relational (i.e. the maintenance of client-provider relationships over time and consistency of personnel), and management (i.e. the care received from different providers is connected in a coherent way) (137).

5.3 Outcomes

Outcomes are the results reflected in the health status of individuals with arthritis as well as at the system level. Individual-level outcomes include those classified according to the ICF (body function/structure, activity, and participation), as well as client satisfaction and knowledge. For example, at the body function and structure level, education interventions have resulted in outcomes of decreased pain and decreased morning stiffness. Similarly, at the activity level, exercise interventions have resulted in improved functional status of individuals with arthritis. Although further research aimed at all three levels of functioning in the ICF framework is warranted, it is especially lacking at the participation level. System-level outcomes include effectiveness, including costs of the services received (i.e. cost-effectiveness), the contribution of PHC to maintaining and improving the health of clients and populations (i.e. health effectiveness), as well as the perceived or observed contribution of PHC to the management of the health condition (i.e. service effectiveness) (137). Ongoing program evaluation is important for ensuring that client needs are addressed, that resources are being used appropriately, costs are minimized, and also ensuring that the structures and processes are in place for optimal outcomes. It is important to consider using consistent and standard individual and system-level outcomes in the area of rehabilitation. Figure 3 illustrates the influence of individual- and system-level outcomes on both the structure and process elements of the model. The model also shows that

the outcome is intended to inform research, theory, policy, and practice development and improvement in the area of PHC rehabilitation and arthritis.

5.4 Environment

A service delivery model of PHC and rehabilitation for arthritis must also consider the context (i.e. environment and community) in which the client lives and where multiple factors may exist that ultimately have an impact on the health and well being of individuals and populations. The environment includes institutional, social, cultural, and physical elements. Institutional elements of the environment include funding (i.e. payment structures, remuneration, lack of funding for services or programs) and financial (i.e. lack of finances to access services or programs) issues. Stable and predictable funding is required for arthritis programs and services. Social and cultural elements of the environment include misperceptions of arthritis, public beliefs and myths regarding aging, as well as a focus on the traditional medical model of client care rather than a comprehensive and collaborative approach. These overarching environmental factors influence structure, process, and outcome.

5.5 Summary of Elements in the Model

Key elements of “*A Client-Centred Health Service Model of Primary Health Care and Rehabilitation for Arthritis*” include:

Structure

1. Collaborative care team (client, family, and providers)
2. Rehabilitation personnel/Professional issues
3. Rehabilitation settings
4. Access/Utilization

Process (note: conceptual overlap exists for outcome and process elements of this model)

1. Client-centred care
2. Multidisciplinary collaborative care
3. Provision of a range of rehabilitation services
4. Rehabilitation best practices for osteoarthritis and rheumatoid arthritis
5. Amount/Timing/Comprehensiveness
6. Coordination/Continuity

Outcomes

1. Individual-level
2. System-level

With integration of the following:

1. Environmental factors that influence structure, process, and outcomes.
2. Outcomes at the individual- and system-level that inform theory, policy, and practice development and improvement.

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