



**Interprofessional Collaboration in Eye Care:
A Literature Review**

November 2009

Introduction

This review highlights some of the literature about interprofessional collaboration in eye care and related issues such as conflict of interest, business practices, refraction, delegation and advertising¹. Articles about the prevalence of vision disorders, coverage for eye care and the usefulness of screening are included to provide context.

The literature review is arranged by topic, but many articles relate to more than one topic. If an abstract was provided with the original article, it is reproduced here. Where no abstract was available, a summary is included. Some articles may be accessed directly by clicking on the Internet web link provided; others have to be downloaded from the website address indicated; still others may not be available on line and need to be purchased.

In these highlights from the literature, there are scientific reviews, academic commentaries, descriptive reviews and policy documents. We searched legal and medical databases including PubMed, CINAHL, The Cochrane Library, Quicklaw, Hein Online, CanLII, LegalTrac, Index to Canadian Legal Literature and FindLaw. A description of these databases is included in Appendix 1. We also used general search engines and in some cases, searched directly within websites (e.g. www.cmaj.ca). We selected some articles that appeared in the reference sections of other articles. Finally, we selected some articles that were linked to other articles within a database.

Most articles are from 2000 onwards but several published prior to 2000 are included if they raised a current and relevant issue that was not found in a more recent article. This literature search was conducted between September 1, 2009 and November 4, 2009.

¹ Access to records is another issue related to interprofessional collaboration however no relevant articles were identified.

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Interprofessional Collaboration

Title	Interprofessional care and collaboration: are ophthalmologists and optometrists ready?
Citation	Buys YM, Nicoleta M. Can J Ophthalmol. 2009 Jun;44(3):254-6.
Source	Canadian Journal of Ophthalmology. Commentary.
Database	PubMed
Search terms	"Canada" "optometry" "eye" "care"
Link²	http://www.ncbi.nlm.nih.gov/pubmed/19491976?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum
Accessed	October 2, 2009
Relevance	Interprofessional collaboration
Summary³	Chronic eye diseases that cause vision loss, such as glaucoma and macular degeneration, are increasing as the population ages. There is a shortage of ophthalmologists to adequately deal with this increase. In 2008 the Canadian Glaucoma Society established the Committee on Interprofessional Collaboration to explore the benefits of collaboration with other ocular health providers, including optometrists, in glaucoma care.

Title	Enhancing vision care integration: 1. Development of practice algorithms.
Citation	Persaud DD, Jreige S, LeBlanc RP. Can J Ophthalmol. 2004 Apr;39(3):219-24.
Source	Canadian Journal of Ophthalmology
Database	PubMed
Search terms	"Canada" "optometry" "eye" "care"
Link	http://www.ncbi.nlm.nih.gov/pubmed/15180137?ordinalpos=12&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum
Accessed	2009-10-02
Relevance	Interprofessional Collaboration. Business Practices.
Summary	<p>Abstract: <u>Background:</u> Appropriate access to the best quality of vision care is enhanced when patients receive eye care services from the right professional, at the right time, and in the right place. This paper, the first in a two-part series, describes the development of an integrated framework for vision care delivery. Specifically, two patient-centred vision care algorithms for the multidisciplinary management of diabetic retinopathy and the red eye are outlined, and the process that resulted in their development is described.</p> <p><u>Methods:</u> The method used relies on a description of a multidisciplinary collaboration that occurred among ophthalmologists, optometrists, general practitioners and representatives of the Nova Scotia Department of Health with the aim of developing an integrated patient-focused multidisciplinary framework for vision care delivery.</p> <p><u>Results:</u> The process of collaborative negotiation among the four groups</p>

² Internet site showing article citation and abstract (where available).

³ Summaries were made by the author of this chart and are only included if the article cited did not include an abstract. Those marked "Abstract" are the abstract originally included with the publication cited.

	<p>resulted in the development of multidisciplinary algorithms for the screening of patients with diabetes mellitus and the treatment of those presenting with a red eye.</p> <p><u>Interpretation:</u> Professional scope of practice has always been a contentious issue among health care professions. However, where parties agree to work within an atmosphere of respect and to accept guidance in areas of disagreement from a third party respected by all, compromise is possible. The result was the development of two vision care algorithms and ongoing efforts on the development of other algorithms.</p>
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Title	Enhancing vision care integration: 2. Implementation of practice algorithms.
Citation	Persaud DD, Jreige S, LeBlanc RP. Can J Ophthalmol. 2004 Apr;39(3):225-33.
Source	Canadian Journal of Ophthalmology
Database	PubMed
Search terms	"Canada" "optometry" "eye" "care"
Link	http://www.ncbi.nlm.nih.gov/pubmed/15180138?ordinalpos=11&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum
Accessed	October 2, 2009
Relevance	Interprofessional Collaboration. Business Practices.
Summary	<p>Abstract: Background: Appropriate access to the best quality of vision care is enhanced when patients receive eye care services from the right professional, at the right time, and in the right place. In the preceding article the authors describe the development of two patient-centred vision care algorithms for the multidisciplinary management of diabetic retinopathy and red eye. Subsequently, a questionnaire survey was done to determine ophthalmologist, optometrist and general practitioner (GP) familiarity with and acceptance of the vision care algorithms.</p> <p>Methods: The survey was conducted in the summer of 2001 among all ophthalmologists, optometrists and GPs registered with their respective professional body in Nova Scotia to assess their knowledge and acceptance of the diabetes mellitus and red eye algorithms. They were also asked to indicate their preferred method(s) of education and dissemination regarding these and future algorithms.</p> <p>Results: Of the 740 practising GPs in Nova Scotia, 188 completed the questionnaire, for a response rate of 25.4%. The corresponding figures for optometrists and ophthalmologists were 73.6% (53/72) and 43.5% (20/46) respectively. Most of all three types of clinicians practise in Halifax County. More than 80% of the optometrists and ophthalmologists were aware of the algorithms, but less than 50% of the GPs were aware of them. A large majority of respondents in all three groups (77% to 98%) indicated that they were comfortable using the diabetes and red eye algorithms as presented.</p> <p>Interpretation: Ophthalmologists, optometrists and GPs indicated an understanding of and willingness to use the diabetes and red eye algorithms. However, they were not unanimous regarding the choice of implementation method. Therefore, six different strategies for implementing the vision care algorithms are currently being used and are described in the paper.</p>

Title	Exclusive, idiosyncratic and collective expertise in the interprofessional arena: the case of optometry and eye care in The Netherlands
Citation	Stevens FC, Diederiks JP, Grit F, van der Horst F. <i>Sociol Health Illn.</i> 2007 May;29(4):481–496.
Source	<i>Sociology of Health and Illness.</i>
Database	Search Engine: Google Scholar ⁴
Search terms	"Ontario" "eye care" "interprofessional"
Link	http://www3.interscience.wiley.com/journal/118532239/abstract?CRETRY=1&SRETRY=0
Accessed	October 4, 2009
Relevance	Interprofessional Collaboration. Business Practices.
Summary	Abstract: This paper addresses expertise as the foundation of professional boundaries and domains through a comparative study of four eye care occupations in the Netherlands. Claims of expertise are explored with an analysis of whether practitioners believe that expertise is exclusive to their profession. Results show that (a) established professions display a stronger sense of the 'exclusiveness' of expertise; (b) idiosyncratic expertise is more common among encroaching professions than among established ones. These findings substantiate trends towards professionalism, as jurisdictional disputes on professional domains and boundaries usually occur between more established medical professions seeking to protect their knowledge area, and encroaching ones trying to expand theirs. The study next addresses the ways in which claims to expertise influence practitioners' attitudes towards professional status and professional practice. Attitudes to expertise are influenced by age, and affect professional work in the workplace. Practitioners who considered expertise as a collective characteristic were younger, undertook more examinations, more diagnoses, gave more treatments, referred less, and perceived more problems regarding inter-professional recognition of their professional status.

Title	IT-supported skill-mix change and standardisation in integrated eyecare: lessons from two screening projects in the Netherlands
Citation	Marleen de Mul, Antoinette de Bont and Marc Berg, (2007) 7 <i>International Journal of Integrated Care</i>
Source	<i>International Journal of Integrated Care</i>
Database	PubMed
Search terms	Ophthalmology optometrists glaucoma and "united kingdom"
Link	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1894676/pdf/ijic2007-200715.pdf/?tool=pmcentrez
Accessed	Oct. 25, 2009
Relevance	Interprofessional Collaboration
Summary	ABSTRACT Introduction: Information Technology (IT) has the potential to significantly support skill-mix change and, thereby, to improve the efficiency and

⁴ Google Scholar is not a database but rather a search engine. Google Scholar searches the Internet for peer-reviewed papers, theses, books, abstracts and articles, from academic publishers, professional societies, preprint repositories, universities and other scholarly organizations. These sources may or may not constitute formal databases with defined inclusion criteria.

	<p>effectiveness of integrated care.</p> <p>Theory and methods: IT and skill-mix change share an important precondition: the standardisation of work processes. Standardisation plays a crucial role in IT-supported skill-mix change. It is not a matter of more or less standardisation than in the 'old' situation, but about creating an optimal fit. We used qualitative data from our evaluation of two integrated-care projects in Dutch eye care to identify domains where this fit is important.</p> <p>Results: While standardisation was needed to delegate screening tasks from physicians to non-physicians, and to assure the quality of the integrated-care process as a whole, tensions arose in three domains: the performance of clinical tasks, the documentation, and the communication between professionals. Unfunctional [sic] standardisation led to dissatisfaction and distrust between the professionals involved in screening.</p> <p>Discussion and conclusion: Although the integration seems promising, much work is needed to ensure a synergistic relationship between skill-mix change and IT. Developing IT-supported skill-mix change by means of standardisation is a matter of tailoring standardisation to fit the situation at hand, while dealing with the local constraints of available technology and organisational context.</p>
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Title	Agreement between optometrists and ophthalmologists on clinical management decisions for patients with glaucoma
Citation	Banes M.J. et al., "Agreement between optometrists and ophthalmologists on clinical management decisions for patients with glaucoma" (2006) 90 Br J Ophthalmol 579-585.
Source	British Journal of Ophthalmology
Database	Search within www.bjophthalmol.com
Search terms	
Link	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1857057/pdf/579.pdf?tool=pmcentrez
Accessed	October 31, 2009
Relevance	Interprofessional Collaboration
Summary	<p>ABSTRACT</p> <p>Background/aims: Although optometrists have become an accepted part of the team in many hospital glaucoma clinics, their decision making ability has not been assessed formally. This study aims to document the accuracy and safety of clinical work undertaken by optometrists in the hospital setting by investigating their management decisions on follow up of patients with glaucoma.</p> <p>Methods: Four optometrists and three medical clinicians examined 50 patients each. Clinical findings were recorded as usual in the hospital records but management decisions were documented separately on a specially designed data collection form. Subsequently, the patient records and clinical findings were reviewed retrospectively and independently by two consultant ophthalmologists, who were masked to the management decisions of the optometrists and medical clinicians. The consultants' management decisions were then compared with those made by the optometrists and medical clinicians. Percentage agreements were computed together with kappa (k), or weighted kappa, statistics where appropriate.</p> <p>Results: Agreement between consultants and optometrists was 55% (k = 0.33) for evaluation of visual field status, 79% (k = 0.67) for medical management, 72–98% for other aspects of patient management, and 78% (weighted k = 0.35)</p>

	<p>for scheduling of next clinic appointment. Very similar levels of agreement were found between consultants and medical clinicians.</p> <p>Conclusion: Agreement between optometrists and consultants, in glaucoma clinical decision making, was at least as good as that between medical clinicians and consultants. Within an appropriate environment, optometrists can safely work as part of the hospital glaucoma team in outpatient clinics.</p>
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Title	Outcomes of referrals by community optometrists to a hospital glaucoma service
Citation	Bowling B., Chen S.D.M. and Salmon J.F. (2005) 89 Br. J. Ophthalmol 1102-1104.
Source	British Journal of Ophthalmology
Database	Direct Search within www.bjophthalmol.com
Search terms	
Link	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1772809/pdf/bjo08901102.pdf?to=ol=pmcentrez
Accessed	October 31, 2009
Relevance	Interprofessional Collaboration
Summary	<p>ABSTRACT</p> <p>Aim: To determine the outcomes resulting from optometric referrals to a specialist glaucoma screening clinic over a 10 year period.</p> <p>Methods: Details of the initial clinical assessment of all new patients referred to the adult glaucoma screening clinic at Oxford Eye Hospital were collected prospectively from July 1994 to June 2004.</p> <p>Results: Optometrists working in community practice initiated 2505 referrals. Of these, glaucoma was confirmed in 510 patients (20.4%), including 160 with normal intraocular pressure (IOP). A diagnosis of ocular hypertension was made in 747 patients (29.8% of referrals) and 125 (5.0%) were categorised as glaucoma suspects. There was no evidence of a diagnostic trend over the period of data collection.</p> <p>Treatment to lower IOP was commenced in 458 patients (18.3%). Nearly half of those referred, 1148 (45.8%), were discharged from ophthalmological review at the first visit.</p> <p>Conclusion: In this survey, the largest of its nature, only one in five subjects had glaucoma and nearly half were discharged from hospital ophthalmological review. The findings provide a baseline against which the effectiveness of any future system of glaucoma detection in the United Kingdom can be compared.</p>

Title	Primary care and ophthalmology in the United Kingdom
Citation	Riad S.F., Dart J.K.G. and Cooling R.J., (2003) 87 Br. J. Ophthalmology 493-499.
Source	The British Journal of Ophthalmology
Database	www.bjophthalmol.com
Search terms	
Link	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1771577/pdf/bjo08700493.pdf?to=ol=pmcentrez
Accessed	October 31, 2009

Relevance	Interprofessional Collaboration
Summary	<p>The authors proposed the following working definition for ophthalmic primary care:</p> <p>“Ophthalmic primary care is the provision of first contact care for all ophthalmic conditions and the follow up, preventative, and rehabilitative care of selected ophthalmic conditions. It can be delivered in a variety of settings and by a diverse workforce, by in strict, efficient, and timely coordination, to attain the best clinical outcome possible for the patient. A service is designated as ophthalmic primary care, only if appropriately integrated with the patient’s main primary care provider, in order to ensure continuity, longitudinality, and comprehensiveness in the overall care of the patient. The primary care ophthalmic service itself should be accessible, equitable, knowledgeable, responsive, and efficient. In these aims, it is supported by the population sciences which identify the medical and service needs of the population served.”</p>

Title	Referral patterns to an ophthalmic outpatient clinic by general practitioners and ophthalmic opticians and the role of these professionals in screening for ocular disease
Citation	Harrison R.J., Wild J.M. and Hobley A.J., (1988) 297(6657) BMJ 1162-1167.
Source	BMJ
Database	PubMed
Search terms	
Link	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1835025/
Accessed	November 2, 2009
Relevance	Interprofessional Collaboration. Screening.
Summary	<p>Abstract:</p> <p>Case notes of 1113 consecutive new patients referred to a consultant ophthalmologist at a district general hospital were reviewed to determine the source and efficacy of referrals and the current screening practices of general practitioners and ophthalmic opticians. General practitioners initiated referral in 546 cases (49%) and ophthalmic opticians referral in 439 (39%). Visual loss or visual disturbance was the most important single reason for referral (345 cases; 31%), followed by suspected glaucoma (145 cases; 13%), abnormalities of binocular vision (140; 12.5%), disorders of eyelids or ocular adnexa (127; 11%), and red eye (86; 8%). General practitioners referred many more patients with disorders of the eyelids and adnexa and ophthalmic opticians many more patients with suspected glaucoma. Ophthalmic opticians were far more likely than general practitioners to refer patients with suspected glaucoma correctly. A total of 180 patients (16%) were referred from ocular screening, in 149 cases by ophthalmic opticians and in 10 by general practitioners. Seventy patients had glaucoma or incomplete features of glaucoma, all of them referred by ophthalmic opticians. Of eight diabetic patients referred by ophthalmic opticians, three had asymptomatic disease and in two diabetes was diagnosed as a result of ocular screening. No patient was referred for asymptomatic diabetic retinopathy from screening by general practitioners. Ophthalmic opticians were more likely than general practitioners to diagnose retinopathy requiring photocoagulation. Use of a community based service to screen for glaucoma could save unnecessary consultant outpatient appointments. A similar service</p>

	could facilitate detection of diabetic retinopathy at a stage when treatment is most effective.
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Title	Preventing Visual Loss from Chronic Eye Disease in Primary Care
Citation	Rowe, S., MacLean, C.H., Shekelle, P.G., (2004) 291(12) Journal of the American Medical Association 1487-1495.
Source	Journal of the American Medical Association. Review
Database	
Search terms	
Link	http://jama.ama-assn.org/cgi/content/full/291/12/1487
Accessed	Sept. 25, 2009
Relevance	Screening
Summary	<p>Abstract:</p> <p>Context Vision loss is common in the United States and its prevalence increases with age. Visual disability significantly impacts quality of life and increases the risk of injury. Although at least 40% of blindness in the United States is either preventable or treatable with timely diagnosis and intervention, many people with vision loss are undiagnosed and untreated.</p> <p>Objective To review the evidence regarding screening and management of eye disorders and visual disability among adults in the primary care setting.</p> <p>Data Sources and Study Selection MEDLINE, HealthSTAR, EMBASE, The Cochrane Database of Systematic Reviews, and the National Guidelines Clearinghouse were searched for articles and practice guidelines about screening and management of eye diseases and vision loss among adults in the primary care setting using key words and free-text terms, such as <i>vision screening, glaucoma prevention and control</i>, from 1985 to 2003. References in these articles and those suggested by experts in eye care, vision loss, and vision screening were reviewed as well.</p> <p>Data Extraction Articles were searched for the most clinically important information and emphasized randomized controlled trials where available.</p> <p>Data Synthesis Most major guidelines recommend periodic referral of older adults to an eye care professional for comprehensive evaluation to detect eye diseases and visual disability. The value of routine screening for vision loss in the primary care setting has not been established. Timely identification and treatment of eye diseases can substantially reduce the incidence and prevalence of visual disability among older adults. Optimizing management of systemic diseases, such as diabetes, hypertension, and hyperlipidemia, significantly reduces the risk of related eye disorders.</p> <p>Conclusions Primary care clinicians can play a vital role in preserving vision in their patients by managing systemic diseases that impact eye health and by ensuring that patients undergo periodic evaluations by eye care professionals and receive needed eye care.</p>

Title	Preventing and Managing Visual Disability in Primary Care
Citation	JAMA. Vol. 291 No.12, March 24/31, 2004
Source	Journal of the American Medical Association
Database	
Search terms	
Link	http://jama.ama-assn.org/cgi/content/full/291/12/1497
Accessed	Sept. 25, 2009
Relevance	Interprofessional Collaboration
Summary	<p>Abstract</p> <p>Clinicians in primary care settings are well positioned to participate in the prevention and management of visual disability. They can have a significant impact on their patients' visual health by screening for vision problems, aggressively controlling known risk factors for visual loss, ensuring adherence to ophthalmologic treatment and continuity of eye care, and by timely referral of specific patient populations to qualified eye care professionals (eg, ophthalmologists and optometrists). Using their knowledge about common ophthalmic medications, clinicians can detect adverse effects of these agents, including exacerbations of heart or lung disease. They can ensure that appropriate patients are screened for common serious eye diseases, such as glaucoma, and that patients with disabilities related to vision problems are assessed for treatable conditions, such as cataracts or refractive error. Finally, clinicians can direct patients with low vision from any cause to resources designed to help enhance patient function and emotional support.</p>

Title	Optimal clinical management of eye problems: the role of optometrists in managed care plans.
Citation	Soroka M, Krumholz DM, Krasner M, Portello J. Optometry. 2000 Dec;71(12):781-90.
Source	Academic journal
Database	PubMed
Search terms	"eye care" "scope" "practice"
Link	http://www.ncbi.nlm.nih.gov/pubmed/11145303?ordinalpos=7&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum
Accessed	October 4, 2009
Relevance	Interprofessional Collaboration. Business Practices.
Summary	<p>Abstract:</p> <p>Background: Recent developments in the education and licensure of optometrists have created new opportunities for more-efficient provision of eye care. This study was conducted to determine the extent to which optometrists provided various kinds of eye care independently in managed care organizations. We compared optometric practices in health plans located in states in which the legal authority of optometrists was limited, to optometric practices in plans situated in states in which optometric licensure permitted broader prescribing authority. The volume and nature of referrals to ophthalmologists were assessed in relation to state law and organizational protocols.</p>

	<p>Methods: A 15-item patient encounter form was developed and completed for all patients examined by the optometrists at each site during a 4-week period in 1998. Specific conditions were selected and criteria developed to help determine whether referrals to ophthalmologists were appropriate, or if they could have been managed by the optometrist. These referrals were assessed by an independent panel of four optometrists.</p> <p>RESULTS: This study documented that optometrists provide a substantial range of eye care, and their individual scope of practice is influenced not only by legal boundaries, but also by financial and organizational factors found within managed care organizations. The pattern of referrals to ophthalmologists helped indicate the extent to which optometrists were underutilized or used appropriately in various settings.</p> <p>Conclusions: There is no single reliable predictor of whether optometrists will be used at the highest level of their abilities and scope of license. Although state licensure sets the overall parameters for care, optometric practice in managed care plans may be modified by internal protocols and organizational factors.</p>
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Title	Highlights: 2008 American Optometric Association Scope of Practice Survey.
Citation	Edlow RC, Marcus GR. Optometry. 2009 May;80(5):267-70.
Source	Academic journal
Database	Search Engine: Google Scholar
Search terms	"eye care" "shared" "scope of practice"
Link	http://www.optometryjaoa.com/article/S1529-1839(09)00106-7/abstract
Accessed	2009-10-04
Relevance	Business practices/employment relationships
Summary	<p>This survey is the latest in a series conducted every 2 years by the American Optometric Association (AOA) Information & Data Committee, to determine what services optometric practices are providing patients.</p> <p>Key findings: optometrists now diagnose an average of 104 cases of anterior segment disorders (including 24 cases of glaucoma) over a typical 6-month period and provide all of the treatment for four fifths of those anterior segment patients and two thirds of the glaucoma patients. As a result, optometrists now prescribe or dispense pharmaceuticals to patients more than 400 times over a typical 6-month period – substantially more than just 2 years earlier.</p> <p>An average of 44 refractive surgery patients are typically screened by an optometrist during a 6-month period.</p> <p>Virtually all responding optometrists (98.2%) now routinely perform annual dilated examinations on diabetic patients, with 4 of 5 routinely sending written reports to other primary care practitioners to facilitate an integrated team approach to care. More than a third of optometrists now provide at least some low vision services in the office. Nine of 10 manage or comanage macular degeneration patients. One in three optometrists now offer corneal topography and 3 of 5 pachymetry.</p>

Title	Environmental Scan of Interprofessional Collaborative Practice Initiatives (Canada)
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Citation	Cote, Genevieve, Lauzon, Chantal and Kyd-Strickland, Barbara (2008) 22 (5) Journal of Interprofessional Care 449-460.
Source	Journal of Interprofessional Care Professional Journal
Database	CINAHL
Search terms	CINAHL Search Terms: "interprofessional collaboration" refined with Canada.
Link	http://informahealthcare.com/doi/abs/10.1080/13561820802210950
Accessed	October 7, 2009
Relevance	Interprofessional Collaboration
Summary	<p>Abstract:</p> <p>Interprofessional collaboration in health care is high on the policy agenda in Canada. There is evidence that governments, academic institutions, regulatory bodies and health services are developing directions, policies and strategies with collaboration in mind. The Ottawa Hospital (TOH) received governmental funding to implement The Ottawa Hospital Inter-Professional Model of Patient Care[®]. Prior to implementing our model, we conducted an environmental scan to identify initiatives related to interprofessional collaboration in clinical settings. A historical method was used to understand the chronological development of interprofessional collaboration within the health field over the last 10 years. Critical browsing was used to search, select and summarize information found on the web. Fifty-two documents were critically reviewed; 27 documents were retained for further analysis and inclusion. The information was analyzed according to three main parameters: source, summary and relevance to our project. The five broad themes identified are: promotion, networking, evidence, resources and linkage between interprofessional education and care. This seems an accurate reflection of the current state of this area; there is active promotion and networking, concrete frameworks and funds but few published results regarding the efficacy of implementing IPC in health care organizations. As experience with the approach accumulates, evidence should grow.</p>

Title	Reducing Barriers to Interprofessional Training: Promoting Interprofessional Competence
Citation	Pecukonis, Edward; Doyle, Otima; Bliss, Donna Leigh, (2008) 22(4) Journal of Interprofessional Care 417-428.
Source	Journal of Interprofessional Care Professional Journal
Database	CINAHL
Search terms	CINAHL Search Terms: "interdisciplinary practice"
Link	http://informahealthcare.com/doi/abs/10.1080/13561820802190442
Accessed	September 29, 2009
Relevance	Interprofessional Collaboration
Summary	<p>Abstract:</p> <p>The need to train health professionals who can work across disciplines is</p>

	<p>essential for effective, competent, and culturally sensitive health care delivery. By its very nature, the provision of health service requires communication and coordination between practitioners. However, preparation for interdisciplinary practice within the health care setting is rare. The authors argue that the primary reason students are not trained across disciplines is related to the diverse cultural structures that guide and moderate health education environments. It is further argued that this profession specific “cultural frame” must be addressed if there is any hope of having interprofessional education accepted as a valued and fully integrated dimension of our curriculum. Each health discipline possess its own <i>professional culture</i> that shapes the educational experience; determines curriculum content, core values, customs, dress, salience of symbols, the meaning, attribution, and etiology of symptoms; as well as defines what constitutes health, wellness and treatment success. Most importantly, professional culture defines the means for distributing power; determines how training should proceed within the clinical setting; and the level and nature of inter-profession communication, resolution of conflicts and management of relationships between team members and constituents. It might be said that one factor limiting interdisciplinary training is <i>profession-centrism</i>. If we are to achieve effective and fully integrated interdisciplinary education, we must decrease profession-centrism by crafting curriculum that promotes <i>interprofessional cultural competence</i>. The article explores how to promote interprofessional cultural competence within the health education setting.</p>
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Title	Improving the Clarity of the Interprofessional Field: Implications for Research and Continuing Interprofessional Education
Citation	Goldman J, Zwarenstein M, Bhattacharyya O, Reeves S., (2009) 29(3) J Contin Educ Health Prof 151-156.
Source	Journal of Continuing Education in the Health Professions
Database	Cochrane Library
Search terms	Interprofessional Collaboration
Link	
Accessed	
Relevance	Interprofessional Collaboration
Summary	<p>Abstract:</p> <p>Significant investments are being made around the world to improve interprofessional collaboration, yet limits in our knowledge of this field restrict the ability of decision makers to base their decisions upon evidence. Clarity of the interprofessional field is blurred by a conceptual and semantic confusion that affects our understanding of key elements of education and practice activities, their interlinked relationship, and their effects on health or system outcomes. Systematic reviews of interprofessional education (IPE) and interprofessional collaboration (IPC) have provided some insight into the nature and effectiveness of this field, but a lack of clarity remains. In this article we report on a scoping review currently being undertaken to analyze the interprofessional field, improve its conceptual clarity, and identify elements needed to enhance its development. Emerging review findings regarding participants and settings, interventions, and outcomes are reported. The article provides implications from this review and discusses them in relation to continuing IPE and future research.</p>

Title	Interprofessional Collaboration: effects of practice-based interventions on professional practice and healthcare outcomes
Citation	Zwarenstein M, Goldman J, Reeves S. <i>Cochrane Database of Systematic Reviews</i> 2007, Issue 3. Art. No.: CD000072.
Source	Cochrane library Review
Database	Cochrane Library
Search terms	Linked to article above.
Link	http://www.cochrane.org/reviews/en/ab000072.html
Accessed	
Relevance	Interprofessional Collaboration
Summary	<p>Abstract</p> <p>Background</p> <p>Poor interprofessional collaboration (IPC) can negatively affect the delivery of health services and patient care. Interventions that address IPC problems have the potential to improve professional practice and healthcare outcomes.</p> <p>Objectives</p> <p>To assess the impact of practice-based interventions designed to change IPC, compared to no intervention or to an alternate intervention, on one or more of the following primary outcomes: patient satisfaction and/or the effectiveness and efficiency of the health care provided. Secondary outcomes include the degree of IPC achieved.</p> <p>Search strategy</p> <p>We searched the Cochrane Effective Practice and Organisation of Care Group Specialised Register (2000-2007), MEDLINE (1950-2007) and CINAHL (1982-2007). We also handsearched the Journal of Interprofessional Care (1999 to 2007) and reference lists of the five included studies.</p> <p>Selection criteria</p> <p>Randomised controlled trials of practice-based IPC interventions that reported changes in objectively-measured or self-reported (by use of a validated instrument) patient/client outcomes and/or health status outcomes and/or healthcare process outcomes and/or measures of IPC.</p> <p>Data collection and analysis</p> <p>At least two of the three reviewers independently assessed the eligibility of each potentially relevant study. One author extracted data from and</p>

	<p>assessed risk of bias of included studies, consulting with the other authors when necessary. A meta-analysis of study outcomes was not possible given the small number of included studies and their heterogeneity in relation to clinical settings, interventions and outcome measures. Consequently, we summarised the study data and presented the results in a narrative format.</p> <p>Main results</p> <p>Five studies met the inclusion criteria; two studies examined interprofessional rounds, two studies examined interprofessional meetings, and one study examined externally facilitated interprofessional audit. One study on daily interdisciplinary rounds in inpatient medical wards at an acute care hospital showed a positive impact on length of stay and total charges, but another study on daily interdisciplinary rounds in a community hospital telemetry ward found no impact on length of stay. Monthly multidisciplinary team meetings improved prescribing of psychotropic drugs in nursing homes. Videoconferencing compared to audioconferencing multidisciplinary case conferences showed mixed results; there was a decreased number of case conferences per patient and shorter length of treatment, but no differences in occasions of service or the length of the conference. There was also no difference between the groups in the number of communications between health professionals recorded in the notes. Multidisciplinary meetings with an external facilitator, who used strategies to encourage collaborative working, was associated with increased audit activity and reported improvements to care.</p> <p>Authors' conclusions</p> <p>In this updated review, we found five studies (four new studies) that met the inclusion criteria. The review suggests that practice-based IPC interventions can improve healthcare processes and outcomes, but due to the limitations in terms of the small number of studies, sample sizes, problems with conceptualising and measuring collaboration, and heterogeneity of interventions and settings, it is difficult to draw generalisable inferences about the key elements of IPC and its effectiveness. More rigorous, cluster randomised studies with an explicit focus on IPC and its measurement, are needed to provide better evidence of the impact of practice-based IPC interventions on professional practice and healthcare outcomes. These studies should include qualitative methods to provide insight into how the interventions affect collaboration and how improved collaboration contributes to changes in outcomes.</p>
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Title	Interprofessional Education: effects on professional practice and healthcare outcomes
Citation	Reeves S, Zwarenstein M, Goldman J, Barr H, Freeth D, Hammick M, Koppel I. <i>Cochrane Database of Systematic Reviews</i> 2007, Issue 4. Art. No.: CD002213.
Source	Cochrane library. Updated Linked to 2001 review. Review
Database	Cochrane Library

Search terms	
Link	http://www.cochrane.org/reviews/en/ab002213.html
Accessed	
Relevance	Interprofessional Collaboration
Summary	<p>Abstract:</p> <p>Background Patient care is a complex activity which demands that health and social care professionals work together in an effective manner. The evidence suggests, however, that these professionals do not collaborate well together. Interprofessional education (IPE) offers a possible way to improve collaboration and patient care.</p> <p>Objectives To assess the effectiveness of IPE interventions compared to education interventions in which the same health and social care professionals learn separately from one another; and to assess the effectiveness of IPE interventions compared to no education intervention.</p> <p>Search strategy We searched the Cochrane Effective Practice and Organisation of Care Group specialised register, MEDLINE and CINAHL, for the years 1999 to 2006. We also handsearched the Journal of Interprofessional Care (1999 to 2006), reference lists of the six included studies and leading IPE books, IPE conference proceedings, and websites of IPE organisations.</p> <p>Selection criteria Randomised controlled trials (RCTs), controlled before and after (CBA) studies and interrupted time series (ITS) studies of IPE interventions that reported objectively measured or self reported (validated instrument) patient/client and/or healthcare process outcomes.</p> <p>Data collection and analysis Two reviewers independently assessed the eligibility of potentially relevant studies, and extracted data from, and assessed study quality of, included studies. A meta-analysis of study outcomes was not possible given the small number of included studies and the heterogeneity in methodological designs and outcome measures. Consequently, the results are presented in a narrative format.</p> <p>Main results We included six studies (four RCTs and two CBA studies). Four of these studies indicated that IPE produced positive outcomes in the following areas: emergency department culture and patient satisfaction; collaborative team behaviour and reduction of clinical error rates for emergency</p>

	<p>department teams; management of care delivered to domestic violence victims; and mental health practitioner competencies related to the delivery of patient care. In addition, two of the six studies reported mixed outcomes (positive and neutral) and two studies reported that the IPE interventions had no impact on either professional practice or patient care.</p> <p>Authors' conclusions</p> <p>This updated review found six studies that met the inclusion criteria, in contrast to our first review that found no eligible studies. Although these studies reported some positive outcomes, due to the small number of studies, the heterogeneity of interventions, and the methodological limitations, it is not possible to draw generalisable inferences about the key elements of IPE and its effectiveness. More rigorous IPE studies (i.e. those employing RCTs, CBA or ITS designs with rigorous randomisation procedures, better allocation concealment, larger sample sizes, and more appropriate control groups) are needed to provide better evidence of the impact of IPE on professional practice and healthcare outcomes. These studies should also include data collection strategies that provide insight into how IPE affects changes in health care processes and patient outcomes.</p>
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Title	Streaming Into the River
Citation	Meads, Geoff, (1999) 13:3 Journal of Interprofessional Care 271-276.
Source	Journal of Interprofessional Care Professional Journal
Database	Direct search within the Journal of Interprofessional Care
Search terms	
Link	http://informahealthcare.com/doi/abs/10.3109/13561829909010370
Accessed	October 7, 2009
Relevance	IPC
Summary	<p>Abstract:</p> <p>The impact on health strategy of moving further towards a primary care-centred health care system in the UK is considered. Initiatives in primary eye care within a London health district illustrate the scope to extend both interprofessional care and learning. A model of network-based development is identified as a framework for delivering health strategy based on primary care. The implications for both other family health services professionals and future primary care organisational and policy developments are explored.</p>

Title	Enhancing Interdisciplinary Collaboration in Primary Health Care, Barriers and Enabling Factors Task Groups Report
Citation	Enhancing Interdisciplinary Collaboration in Primary Health Care Initiative (EICPHC Initiative) May 2005.

Source	EICPHC Initiative research paper
Database	Direct search within EICPHC website.
Search terms	
Link	http://www.eicp.ca/en/said/consultation/barriers/barriers-and-enabling-factors-task-force-groups-report.pdf
Accessed	October 9, 2009
Relevance	Interprofessional Collaboration
Summary	<p>Identified five key framework elements re collaboration in primary health care:</p> <ul style="list-style-type: none"> -Liability/risk management -Funding -Electronic health records -Regulatory factors -Health human resources <p>Key regulatory issues:</p> <ul style="list-style-type: none"> -Harmonize scopes of practice -Harmonize standards of practice -Protect confidentiality/privacy while providing access to information -Address slow pace of legislative change -Examine labour relations/collective agreements to address IPC issues.

Title	Achieving Public Protection through Collaborative Self-Regulation: Reflections for a New Paradigm
Citation	Conference Board of Canada 2007.
Source	Conference Board of Canada Think-tank research paper
Database	Direct search within Conference Board of Canada website.
Search terms	
Link	http://sso.conferenceboard.ca/e-Library/temp/BoardWise2JPEEAEMCGCAKHPOCGEOJFBGA20091014101426/071-07%20AchievingPublicProtection_WEBr2.pdf
Accessed	October 9, 2009
Relevance	Interprofessional Collaboration
Summary	The report examines the legislative and regulatory environment in Canada and whether, and how, it acts as a barrier or facilitator to interdisciplinary collaboration in health care. It includes advice to both regulators and policymakers as to the role that legislation and regulation could play in enhancing collaborative practice and improving health human resource management.

Title	Regulatory and Medico-Legal Barriers to Interprofessional Practice
Citation	Lahey, William and Currie, Robert, (2005) 19 (s1) Journal of Interprofessional Care 197-223.
Source	Journal of Interprofessional Care Professional Journal

Database	CINAHL
Search terms	CINAHL Search Terms: "interprofessional regulation" refined with Canada.
Link	http://informahealthcare.com/doi/abs/10.1080/13561820500083188
Accessed	October 8, 2009
Relevance	Interprofessional Collaboration
Summary	<p>Abstract:</p> <p>Unlike the other contributions to this issue, this paper is concerned with the prospects and potential ramifications of implementing interprofessional practice from the legal standpoint. The authors focus on the two forums where the major legal issues are likely to be played out: the laws under which health care professionals are regulated; and the law of professional malpractice as applied by the courts under the tort of negligence. The goal is to examine the regulatory and medico-legal barriers that might prevent or inhibit health care professionals from working together on an interprofessional basis, and to forecast the kinds of changes within legal systems which will be necessary to accommodate the change.</p> <p>The first part of the paper focuses on the legal regimes which govern the Canadian health care system, and argues that the essential integrity of the system of professional self-regulation must be protected in programs of reform that seek to create space for interprofessional practice. The authors also propose a number of specific initiatives of review and legislative change as examples of the role that legal reform can play in the shift to a culture of interprofessional regulation. The second part of the paper focuses on malpractice law and suggests that, while in the long term the superior quality of care brought about by interprofessional practice should produce less liability, in the short term interprofessional practice may fit uneasily within the legal constructs traditionally employed by the courts to evaluate malpractice claims. The authors propose three strategies designed to minimize this risk.</p>

Title	Interprofessional Teamwork: Professional cultures as Barriers.
Citation	Hall, Pippa, (2005) 19 Journal of Interprofessional Care 188-196.
Source	Journal of Interprofessional Care Professional Journal
Database	Direct search within the Journal of Interprofessional Care
Search terms	
Link	http://informahealthcare.com/doi/abs/10.1080/13561820500081745
Accessed	September 29, 2009
Relevance	Interprofessional Collaboration
Summary	<p>Abstract:</p> <p>Each health care profession has a different culture which includes values, beliefs, attitudes, customs and behaviours. Professional cultures evolved as the different professions developed, reflecting historic factors, as well as social class and gender issues. Educational experiences and the socialization process that occur during the training of each health professional reinforce the common values, problem-solving approaches and language/jargon of each profession. Increasing specialization has led to even further immersion of the learners into the knowledge and culture of their own professional group. These professional</p>

	cultures contribute to the challenges of effective interprofessional teamwork. Insight into the educational, systemic and personal factors which contribute to the culture of the professions can help guide the development of innovative educational methodologies to improve interprofessional collaborative practice.
Title	Canada as a case study
Citation	Barr, Hugh, (2005) 19 (S1) <i>Journal of Interprofessional Care</i> 5-7.
Source	<i>Journal of Interprofessional Care</i> Editorial
Database	Direct search within the <i>Journal of Interprofessional Care</i>
Search terms	
Link	http://informahealthcare.com/doi/pdf/10.1080/13561820500081562
Accessed	September 29, 2009
Relevance	Interprofessional Collaboration
Summary	Provides an overview of a supplementary edition of the <i>Journal of Interprofessional Care</i> re the state of interprofessional care in Canada. Makes the case for interprofessional education to advance interprofessional practice.

Title	Collaborative Health Care Teams in Canada and the USA: Confronting the Structural Embeddedness of Medical Dominance
Citation	Bourgeault, Ivy Lynn and Mulvale, Gillian, (2006) 15(5) <i>Health Sociology Review</i> 481-495.
Source	Professional Journal
Database	CINAHL
Search terms	CINAHL Search Terms: collaborative and team
Link	http://www.atypon-link.com/EMP/doi/abs/10.5555/hesr.2006.15.5.481
Accessed	October 9, 2009
Relevance	Interprofessional Collaboration
Summary	<p>Abstract:</p> <p>There has been a renewed interest in collaborative models of health care delivered by 'interdisciplinary teams' of providers across several health care systems. This growing phenomenon raises a host of issues related to the management of professional boundaries and the contemporary state of medical dominance. In this paper, we undertake a critical analysis of the factors both promoting and impeding collaborative care models of primary and mental health care in Canada and the U.S. The data our arguments are based upon include a combination of documentary and interview data from key stakeholders influential in various collaborative care initiatives. Based on these data, we develop a conceptual model of the various levels of influence, focusing in particular on the macro (regulatory/funding) and meso (institutional) factors. Our comparative policy and institutional analysis reveals the similarities and differences in the influences of the broader contexts in Canada and the U.S., and by extension the different ways that the structural embeddedness of medical dominance impinges upon and reacts to recent policy changes regarding collaborative health care teams.</p>

Conflict of Interest

Title	Role conflict and conflict of interest: a professional practice dilemma.
Citation	Pullman D. J Am Optom Assoc. 1996 Feb;67(2):98-108.
Source	Journal of the American Optometric Association
Database	PubMed
Search terms	"Ontario" "optometry" "business"
Link	http://www.ncbi.nlm.nih.gov/pubmed/9120208?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum
Accessed	October 4, 2009
Relevance	Conflict of interest
Summary	<p>Abstract: Background: The structural nature of the optometric profession requires that the majority of optometrists act both as professional health care providers and as entrepreneurial business persons. Clients in turn act both as patients seeking professional health care and as consumers who need to purchase ophthalmic products.</p> <p>Methods/Results: The development of the current structural nature of optometry is examined, and the concomitant moral implications and responsibilities that emerge out of the role conflicts experienced by both practitioner and patient are explained. Inasmuch as the optometrist's relationship to the patient can at times be ambiguous, the optometrist can be put in a conflict-of-interest situation.</p> <p>Conclusions: It is the optometrist's moral responsibility to endeavour to avoid conflict-of-interest situations, or to clarify or change them when they occur.</p>

Title	A perspective on commercial relationships between ophthalmology and industry.
Citation	Jampol LM, Packer S, Mills RP, Day SH, Lichter PR, Council of the American Ophthalmological Society. Arch Ophthalmol. 2009 Sep;127(9):1194-202.
Source	Archives of Ophthalmology
Database	PubMed
Search terms	"eye care" "conflict of interest"
Link	http://www.ncbi.nlm.nih.gov/pubmed/19752430?ordinalpos=1&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum
Accessed	October 4, 2009
Relevance	Conflict of interest. Business practices/employment relationships.
Summary	<p>Abstract: Relationships between physicians and industry including pharmaceutical companies and device manufacturers are being closely scrutinized by the public and the media. These companies can contribute beneficially to patient outcomes by supporting research that improves eye care. However, ethical issues may arise that affect practicing ophthalmologists, researchers, academic faculty, and ophthalmologic organizations. These topics were discussed at a symposium sponsored by the American Ophthalmological Society in May 2008. After this meeting, the council of the society developed</p>

	<p>this perspective to clarify some of the issues at the interface of industry and ophthalmology. The perspective is intended to provide some guidance to physicians, researchers, and professional societies and to enhance further dialogue.</p>
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Title	Implications of the Georgia Patient Self-Referral Act of 1993
Citation	Fenton Charles F., (1994-1995) 11 Ga. St. U.L. Rev. 543.
Source	Georgia State University Law Review, commentary
Database	Hein Online
Search terms	"optician dispense"~25 [Optician and dispense within 25 words] "ophthal dispense"~25 [Ophthal and dispense within 25 words]
Link	
Accessed	October 30, 2009
Relevance	Conflict of Interest, Business Practices
Summary	<p>The article discusses <i>Pearle Optical of Monroeville, Inc. v. Georgia State Board of Examiners in Optometry</i>. In this case, the Georgia Supreme Court upheld as constitutional, the rules and regulations of the State Board of Examiners in Optometry that prohibited optometrists from being employed by an entity that dispensed eyeglasses. The Court found that even though most optometrists dispense glasses in their offices, the employment of the optometrist by such an entity created a conflict of interest. [562]</p> <p>The authors use this case as an example of a situation where a state may intervene to regulate a physician investment when the investment presents a conflict of interest due to the state's valid interest in providing for the public health. [563]</p>

Title	The Doctor –Merchants: An Analysis of the Laws Governing Physician Control of the Sources of Supply of Medical Products
Citation	Gerity, Thomas C., "The Doctor –Merchants: An Analysis of the Laws Governing Physician Control of the Sources of Supply of Medical Products" (1974) 45 Miss. L.J. 1234.
Source	Mississippi Law Journal, Commentary
Database	Hein Online
Search terms	"optician dispense"~25 [Optician and dispense within 25 words]; "ophthal dispense"~25 [Ophthal and dispense within 25 words]
Link	
Accessed	October 30, 2009
Relevance	Conflict of Interest, Business Practices
Summary	<p>This article discusses the controversy that arises when medical practitioners own an interest in certain entities such as pharmacies and optical dispensaries.</p> <p>"Ophthalmologists and optometrists are subject to the same criticism as physicians when they own an interest in an optical shop, dispense eyeglasses from their offices, or lease space to an optician. Eye doctors profiting from the sale of glasses pose a threat to the economic viability of independent opticians and are subject to the temptation to write unnecessary prescriptions." [1238]</p>

Title	Conflicts of interest in Canadian health care law
Citation	Dickens, Bernard M. "Conflicts of interest in Canadian health care law" (1995) American Journal of Law & Medicine 259.
Source	American Journal of Law & Medicine, Commentary
Database	LegalTrac
Search terms	Optometrist AND "conflict of interest"
Link	
Accessed	October 23, 2009
Relevance	Conflict of Interest. Business Practices.
Summary	<p>The article addresses the <i>Regulated Health Professions Act</i>, 1991, S.O. 1991, c. 18 ("<i>RHPA</i>") which has created a legal framework for the activities of over twenty self governing health professions. The author sees the initiative of the regulation as an attempt to invoke health care practitioners' duty to maintain high ethical standards. The article addresses a number of issues including: the development of conflict of interest law in Canadian courts; the legislative and regulatory approaches to conflict of interest; court treatment of professional tribunal rulings under the legislation; the controls outside the health care professions; and the challenge of recent economic developments and debates on health priorities.</p> <p>The article discusses the regulations that once governed optometrists in Ontario that were the subject of litigation that clarified judicial approaches to professional licensing authorities' perceptions of professional misconduct.</p> <p>The author also discusses the decision of Divisional Court in <i>Cox v. College of Optometrists of Ontario</i>. In this case, the disciplinary committee of the College of Optometrists of Ontario (the "College") found Dr. Cox guilty of professional misconduct on the basis of conflict of interest. Specifically, he was found guilty of renting his office from a vendor of ophthalmic appliances for a rent that was not normal for the area and engaging in the practice of optometry in association, partnership or otherwise with a vendor of ophthalmic appliances, contrary to sections of <i>RHPA</i>.</p> <p>The divisional court upheld the disciplinary committee's decision explaining that the members of the College had the expertise necessary to recognize and define the activities that constitute a conflict of interest. The Court determined the test for conflict of interest as whether it can be said that no reasonable person could conclude that the prohibited private interest could influence the optometrist's professional conduct. The Court stressed that the practitioners must maintain the appearance of an arm's length relationship with ophthalmic dispensers.</p>

Business Practices

Title	Ophthalmologistes, optometristes et opticiens d'ordommances: champs d'exercice et conflits interprofessionnels ⁵
Citation	Julie-Suzanne Doyen, "Ophthalmologistes, optometristes et opticiens d'ordommances: champs d'exercice et conflits interprofessionnels" (1991) 22 R.D.U.S. 175.
Source	Revue de Droit, Universite de Sherbrooke
Database	Quicklaw
Search terms	Optometrist AND Optician
Link	
Accessed	October 23, 2009
Relevance	Interprofessional Collaboration
Summary	<p>Abstract⁶: "The article deals with the specific fields of activities of physicians (ophthalmologists), optometrists and opticians. The author identifies many conflicts between these professionals resulting from the overlapping of their fields of activities and from the corporations negative interrelationships. To justify some of the actions of their members, the professional corporations refer to the need to protect the interests of their patients and to the liberty to exercise a profession. The author suggests a number of solutions to those problems."</p> <p>Summary⁷: The author identifies the right to prescribe drugs as the source of conflict between optometrists and ophthalmologists and recommends that optometrists be allowed to prescribe diagnostic drugs where it is safe to do so, tight regulatory control over such prescribing and increased clinical pharmacology in optometry education. The author also suggests direct collaboration between the two professions and cites a pilot program proposed by the association of Ophthalmologists, which seeks to integrate Optometry into the hospital setting.</p> <p>The author identifies the overlap in scopes of practice, a long history of legal battles and a substantial increase in the number of opticians taking courses in techniques in visual orthoses (since 1989) as the main sources of conflict between optometrists and opticians. The author recommends mediation instead of legal battles to resolve conflicts between the two professions. The author also indicates that current definitions and restrictions on the profession of Opticianry are reasonable and appropriate.</p>

Title	The Effect of Commercial Practice Restrictions: The Case of Optometry
Citation	Deborah Haas- Wilson, "The Effect of Commercial Practice Restrictions: The Case of Optometry" (1986) 29 J.L. & Econ. 165.
Source	Journal of Law & Economics
Database	Hein Online

⁵ The original article is published in French. HPRAC staff translated the article into English. A copy of that translation can be found at Appendix 2.

⁶ The abstract reproduced here was provided in English.

⁷ The summary is based on HPRAC's translation of the original article.

Search terms	Optometrist
Link	
Accessed	October 23, 2009
Relevance	Business Practices, Advertising
Summary	<p>This paper provides a study of the economic effect of four commercial practice restrictions placed on optometrists [168⁸]. These commercial practices place restrictions on:</p> <ol style="list-style-type: none"> 1) the employment of optometrists by nonprofessional corporations; 2) the permissible locations of optometrists' offices; 3) the operations of multiple offices by optometrists; and 4) the use of trade names by optometrists employed by nonprofessional corporations [165]. <p>The author claims that the Federal Trade Commission (FTC) has argued that these restrictions serve optometrists' self interest by restricting the growth of high volume, chain vision care outlets [166]. She also claims that there is an assumption that the regulation of optometrists' production and information dissemination processes is necessary to protect consumer interests [165].</p> <p>The author claims that there is empirical evidence suggesting that restrictions on optometrists' advertising increases the price of ophthalmic goods and services [166].</p> <p>The author sets out to test her hypothesis that the above four commercial practice restrictions have the effect of increasing eye examinations and eyeglasses prices [175]. She conducts an empirical study and concludes, from her data, that commercial practice restrictions in the ophthalmic market have the effect of increasing eye examination and eyeglasses prices without increasing the quality of the services provided. She therefore concludes that the commercial practice restrictions are not protecting the consumer [183].</p>

Title	Competing for Professional Control: Professional Mix in the Eyeglasses Industry
Citation	Alex. R. Maurizi, Ruth L. Moore, and Lawrence Shepard, "Competing for Professional Control: Professional Mix in the Eyeglasses Industry" (1981) 24 J.L. & Econ 351.
Source	Journal of Law and Economics
Database	HeinOnline
Search terms	Optometrist AND Optician AND Ophthalmologist
Link	
Accessed	October 23, 2009
Relevance	Business Practices Advertising

⁸ The number in brackets "[]" refers to the page number of the article.

Refraction

Title	A comparison of manifest refractions, cycloplegic refractions and retinoscopy on the RMA-3000 autorefractometer in children aged 3 to 15
Citation	Rotsos T., Grigoriou D., Kokkolaki A., Manios N., (2009) 3 Clinical Ophthalmology 429-431.
Source	Clinical Ophthalmology
Database	PubMed
Search terms	
Link	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2724033/
Accessed	November 2, 2009
Relevance	Refraction
Summary	<p>ABSTRACT</p> <p>Purpose The study was conducted to compare the accuracy of readings of the RMA-3000 autorefractometer (Topcon, Tokyo, Japan) with traditional retinoscopy as a means of determining the approximate subjective refraction in children after cycloplegia.</p> <p>Methods 142 children aged 3 to 15 years were included. All children had their refractive status measured with the RMA-3000 autorefractometer (noncycloplegic autorefraction [AR]). Subsequently all children underwent cycloplegia and the refractive status was estimated again with the autorefractometer (cycloplegic autorefraction [ARC]) and traditional retinoscopy (RC) by examiners who were unaware of the results from the other techniques.</p> <p>Results From 69 right eyes with negative sphere we observed that the sphere power was significantly higher (more than 0.5 diopters) in AR than in ARC ($P = 0.0001$) and RC ($P = 0.0001$). From the 73 normal and hyperopic right eyes we observed that the sphere power was significantly lower (more than 0.5 diopters) in AR than in ARC ($P = 0.0001$) and RC ($P = 0.0001$).</p> <p>Conclusions The use of the autorefractometer in children (in whom accommodation is more active than older patients) without cycloplegia may underestimate the actual hyperopia and overestimate the actual myopia. Manual retinoscopy is still the most accurate technique to estimate refractive status in children.</p>

Title	A Comparison of Automated and Manifest Refraction: The Effect of Age
Citation	Durrani K, Khan A. and Ahmed S. (2006) 47 IOVS.
Source	The Cochrane Central Register of Controlled Trials (CENTRAL) 2009 Issue 4.
Database	
Search terms	
Link	http://www.mrw.interscience.wiley.com/cochrane/clcentral/articles/955/CN-00717955/frame.html
Accessed	November 2, 2009
Relevance	Refraction

Summary	<p>Abstract:</p> <p>Purpose: Autorefracton without subjective refinement is being increasingly employed by opticians in Pakistan for prescribing glasses. The purpose of this study is to compare the refractive correction obtained by autorefracton alone and manifest refraction at a tertiary care hospital in Pakistan and to determine the relationship of this difference with age.</p> <p>Methods: Two hundred and sixty nine patients visiting the ophthalmology clinic of a large tertiary-care hospital in Karachi, Pakistan were studied. Autorefracton alone using a Canon R-10 Autorefracton and manifest refraction were performed at the same visit. All children below age 15 underwent both evaluations under cycloplegia. A clinically significant difference between autorefracton and manifest refraction was defined as a difference of >0.50 D in sphere, cylinder, spherical equivalent or weighted axis, or >10° in axis. Results are reported for one eye (left) of each patient.</p> <p>Results: In 269 left eyes, the median difference between autorefracton and manifest refraction in spherical corrections was +0.10 D (p= 0.04), -0.37 D in cylindrical corrections (p<0.01), 7.2° in axes (p<0.01), and -0.09 D in spherical equivalent (p= 0.06). The median difference in weighted axes was 0.24 D (p<0.01). Children 10 years of age or younger were 3.47 times more likely to have a clinically significant difference in spherical corrections (OR: 3.47, 95% CI: 1.74- 6.96), 2.23 times in cylindrical corrections (OR: 2.23, 95% CI: 1.09- 4.58), 1.72 times in axes (OR: 1.72, 95% CI: 1.27- 4.90), 2.49 times in spherical equivalent (OR: 2.49, 95% CI: 0.88- 3.35) and 2.01 times more likely to have a clinically significant difference in weighted axes (OR: 2.01, 95% CI: 1.22- 4.92).</p> <p>Conclusions: There is a significant difference between the corrections obtained by autorefracton alone and manifest refraction, particularly in children. Autorefracton alone without subjective refinement cannot be substituted for manifest refraction, especially in children 10 years of age or younger.</p>
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Title	Repeatability (test-retest variability) of refractive error measurement in clinical settings.
Citation	Acta Ophthalmol Scand 2006 Aug.84(4)532-6.
Source	Acta Ophthalmologica Scandinavia
Database	PubMed
Search terms	Linked to "Refraction and Visual Acuity measurements: what are their measurement uncertainties?" not reproduced here but available in the Cochrane Library
Link	http://www3.interscience.wiley.com/cgi-bin/fulltext/118606491/PDFSTART
Accessed	November 2, 2009
Relevance	Refraction
Summary	<p>ABSTRACT</p> <p>Purpose: To estimate the repeatability of refractive error measurement (REM) in a clinical environment in cataractous, pseudophakic and healthy eyes.</p> <p>Methods: The refractive error of patients referred for cataract surgery or consultation measured by ophthalmic professionals was re-examined and the measurement results were compared. A total of 99 eyes from 99 persons (41 cataractous, 36 pseudophakic and 22 healthy eyes) with visual acuity (VA) of 0.3–1.3 (logMAR 0.52 to – 0.11) were included. The differences between measurements 1 and 2 were calculated as 3-dimensional vector values and spherical equivalents (SEs) and expressed as the coefficient of repeatability (CR). The mean time interval between the first and second examinations was 45 days.</p>

	<p>Results: The CRs for all eyes for vertical (V), torsional (T) and horizontal (H) vectors were 0.74 D, 0.34 D and 0.93 D, respectively. The CR of SE for all eyes was 0.74 D. Eyes with lower VA (0.3–0.45) had larger variability in vector and SE values but the differences between VA groups were not statistically significant. The difference in the mean defocus equivalent (DE) between measurements 1 and 2 was, however, significantly greater in the group with lower VA. In all VA groups the mean difference vector was very close to the zero vector, which means that there was no systematic difference.</p> <p>Conclusions: Repeatability of refractive error measurements in clinical settings has a certain degree of variability. In this series, the variability in eyes with better VA was not great and was in accordance with earlier findings in healthy eyes. Eyes with lower VA had greater variability due to greater tolerance to defocus. Thus, conclusions concerning changes in the refractive state and the need to make changes in the refractive correction of eyes with poorer vision should be made with caution.</p>
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Title	Evaluation of the measurement of refractive error by the PowerRefractor: a remote, continuous and binocular measurement system of oculomotor function
Citation	Hunt O.A., Wolffsohn J.S. and Gilmartin B., (2003) 87 Br. J. Ophthalmol 1504-1508.
Source	The British Journal of Ophthalmology
Database	www.bjophthalmol.com
Search terms	
Link	http://bjo.bmj.com/content/87/12/1504.abstract
Accessed	November 2, 2009
Relevance	Refraction
Summary	<p>Abstract:</p> <p>Background/aim: The technique of photoretinoscopy is unique in being able to measure the dynamics of the oculomotor system (ocular accommodation, vergence, and pupil size) remotely (working distance typically 1 metre) and objectively in both eyes simultaneously. The aim of this study was to evaluate clinically the measurement of refractive error by a recent commercial photoretinoscopic device, the PowerRefractor (PlusOptiX, Germany).</p> <p>Method: The validity and repeatability of the PowerRefractor was compared to: subjective (non-cycloplegic) refraction on 100 adult subjects (mean age 23.8 (SD 5.7) years) and objective autorefraction (Shin-Nippon SRW-5000, Japan) on 150 subjects (20.1 (4.2) years). Repeatability was assessed by examining the differences between autorefractor readings taken from each eye and by re-measuring the objective prescription of 100 eyes at a subsequent session.</p> <p>Results: On average the PowerRefractor prescription was not significantly different from the subjective refraction, although quite variable (difference +0.05 (0.63) D, $p = 0.41$) and more negative than the SRW-5000 prescription (by -0.20 (0.72) D, $p < 0.001$). There was no significant bias in the accuracy of the instrument with regard to the type or magnitude of refractive error. The PowerRefractor was found to be repeatable over the prescription range of -8.75D to +4.00D (mean spherical equivalent) examined.</p> <p>Conclusion: The PowerRefractor is a useful objective screening instrument</p>

	and because of its remote and rapid measurement of both eyes simultaneously is able to assess the oculomotor response in a variety of unrestricted viewing conditions and patient types.
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Title	Clinical evaluation of the Allergan Humphrey 500 autorefractor and the Nidek AR-1000 autorefractor
Citation	Bettina Kinge, Anna Midelfart and Geir Jacobsen (1996) 80 Br. J. Ophthalmol 35-39
Source	British Journal of Ophthalmology
Database	PubMed
Search terms	
Link	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC505381/
Accessed	November 2, 2009
Relevance	Refraction
Summary	<p>Abstract:</p> <p>AIMS/BACKGROUND: The intentions of this study were to estimate agreement between two different autorefractors and standard subjective refraction techniques and to evaluate the clinical implications of relying on the autorefractor measurements. METHODS: Subjective refraction was carried out on 448 cycloplegic eyes and compared with cycloplegic readings with the Allergan Humphrey 500 autorefractor (448 eyes) and the Nidek AR-1000 autorefractor (160 eyes). Each refraction was followed by clinical visual acuity measurement. The study population comprised 224 healthy students, 107 men and 117 women, with a mean age of 20.6 (SD 1.1) years.</p> <p>RESULTS: Both the Nidek and Humphrey autorefractors measured more negative or less positive refractive values compared with subjective refraction and these biases were statistically significant (Humphrey right eye -0.23 D, p = 0.0001, left eye -0.20 D, p = 0.0001), (Nidek right eye -0.13 D, p = 0.0001, left eye -0.11 D, p = 0.0002). Comparing the results of autorefraction with subjective refraction, the Nidek was better than the Humphrey autorefractor in several ways: a smaller mean difference, better agreement between spherical equivalent values, narrower limits of agreements, and better visual acuity obtained with the autorefraction. On the other hand, the Humphrey autorefractor agreed better with subjective refraction concerning cylinder axis.</p> <p>CONCLUSION: The results show that both autorefractors represent a valuable complement to subjective refraction, but cannot be used as a replacement.</p>

Delegation

Title	An Interprofessional Guide on the Use of Orders, Directives and Delegation for Regulated Health Professionals in Ontario
Citation	Federation of Health Regulatory Colleges of Ontario (2007)
Source	Federation of Health Regulatory Colleges of Ontario
Database	
Search terms	
Link	http://mdguide.regulatedhealthprofessions.on.ca/why/default.asp?printVersion=yes
Accessed	Sept 24, 2009
Relevance	Delegation
Summary	This guide was developed by the Federation of Health Regulatory Colleges of Ontario to address questions regarding the use of orders and delegation to facilitate inter-professional care by health professionals in Ontario.

Title	Doctor-patient relationship required to delegate prescription authority
Citation	Roy Stephenson & Brian Moher, "Doctor-patient relationship required to delegate prescription authority" (Apr. 2007) 26 Lawyers Wkly No. 48.
Source	Lawyers Weekly ⁹ , Commentary
Database	Index to Canadian Legal Literature
Search terms	Optometrist AND Optician
Link	
Accessed	October 23, 2009
Relevance	Delegation.
Summary	<p>The authors address the decision of <i>College of Optometrists (Ontario) v. SHS Optical Ltd.</i> [2006] O.J. No. 4708. The case involved the actions of an optician who operated a chain called Great Glasses that offered its customers free eye tests performed by a computer. The computer results were used instead of a legally required prescription from an optometrist or physician.</p> <p>"Justice Crane found that the blanket advertising of "free eye tests" by Bergez was a "gross deception on the public, putting his customers at risk of their health, done solely for ... commercial profit."</p> <p>The authors of this article acted as counsel to the Ontario College of Optometrists in <i>College of Optometrists (Ontario) v. SHS Optical Ltd.</i> [2006] O.J. No. 4708.</p>

Title	Ethics of Comanagement.
Citation	Packer S, Lynch J. Arch Ophthalmol. 2002;120:71-76.
Source	Archives of Ophthalmology
Database	PubMed – accessed by Google Scholar search engine

⁹ The Lawyers' Weekly is a newspaper for lawyers.

Search terms	"eye care" "conflict of interest" "profession"
Link	http://www.ncbi.nlm.nih.gov/pubmed/11786061
Accessed	October 4, 2009
Relevance	Conflict of interest. IPC Delegation
Summary	<p>Co-management is a delegation of patient care services related to surgery: the surgeon arranges for certain aspects of preoperative or postoperative care to be delivered by another health care provider (typically another ophthalmologist or an optometrist). Ethical considerations of co-management relationships in ophthalmology and optometry are reviewed.</p> <p>Conclusion: The resolution of the ethical slippery slope involved in the justification of co-management may have significant consequences that affect relationships with patients, colleagues, and society.</p>

Advertising

Title	How the public views optometrists' advertising: An empirical analysis.
Citation	Freeman GL Jr, Moser HR. J Med Marketing. 2009;9:255–67.
Source	Journal of Medical Marketing, survey
Database	IngentaConnect – accessed by Google Scholar search engine
Search terms	“eye care” “advertising” “optician” “professional” “practice”
Link	http://www.ingentaconnect.com/content/pal/jomm/2009/00000009/00000003/art00008
Accessed	October 4, 2009
Relevance	Advertising
Summary	<p>Abstract: This article represents the responses of 382 individuals to a mail survey examining views concerning advertising by optometrists in the United States. Historically, most professions prohibited licensed members from engaging in speech activities that proposed a commercial transaction, that is, advertising. However, the history of an optometrist's legal right to advertise is not the main focus of this article. A brief review of the past, present and possible future of such rights might assist readers in understanding the revolutionary constitutional and commercial speech changes that have occurred over the past three decades. An optometrist's legal right to advertise in the United States has developed as part of the evolutionary interpretation of the First Amendment of the US Constitution. The purposes for this study were to determine (a) the public's attitudes toward advertising by optometrists and (b) whether occupation, age, race, marital status, total family household income, education and gender of an individual accounted for any significant differences in his/her attitudes concerning optometrists who advertise in the United States.</p>

Screening

Title	Canadian Ophthalmological Society evidence-based clinical practice guidelines for the periodic eye examination in adults in Canada
Citation	Clinical Practice Guideline Expert Committee, (2007) 42 Can J Ophthalm 39-45.
Source	Canadian Journal of Ophthalmology
Database	
Search terms	
Link	http://article.pubs.nrc-cnrc.gc.ca/RPAS/rpv?hm=HInit&calyLang=eng&journal=cjo&volume=42&afpf=i06-126e.pdf
Accessed	October 29, 2009
Relevance	Screening
Summary	<p>Summary:</p> <p>Recommended frequency of eye care examinations for asymptomatic low risk patient [43]:</p> <p>Ages 19-40 : every 10 years; Ages 41-55: every 5 years; Ages 56-65: every 3 years; Over 65: every 2 years.</p>

Title	Screening for prevention of optic nerve damage due to chronic open angle glaucoma
Citation	Hatt SR, Wormald R, Burr J., <i>Cochrane Database of Systematic Reviews</i> 2006, Issue 4. Art. No.: CD006129.
Source	Cochrane Library Intervention Review
Database	Cochrane Library
Search terms	
Link	http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD006129/frame.html
Accessed	October 12, 2009
Relevance	Screening
Summary	<p>Abstract:</p> <p>Background Open angle glaucoma (OAG) is a primary, progressive optic neuropathy; the onset is without symptoms and progression occurs silently until the advanced stages of the disease, when it affects central vision. The blindness caused by OAG is irreversible. It has often been assumed to be a condition that fulfils the criteria for population screening, although this has not been supported by other in-depth non-</p>

systematic reviews. The focus of this review was to examine the evidence for the effectiveness of screening for OAG.

Objectives

To determine the impact of screening for OAG compared with opportunistic case findings or current referral practices on the prevalence of and the degree of optic nerve damage due to OAG in screened and unscreened populations.

Search strategy

We included any randomised controlled trial (RCT) evaluating population-based screening programmes for OAG with a minimum one year follow up. We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (which contains the Cochrane Eyes and Vision Group Trials Register) (*The Cochrane Library*, Issue 4, 2008), MEDLINE (January 1950 to January 2009), EMBASE (January 1980 to January 2009), the UK Clinical Trials Gateway (UKCTG) and ZETOC (January 1993 to January 2009). There were no language or date restrictions in the search for trials. The electronic databases were last searched on 12 January 2009.

Selection criteria

We planned to include RCTs, including cluster RCTs.

Data collection and analysis

Two review authors independently assessed the study abstracts identified by the electronic searches. We did not find any trials that met the inclusion criteria.

Main results

As no trials were identified, no formal analysis was performed.

Authors' conclusions

On the basis of current evidence, population-based screening for chronic OAG cannot be recommended, although much can be done to improve awareness and encourage at risk individuals to seek testing. In wealthy countries with equitable access to high quality eye care and health education, blindness from chronic OAG should become increasingly rare; much greater challenges face poor and emerging economies and countries where there are substantial health and wealth inequalities. Effectiveness of screening for OAG can be established only by high quality RCTs.

Plain Language Summary¹⁰:

Screening to prevent damage to the optic nerve due to open angle glaucoma

Open angle glaucoma (OAG) is the commonest type of glaucoma in white European and African people and is the commonest cause of irreversible blindness. Its onset is insidious and progression symptomless until the condition is far advanced and central vision is lost. Because of this, OAG is assumed to be a condition which should be screened for, but good evidence to support this is lacking. Risk factors for developing OAG include increasing age, raised pressure inside the eye and a history in the family. It is more common in people with African origin, may come on at an early age and is more aggressive. The field of vision (side vision) is gradually lost but changes in the appearance of the optic nerve (where it appears inside the back of the eye) usually occur first. Raised pressure inside the eye may not be present and many with raised pressure do not have

¹⁰ Summary reproduced from the Cochrane Library. Not summarized by the authors. Accessed on Oct 12, 2009 at <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD006129/frame.html>

	<p>glaucoma. Tests for the disease are examination of the optic nerve, measurement of eye pressure and visual field assessment. The challenge of screening is to find people with the disease at a stage when the diagnosis is not in doubt and at risk of going blind if left untreated.</p> <p>The aim of this review was to determine the impact of screening on the prevalence and severity of optic nerve damage due to OAG. We searched for randomised controlled trials (RCTs) of screening versus no screening for OAG because effectiveness of screening as a means of preventing the ill effects of a disease in a population can only be demonstrated by RCTs. We identified 1360 reports of studies but none were RCTs of screening. Therefore, there is insufficient evidence to recommend population based screening for OAG. However much can be done to improve awareness of the condition and encourage those at higher risk to seek testing. In wealthy countries where there is access to high quality eye care and good health education, blindness from OAG should become increasingly rare. Much greater challenges face poor and emerging economies and countries where there is not equal access to good healthcare. The potential effectiveness of screening for OAG in preventing optic nerve damage and ultimately preventing blindness should be tested by high quality RCTs of screening.</p>
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Title	Community screening for visual impairment in the elderly
Citation	Smeeth LL, Iliffe S. <i>Cochrane Database of Systematic Reviews</i> 2006, Issue 3. Art. No.: CD001054.
Source	Cochrane Library, Intervention Review
Database	
Search terms	
Link	http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001054/frame.html
Accessed	October 12, 2009
Relevance	Screening
Summary	<p>Abstract:</p> <p>Background While the aims of multicomponent screening of older people are broad, any benefit arising from the inclusion of a vision component in the assessment will necessarily be dependent on improving vision.</p> <p>Objectives To assess the effects on vision of mass screening of older people for visual impairment.</p> <p>Search strategy We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (which contains the Cochrane Eyes and Vision Group Trials Register) (<i>The Cochrane Library</i>, Issue 1, 2008), MEDLINE (1966 to February 2008), EMBASE (1980 to February 2008), PubMed (on 8th March 2006; last 90 days), UK Clinical Trials Gateway on 29 February 2008, SciSearch and reference lists of relevant trial reports and review articles. We contacted investigators to identify</p>

	<p>additional published and unpublished trials.</p> <p>Selection criteria We included randomised trials of visual or multicomponent screening for identifying vision impairment in people aged 65 years or over in a community setting.</p> <p>Data collection and analysis Both authors independently extracted data and assessed trial quality.</p> <p>Main results Visual outcome data were available for 3494 people in five trials of multi-component assessment. Length of follow up ranged from two to four years. All the trials used self-reported measures for visual impairment, both as screening tools and as outcome measures. In four of the trials people reporting visual problems were referred to either eye services or a physician. In one trial people reporting visual problems received information about resources in the community designed to assist those with poor vision. The proportions of participants in the intervention and control groups who reported visual problems at the time of outcome assessment were 0.26 and 0.23 respectively (risk ratio for visual impairment 1.03, 95% confidence interval (CI) 0.92 to 1.15). Visual outcome data were also available for 1807 people aged 75 years and over in a cluster randomised trial in which physicians' general practices were randomised to two different screening strategies; universal or targeted. Three to five years after screening, the risk ratio for visual acuity less than 6/18 in either eye comparing universal with targeted screening was 1.07 (95% CI 0.84 to 1.36, P = 0.58). The mean composite score of the National Eye Institute 25 item visual function questionnaire was 85.6 in the targeted screening group and 86.0 in the universal group, a difference of 0.4 (95% CI -1.7 to 2.5, P = 0.69).</p> <p>Authors' conclusions There is no evidence that community-based screening of asymptomatic older people results in improvements in vision.</p> <p>Summary¹¹ Visual impairment is common among older people and is associated with falls and reduced quality of life. Visual problems in older people are often not reported to medical services. Screening has been recommended because vision could be improved by encouraging treatment in the majority of older people with impaired vision. The review found five studies in which vision was tested as part of a broader screening assessment. No improvement in vision was seen two to four years after screening compared to elderly people who were not screened. This may be due to the lack of a clear plan of intervention for visual problems found on screening. In another study, the risk of having visual impairment in either eye was similar with universal and targeted screening, three to five years after screening.</p>
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Title	Vision screening for correctable visual acuity deficits in school-age children and
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¹¹ Summary reproduced from the Cochrane Library. Not summarized by the authors. Accessed on Oct 12, 2009 at <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001054/frame.html>.

	adolescents
Citation	Powell C, Wedner S, Hatt SR <i>Cochrane Database of Systematic Reviews</i> 2004, Issue 4. Art. No.: CD005023.
Source	Cochrane Library Intervention Review
Database	Cochrane Library
Search terms	
Link	http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD005023/frame.html
Accessed	October 12, 2009
Relevance	Screening
Summary	<p>Abstract:</p> <p>Background Although the benefits of vision screening seem intuitive the value of such programmes in junior and senior schools has been questioned. In addition to this, there exists a lack of clarity regarding the optimum age for screening and frequency at which to carry out screening.</p> <p>Objectives The objective of this review was to evaluate the effectiveness of vision screening programmes carried out in schools in reducing the prevalence of undetected, correctable visual acuity deficits due to refractive error in school-age children.</p> <p>Search strategy We searched the Cochrane Central Register of Controlled Trials (CENTRAL), which contains the Cochrane Eyes and Vision Trials Register, in <i>The Cochrane Library</i> (2006, Issue 1), MEDLINE (1966 to March 2006) and EMBASE (1980 to March 2006). No language or date restrictions were placed on these searches.</p> <p>Selection criteria We planned to include randomised controlled trials, including randomised cluster controlled trials.</p> <p>Data collection and analysis Two review authors independently assessed study abstracts identified by the electronic searches. No trials were identified that met the inclusion criteria.</p> <p>Main results As no trials were identified, no formal analysis was performed. A narrative synthesis of other retrieved studies was undertaken in order to explain current practice.</p> <p>Authors' conclusions At present there are no robust trials available that allow the benefits of school vision screening to be measured. The disadvantage of attending school with a visual acuity deficit also needs to be quantified. The impact of a screening programme will depend on the geographical and socio-economic setting in which it is conducted. There is, therefore, clearly a need for well-planned randomised controlled trials to be undertaken in various settings so that the potential benefits and harms of vision screening can be measured.</p>

	<p>Summary¹²:</p> <p>Screening school aged children and adolescents for reduced vision caused by the need for glasses</p> <p>Worldwide, the leading cause of reduced vision in children is an unidentified need for them to wear glasses. The reduced vision that results from abnormal focusing (refractive error) can cause the children to screw up their eyes and complain of headaches. Reduced vision may affect academic performance, choice of occupation and socio-economic status in adult life. Genetic and environmental factors are known to affect the development of refractive error; it is also more common in certain racial groups. Short sightedness has become the commonest eye condition. The need to correct refractive error is determined by its effect on vision. Normal vision can usually be restored by wearing corrective glasses or contact lenses. However, there is some evidence that correction may cause an error to persist where it might otherwise have resolved or reduced naturally. Vision screening is used widely but is concentrated in developed countries; in developing countries it may serve the purpose of providing access to health care. The value of screening after school entry has been queried. Programmes vary with regard to testing personnel, set threshold for failure, frequency and setting. The disability caused by a vision deficit has not been quantified and the optimum age and number of occasions for screening have not been established. The aim of this review was to find studies that evaluated the effectiveness of school vision screening programmes in first identifying children with reduced vision. No eligible randomized studies were found. There is a clear need for reliable evidence to measure the effectiveness of vision screening. A narrative synthesis of other retrieved studies was undertaken in order to explain current practice.</p>
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Title	The clinical effectiveness and cost-effectiveness of screening for open angle glaucoma: a systematic review and economic evaluation
Citation	Burr J.M. et al., (2007) 11(41) Health Technol Assess 1-190.
Source	Health Technology Assessment
Database	PubMed
Search terms	
Link	http://www.ncbi.nlm.nih.gov/pubmed/17927922
Accessed	November 2, 2009
Relevance	Screening
Summary	<p>Abstract:</p> <p>OBJECTIVES: To assess whether open angle glaucoma (OAG) screening meets the UK National Screening Committee criteria, to compare screening strategies with case finding, to estimate test parameters, to model estimates of cost and cost-effectiveness, and to identify areas for future research. DATA SOURCES: Major electronic databases were searched up to December 2005. REVIEW METHODS: Screening strategies were developed by wide consultation. Markov submodels were developed to represent screening strategies. Parameter estimates were determined by systematic reviews of epidemiology, economic evaluations of screening, and effectiveness (test</p>

¹² Summary reproduced from the Cochrane Library. Not summarized by the authors. Accessed on Oct 12, 2009 at <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD005023/frame.html>

accuracy, screening and treatment). Tailored highly sensitive electronic searches were undertaken.

RESULTS: Most potential screening tests reviewed had an estimated specificity of 85% or higher. No test was clearly most accurate, with only a few, heterogeneous studies for each test. No randomised controlled trials (RCTs) of screening were identified. Based on two treatment RCTs, early treatment reduces the risk of progression. Extrapolating from this, and assuming accelerated progression with advancing disease severity, without treatment the mean time to blindness in at least one eye was approximately 23 years, compared to 35 years with treatment. Prevalence would have to be about 3-4% in 40 year olds with a screening interval of 10 years to approach cost-effectiveness. It is predicted that screening might be cost-effective in a 50-year-old cohort at a prevalence of 4% with a 10-year screening interval. General population screening at any age, thus, appears not to be cost-effective. Selective screening of groups with higher prevalence (family history, black ethnicity) might be worthwhile, although this would only cover 6% of the population. Extension to include other at-risk cohorts (e.g. myopia and diabetes) would include 37% of the general population, but the prevalence is then too low for screening to be considered cost-effective. Screening using a test with initial automated classification followed by assessment by a specialised optometrist, for test positives, was more cost-effective than initial specialised optometric assessment. The cost-effectiveness of the screening programme was highly sensitive to the perspective on costs (NHS or societal). In the base-case model, the NHS costs of visual impairment were estimated as 669 pounds. If annual societal costs were 8800 pounds, then screening might be considered cost-effective for a 40-year-old cohort with 1% OAG prevalence assuming a willingness to pay of 30,000 pounds per quality-adjusted life-year. Of lesser importance were changes to estimates of attendance for sight tests, incidence of OAG, rate of progression and utility values for each stage of OAG severity. Cost-effectiveness was not particularly sensitive to the accuracy of screening tests within the ranges observed. However, a highly specific test is required to reduce large numbers of false-positive referrals. The findings that population screening is unlikely to be cost-effective are based on an economic model whose parameter estimates have considerable uncertainty. In particular, if rate of progression and/or costs of visual impairment are higher than estimated then screening could be cost-effective.

CONCLUSIONS: While population screening is not cost-effective, the targeted screening of high-risk groups may be. Procedures for identifying those at risk, for quality assuring the programme, as well as adequate service provision for those screened positive would all be needed. Glaucoma detection can be improved by increasing attendance for eye examination, and improving the performance of current testing by either refining practice or adding in a technology-based first assessment, the latter being the more cost-effective option. This has implications for any future organisational changes in community eye-care services. Further research should aim to develop and provide quality data to populate the economic model, by conducting a feasibility study of interventions to improve detection, by obtaining further data on costs of blindness, risk of progression and health outcomes, and by conducting an RCT of interventions to improve the uptake of glaucoma testing.

Title	Screening for diabetic retinopathy in James Bay, Ontario: a cost-effectiveness analysis
Citation	David Maberley, Hugh Walker, Anita Koushik and Alan Cruess, (2003) 168(2) CMAJ
Source	Canadian Medical Association Journal
Database	CMAJ
Search terms	"Ophthalmology"
Link	http://www.cmaj.ca/cgi/content/abstract/168/2/160
Accessed	October 29, 2009
Relevance	Screening
Summary	<p>ABSTRACT</p> <p>Background: Retinopathy is a common complication of diabetes mellitus that if detected early by regular retinal examinations can be treated; thus, blindness can be delayed or prevented. Providing high-quality retinal screening is difficult, especially in rural and remote areas. Canada's First Nations population has a higher prevalence of diabetes and is, in general, more geographically isolated than the broader Canadian population. We modelled the cost-effectiveness of retinopathy screening by travelling retina specialists versus retinal photography with a portable digital camera in an isolated First Nations cohort with diabetes.</p> <p>Methods: The 2 screening programs were modelled to run concurrently for 5 years, with outcomes evaluated over 10 years. To construct economic models for the population of Cree individuals living in the western James Bay area of northern Ontario, we used available data on the prevalence of diabetes in the area and estimates of the incidence of retinopathy derived from the published literature. We compared the screening models and calculated total costs, visual outcome, costs per sight-year saved and costs per quality-adjusted life year (QALY). We also estimated the costs of implementing a screening program for all First Nations individuals in Ontario with diabetes and no access to an ophthalmologist.</p> <p>Results: From the perspective of the health care system the camera program was preferable to the specialist-based program. Over 10 years, 67 v. 56 sight years were saved, compared with no screening, at costs of \$3900 v. \$9800 per sight year and \$15 000 v. \$37 000 per QALY. Generalizing these results to the province of Ontario, the camera system could allow most isolated First Nations people with diabetes to be screened for 5 years for approximately \$1.2 million.</p> <p>Interpretation: A portable retinal camera is a cost-effective means of screening for diabetic retinopathy in isolated communities of at-risk individuals.</p>

Title	Visionaries Harness Technology for Better Eye Care: Innovative New System Scores Major Award from the Canadian Institutes of Health Research
Citation	Canadian Institute of Health Research 2008
Source	Canadian Institute of Health Research
Database	
Search terms	
Link	http://www.cihr.ca/e/38199.html
Accessed	Accessed October 31, 2009

Relevance	Screening
Summary	This article explains that a specially trained photographer captures digital 3D images of the retina and sends the image over the internet to an ophthalmologist thus improving access to eye care for rural Canadians.

Prevalence of Vision Disorders

Title	VISION 2020 The Right to Sight.
Citation	Global initiative for the elimination of avoidable blindness: Action Plan 2006-2011
Source	World Health Organization (WHO)
Database	
Search terms	
Link	www.who.int/blindness http://www.who.int/blindness/Vision2020_report.pdf (for Action Plan)
Accessed	Sept. 23, 2009
Relevance	Prevalence of Vision Disorders
Summary	Canada is a signatory to the World Health Organization's Vision 2020 Global Declaration, an international initiative to combat avoidable blindness. Canada formed a national committee before Dec. 2006 regarding the prevention of blindness called the National Coalition on Vision Health, participated in a Vision 2020 workshop but did not draft a national plan ¹³ . In June of 2009, the president and CEO of the CNIB indicated that only interim measures have been taken to create such a plan ¹⁴ .

Title	What is the global burden of visual impairment?
Citation	Dandona L. And Dandona R., (2006) 16 BMC Med.
Source	BMC Medicine
Database	PubMed
Search terms	
Link	http://www.ncbi.nlm.nih.gov/pubmed/16539747
Accessed	November 2, 2009
Relevance	Prevalence of Vision Disorders
Summary	Abstract: BACKGROUND: A recent estimate by the World Health Organization (WHO) suggests that 161 million persons worldwide have visual impairment, including 37 million blind (best-corrected visual acuity less than 3/60 in the better eye) and 124 million with visual impairment less severe than blindness (best-corrected acuity less than 6/18 to 3/60 in the better eye). This estimate is quoted widely, but because it is based on definitions using best-corrected visual acuity, uncorrected refractive error as a cause of visual impairment is excluded. METHODS: We reviewed data from population-based surveys of visual impairment worldwide published 1996 onwards that included presenting visual acuity, and estimated the proportion of visual impairment caused by uncorrected refractive error in different sub-regions of the world. We then extrapolated these data to estimate the worldwide burden of visual impairment including that caused by uncorrected refractive error. RESULTS: The total number of persons with visual impairment worldwide, including that due to uncorrected refractive error, was estimated as 259 million, 61% higher than the commonly quoted WHO estimate. This includes 42 million persons with

¹³ Vision 2020: Global initiative for the elimination of avoidable blindness: Action Plan 2006–2011. Appendix V. Implementation of vision 2020 objectives by WHO region at December 2006.

¹⁴ Spiralling Cost of vision loss requires national plan: CNIB. Sept. 23, 2009.

	<p>blindness defined as presenting visual acuity less than 3/60 in the better eye, and 217 million persons with less severe visual impairment level defined as presenting visual acuity less than 6/18 to 3/60 in the better eye, 14% and 75% higher, respectively, than the WHO estimates based on best-corrected visual acuity. Sensitivity analysis, taking into account the uncertainty of the proportion of visual impairment caused by refractive error, revealed that the number of persons in the world with visual impairment due to uncorrected refractive error could range from 82 to 117 million.</p> <p>CONCLUSION: The actual burden of visual impairment worldwide, including that caused by uncorrected refractive error, is substantially higher than the commonly quoted WHO estimate that is based on best-corrected visual acuity. We suggest that the indicative estimate of 259 million persons with visual impairment worldwide, which includes 42 million blind with visual acuity less than 3/60 in the better eye, be used for further planning of the VISION 2020 initiative instead of the often quoted 161 million estimate that includes 37 million blind.</p>
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Title	The Cost of Vision Loss in Canada
Citation	Report by Access Economics Pty Limited (2009)
Source	Canadian National Institute for the Blind (CNIB)
Database	
Search terms	
Link	http://www.cnib.ca/en/research/covl/docs/COVL_full_report.pdf
Accessed	October 29, 2009
Relevance	Prevalence of Vision Disorders
Summary	This report estimates the cost of vision loss in Canada using a prevalence-based approach. The report addresses the main causes of impairment [3], prevalence rates of vision loss [15], health system expenditure on vision care and particular eye disorders, other financial costs, and the burden of eye disease [62]. This report was funded by the CNIB and the Canadian Ophthalmological Society.

Title	Routine eye examinations for persons 20-64 years of age: An evidence-based analysis.
Citation	Ministry of Health and Long-Term Care. Ontario Health Technology Assessment Series 2006; Vol. 6, No. 15
Source	Government report
Database	Google Scholar
Search terms	"Ontario" "eye examination" "delisting"
Link	<p>https://ozone.scholarsportal.info/handle/1873/370</p> <p>Link identified pre-edit version. Final version found by Google¹⁵ search of title at: http://www.health.gov.on.ca/english/providers/program/mas/tech/reviews/pdf/re_v_eye_072106.pdf</p>
Accessed	2009-10-02
Relevance	Prevalence of Vision Disorders

¹⁵ Google is not a database but rather a search engine. The sources found using Google may or may not constitute formal databases with defined inclusion criteria.

Summary	<p>The objective of this analysis was to determine the strength of association between age, gender, ethnicity, family history of disease and refractive error and the risk of developing glaucoma or age related maculopathy (ARM) and age related macular degeneration (AMD).</p> <p>Procedure: Analysis of the literature.</p> <p>Conclusions: The odds of having primary open angle glaucoma (POAG) are statistically significantly greater for people 50 years of age and older relative to those 40 to 49 years of age. The association between gender and prevalent POAG is inconclusive. Prevalent POAG is statistically significantly greater in a black population 50 years of age and older compared with a white population of similar age. Data suggest an association between myopia defined as a spherical equivalent of -1.00D or worse and prevalent POAG. There is a 2.5 to 3.0 fold increase in the odds having POAG in persons with a family history (any first-degree relative) of POAG.</p> <p>After 55 years of age, the incidence of both early ARM and AMD increases with increasing age. Gender differences in incident early ARM and incident AMD are not supported. The data suggests that the prevalence of early ARM is higher in a white population compared with a black population. On study indicated an almost 4-fold increase in the odds of any AMD in a person with a family history of AMD.</p>
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Title	Age-related macular degeneration: armed against ARMD
Citation	Weir, Erica. (2004) 170 (4) CMAJ.
Source	Canadian Medical Association Journal
Database	
Search terms	
Link	http://www.cmaj.ca/cgi/content/full/170/4/463
Accessed	October 29, 2009
Relevance	Prevalence of Vision Disorders Screening
Summary	The author claims that age-related macular degeneration (ARMD) is a leading cause of legal blindness among older people in North America. The paper recommends that adults aged 45 and older should undergo a comprehensive eye examination every 2-4 years to facilitate early detection of ARMD.

Title	Canadian Diabetes Association
Citation	
Source	
Database	
Search terms	
Link	http://www.diabetes.ca/about-diabetes/living/complications/vision-loss/
Accessed	Nov. 2, 2009.
Relevance	Prevalence; Screening

Summary	<p>“In Canada, over two million Canadians have diabetes and that number is expected to reach three million by 2010.” [All items marked in quotations are from http://www.diabetes.ca/about-diabetes/what/prevalence/]</p> <p>“People with diabetes are more likely to develop cataracts at a younger age and are twice as likely to develop glaucoma, but diabetes’ effect on the retina is the main threat to vision. Called diabetic retinopathy, this effect of diabetes on the eyes is the most common cause of blindness in people under age 65 and the most common cause of new blindness in North America. It is estimated that approximately 2 million individuals in Canada (i.e. almost all people with diagnosed diabetes) have some form of diabetic retinopathy.”</p> <p>“In individuals 15 years of age or older with type 1 diabetes, screening and evaluation for retinopathy should be performed annually starting 5 years after the onset of diabetes. In individuals with type 2 diabetes, screening and evaluation for diabetic retinopathy should be performed at the time of diagnosis of diabetes. The interval for follow up assessments should be tailored to the severity of the retinopathy. In those with no or minimal retinopathy, the recommended interval is 1 to 2 years.”</p>
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Title	Myopic and hyperopic refractive error in adults: an overview
Citation	Hyman L., (2007) 14(4) Ophthalmic Epidemiol 192-197.
Source	Ophthalmic Epidemiology
Database	PubMed
Search terms	
Link	
Accessed	November 2, 2009
Relevance	Prevalence of Vision Disorders, Refraction
Summary	<p>ABSTRACT</p> <p>This article provides an overview of the recent epidemiologic findings on myopic and hyperopic refractive error in adults. Refractive errors are common conditions with high costs associated with their correction and a cause of public health and economic concerns. Myopia and hyperopia, the most common types of refractive error, are complex multifactorial conditions with prevalences that vary across populations of different ancestral origins. Recent studies have demonstrated consistently that longitudinal changes in refractive error occur and may be part of an aging process. A cohort effect also has been demonstrated in some populations, indicating that observed changes may be due to both longitudinal changes and changes across birth cohorts. The increase in myopia at older ages appears to be due to associations with other ocular conditions such as cataract. This overview highlights major findings from recent population-based studies of persons 40 years and older on 1) the importance of uncorrected refractive error as a cause of visual impairment and 2) the epidemiology of myopic and hyperopic refractive error, regarding their prevalence, changes over time and longitudinally and associated factors. Suggestions for future directions and opportunities to advance the understanding of the epidemiology of refractive errors in adults are offered.</p>

Title	Strategic Plan 2001-2005: Institute for Neurosciences and Mental Health
Citation	Canadian Institutes of Health Research (2001)
Source	Canadian Institutes of Health Research
Database	Google
Search terms	"cost of blindness" and "Canada"
Link	http://www.cihr.ca/e/documents/strategic-plan-2001_e.pdf
Accessed	Sept 23, 2009
Relevance	Prevalence of Vision Disorders
Summary	<p>The strategic plan sets forth the framework that will help define and guide the INMHS's major health research initiatives. One of the health research initiatives will be vision and hearing losses [33].</p> <p>The report discusses the burden of disease and addresses the issue of vision disorders that are increasing in the ageing population [24].</p>

Title	A Clear Vision: Solutions to Canada's Vision Loss Crisis
Citation	The Cost of Blindness: What it Means to Canadians (2004)
Source	Symposium in Toronto, Canada. Report prepared by CNIB and Novartis through an unrestricted educational grant
Database	Google
Search terms	"Cost of Blindness Canada"
Link	http://www.costofblindness.org/ (note report must be downloaded from this site.)
Accessed	September 24, 2009
Relevance	Prevalence of Vision Disorders
Summary	<p>Call to Action for Canada to fulfil its commitment to the World Health Organization's Vision 2020 plan to develop a national plan for preventing avoidable blindness.</p> <p>Some of the topics the report addresses are the causes of age-related vision loss, the challenges facing Canada on its road to the prevention, diagnosis, treatment and rehabilitation of vision loss, the impact of vision loss on quality of life and the cost to governments and patients.</p>

Title	The Impact of Health Policy Gaps on Low Vision Services in Canada
Citation	VOICE in health policy: Voluntary Organizations Involved in Collaborative Engagement
Source	The Canadian National Institute for the Blind (CNIB)
Database	
Search terms	
Link	http://www.projectvoice.ca/English/03%20-%20Case%20Studies/CNIB_Case%20Study.pdf
Accessed	October 29, 2009
Relevance	IPC, Prevalence of Vision Disorders

Summary	<p>Objectives of the project [8]:</p> <ol style="list-style-type: none"> 1. To assess the impact of the ageing population on vision rehabilitation services and on informal support services. 2. To identify strategies for dealing with growing demands for vision rehabilitation services. Learn more about the circumstances under which seniors with vision impairments are referred and to whom they are referred. 3. To engage Health Canada and other organizations, including The Canadian Association of Optometrists, the Opticians Association of Canada and the Canadian Ophthalmological Association, in order to study the policies or gaps in policy to the extent of their impact on low vision care in Canada. <p>Recommendations include:</p> <ul style="list-style-type: none"> • Establish policy atmosphere that fosters the multi-disciplinary team, and continuity of care (more support) • Find a research home for vision, example within CIHR. We need ongoing research on issues of access and quality of life for seniors re low vision. (more support) • Public awareness with older adults about vision loss and services (less support) • Policy based on evidence (less support) • Vision impairment should be seen within the spectrum of the senior patient (less support) [23] <p>One finding of the report: "Lack of Cooperation and referral between providers and awareness of existing Services. There are problems in referral pathways that can produce delays in referrals or failures to refer. Failures to refer can result in lack of support and intervention in adjusting to vision loss and the maintenance of independence. Delays in referrals can reduce the effectiveness of support and intervention [20]."</p>
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Title	"Prevalence of Blindness Data Tables"
Citation	National Eye Institute
Source	National Eye Institute-division of the U.S. National Institutes of Health "Encourages and assists research, training, publication and knowledge-sharing in vision and ophthalmology"
Database	Google
Search terms	"prevalence USA vision disorders"
Link	http://www.nei.nih.gov/eyedata/pbd_tables.asp
Accessed	October 29, 2009
Relevance	Prevalence of Vision Disorders

Summary	<p>Eye Disease Prevalence Data on the following topics:</p> <ol style="list-style-type: none"> 1. Prevalence of cataract, age-related macular degeneration, and open-angle glaucoma among adults 40 years and older in the United States; 2. Prevalence of diabetic retinopathy among adults; 3. Prevalence of blindness and low vision among adults 40 years and older in the United States; and 4. Estimated prevalence of myopia and hyperopia.
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Title	The Prevalence of Blindness and Visual Impairment among Nursing Home Residents in Baltimore
Citation	Tielsch, J.M., Javitt, J.C., et al. NEJM Vol. 332 No. 18: 1205-1209. May 4, 1995.
Source	New England Journal of Medicine EICPHC Initiative research paper
Database	Google Scholar
Search terms	Vision disorders prevalence
Link	http://nejm.highwire.org/cgi/content/abstract/332/18/1205
Accessed	Nov. 3, 2009
Relevance	Prevalence
Summary	<p>Abstract</p> <p><u>Background</u> Although the prevalence of blindness and visual impairment increases with age, most surveys of ocular disease do not include nursing home residents.</p> <p><u>Methods</u> We conducted a population-based prevalence survey of persons 40 years of age or older residing in nursing homes in the Baltimore area. Of 738 eligible subjects in 30 nursing homes, 499 (67.6 percent) participated in the study. They had their eyes examined and their visual acuity tested and were interviewed in detail. The nonparticipants were more likely to be older, to be white, and to have lower scores on the Mini-Mental State Examination.</p> <p><u>Results</u> The prevalence of bilateral blindness (visual acuity <20/200) was 17.0 percent. The prevalence of visual impairment (<20/40 but >20/200) was 18.8 percent. The frequency of blindness increased from 15.2 percent among those under 60 years of age to 28.6 percent among those 90 or older. The age-adjusted prevalence of blindness was 50 percent higher among blacks than among whites (P<0.01). As compared with the noninstitutionalized population from the same communities, the rate of blindness among nursing home residents was 13.1 times higher for blacks and 15.6 times higher for whites. Cataract was the leading cause of blindness, followed by corneal opacity, macular degeneration, and glaucoma. We judged that 20 percent of the functional blindness and 37 percent of the visual impairment could be remedied by adequate refractive correction.</p> <p><u>Conclusions</u> Blindness and visual impairment are highly prevalent among nursing home residents. Much of this loss of vision could be treated or prevented with appropriate ophthalmologic care.</p>

Title	Future Sight Loss UK (1): The economic impact of partial sight and blindness in the UK adult population
Citation	Report by Access Economics Pty Limited (July 2009)
Source	Report funded by Royal National Institute for Blind People (RNIB)

Database	
Search terms	
Link	http://www.vision2020uk.org.uk/ukvisionstrategy/page.asp?section=74 Note: full report must be downloaded from this site
Accessed	November 2, 2009
Relevance	Prevalence of Vision Disorders
Summary	<p>Future Sight Loss UK is an RNIB funded research initiative on the current and future prevalence and costs relating to sight loss. This research aims to inform the UK Vision Strategy and the RNIB Strategy, the main goals of which are prevention of avoidable sight loss, and improving services and support for blind and partially sighted people.</p> <p>“Access Economics was asked to undertake an international comparison (with Australia, US, Japan, and Canada) and several cost effectiveness analyses on strategic interventions that are expected to prevent and ameliorate the impact of sight loss in the UK adult population.”</p> <p>“Prevalence of partial sight and blindness and costs per person with partial sight or blindness for each country are shown in Table 7-1”[119 of full report]</p> <p>“The economic costs presented in this report relate to the adult UK population (≥18 years of age). Although prevalence of partial sight and blindness has been estimated and reported for those aged 0 to 39, this data must be used with caution. Data on the prevalence of childhood partial sight and blindness in the UK is limited and variable. More research needs to be undertaken into measuring childhood partial sight and blindness and the associated economic costs within the UK.”</p> <p>[All excerpts within quotations are from the executive summary, available at http://www.vision2020uk.org.uk/ukvisionstrategy/page.asp?section=74].</p>

Title	Future Sight Lost UK (2): An epidemiological and economic model for sight loss in the decade 2010 to 2020
Citation	Report by Darwin Minassian and Angela Reidy, EpiVision (July 2009)
Source	Report commissioned by RNIB for the UK Vision Strategy
Database	Direct Search within UK Vision Strategy Website
Search terms	
Link	http://www.vision2020uk.org.uk/ukvisionstrategy/page.asp?section=74
Accessed	November 2, 2009
Relevance	Prevalence of Vision Disorders
Summary	<p>EpiVision (Ophthalmic Epidemiological Consultants) is a group of epidemiologists and health service researchers with a special interest in vision and eye health (http://www.epivision.co.uk/).</p> <p>Future Sight Loss UK is an RNIB funded research initiative on the current and future prevalence and costs relating to sight loss.</p> <p>This research aims to inform the UK Vision Strategy and the RNIB Strategy, the</p>

	main goals of which are the prevention of avoidable sight loss and improving services and support for blind and partially sighted people.
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Title	Evidence Base to support the UK Vision Strategy
Citation	Bosanquet, N and Mehta, P. (2008)
Source	A Vision 2020 UK Initiative led by RNIB and supported by Guide Dogs for the Blind Association.
Database	Direct Search within the UK Vision Strategy website
Search terms	
Link	http://www.vision2020uk.org.uk/ukvisionstrategy/page.asp?section=32&sectionTitle=UK+Vision+Strategy
Accessed	September 23, 2009
Relevance	IPC Prevalence of Vision Disorders
Summary	Review of the current and future challenges of sight loss in the UK. The current level of access to services and recommendations for developing national and local strategies for improving eye care.

Title	National Eye Health Epidemiological Model
Citation	
Source	UK.
Database	
Search terms	
Link	http://www.eyehealthmodel.org.uk/#
Accessed	Nov. 2, 2009
Relevance	Prevalence of Vision Disorders
Summary	<p>“This page allows you to see the number of people affected by eye health conditions in different areas in the UK.”</p> <p>“All of these data are calculated for recognised organisational boundaries, based on prevalence rates derived from epidemiological population surveys. If you want to use your own populations, ('customise your own boundaries' page), use different prevalence rates ('customise rates' page) or get further information, (further information and FAQ pages, click on the relevant sections on the menu bar at the top of this page.”</p> <p>“This application, and the underlying research, was commissioned from PHAST CIC by the Association of British Dispensing Opticians, the Association of Optometrists, the College of Optometrists, the Royal College of Ophthalmologists, the Federation of Ophthalmic and Dispensing Opticians and the Central (LOC) Fund. The consortium is very grateful to the Central (LOC) Fund for their very generous support of this project.”</p> <p>“A new National Eye Health Epidemiological Model (NEHEM) will, for the first time, make data on the prevalence of four common eye conditions freely available. The model will be launched today (October 9) and will be invaluable to those involved in the commissioning and provision of local eye care services in the UK.”</p>

	[All excerpts within quotations from the news release on the General Optical Council Website accessed Nov. 2, 2009 at http://www.optical.org/en/news_publications/news_item.cfm?id=CDC19A17-85B4-4728-AF91395707954F3E]
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Title	UK White Paper on Regulation of Health Care Professionals
Citation	White Paper: Trust, Assurance and Safety – The Regulation of Health Care Professionals in the 21 st Century.
Source	Presented to Parliament by the Secretary of State for Health by Command of Her Majesty February 2007
Database	
Search terms	
Link	http://www.optical.org/goc/filemanager/root/site_assets/reform/TrustAssuranceandSafetyTheRegulationofHealthProfessionalsinthe21stCentury.pdf
Accessed	Nov. 2, 2009
Relevance	Prevalence/Vision Strategy
Summary	<p>The UK White Paper makes recommendations for reforming the regulation of health professionals in the UK which include:</p> <p>a) Parity of professional and lay membership for the councils of the regulatory bodies. [25]. The General Optical Council, which regulates optometrists, opticians and optical businesses, had 32% lay membership at the time of the report [25].</p> <p>b) Separation of Adjudication and Investigation Functions. Creating a new Office of the Health Professions Adjudicator which will have functions (across the whole of the UK) in relation to the professions regulated by the Medical Act 1983 and subsequently the Opticians Act 1989. Per GOC response, this new office will be totally independent of government (accessed Nov. 2, 2009 at http://www.optical.org/en/news_publications/news_item.cfm?id=619313CC-65EE-41AC-AF5EF6E22445CD78).</p> <p>c) Revalidation of registrants.</p> <p>GOC response: accessed. Nov. 2, 2009: The GOC is committed to ensuring that the revalidation scheme to be established for optometrists and dispensing opticians will be risk-based, targeted, proportionate and which sustains, improves and assures the professional standards of optometrists and dispensing opticians, as well as identifying and addressing poor practice or bad behaviour. The GOC's proposal for revalidation is available from the GOC's proposals for revalidation page.</p>

Title	"The Eye Health Alliance is a coalition of the professional and representative optical bodies and eye care charities. For a full list of members and more information go to: www.eyehhealthalliance.co.uk
Citation	
Source	

Database	
Search terms	
Link	
Accessed	Nov. 2, 2009
Relevance	Prevalence
Summary	

Coverage for Eye Care

Title	Health insurance coverage and use of eye care services.
Citation	Zhang X, Lee PP, Thompson TJ, Sharma S, Barker L, Geiss LS, Imperatore G, Gregg EW, Zhang X, Saaddine JB. Arch Ophthalmol. 2008 Aug;126(8):1121-6.
Source	Academic journal
Database	PubMed
Search terms	"Canada" "ophthalmology" "eye" "care"
Link	http://www.ncbi.nlm.nih.gov/pubmed/18695107?ordinalpos=11&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_DefaultReportPanel.Pubmed_RVDocSum
Accessed	October 2, 2009
Relevance	Impact of delisting. Provides background information.
Summary	<p>Abstract: Objective: To compare realized access or use of eye care services in adults with self-reported vision problems in Canada and the United States.</p> <p>Methods: Using the Joint Canada/United States Survey of Health, we examined the differences in use of eye care services in 2018 Canadian respondents and 2930 American respondents with self-reported vision problems. We performed multivariate logistic regression analyses to estimate the probability that individuals with vision problems and various insurance categories would visit an eye care professional.</p> <p>Results: Approximately 8.2% of Americans with self-reported vision problems did not have health insurance. Americans without health insurance had the lowest age-adjusted rate of use of eye care services (42%) compared with Americans with private health insurance (67%) or public health insurance (55%) and Canadians (56%). The difference in use of eye care services between Americans without health insurance and Canadians narrowed when adjusted for income level and was almost eliminated when adjusted for having optional vision insurance. Individuals with optional vision insurance and those with higher income levels were more likely to use eye care services.</p> <p>Conclusions: Americans with vision problems who had health insurance accessed eye care services at a rate higher than or equal to that of their Canadian counterparts. The gap in access between Canadians and Americans without health insurance narrowed after adjustments for income level and optional vision insurance.</p>

Title	The effects of delisting publically funded health care services.
Citation	Stabile M, Ward C. In: Beach CM, Chaykowski RP, Shortt S, St-Hilaire F, Sweetman A, editors. Health Services Restructuring in Canada: New Evidence and New Directions. Montreal & Kingston-London-Ithaca: McGill-Queen's University Press; 2006.
Source	Book
Database	Search Engine: Google Scholar
Search terms	"Ontario" "eye" "examination" "delisting"
Link	http://books.google.ca/books?hl=en&lr=&id=8KvGkTvjH1oC&oi=fnd&pg=PA83&dq=Ontario+eye+examination+delisting&ots=iE9S9BaDed&sig=cnUHrflqzrl0O2

	vnrHDhgVQdPQk#v=onepage&q=&f=false
Accessed	October 2, 2009
Relevance	Coverage for Eye Care
Summary	<p>Abstract: This paper uses variation created by the de-listing of insured services across Canadian provinces over the 1990s to estimate both the demand response across services, and whether this demand response varies by sub-groups such as low-income and elderly individuals. Our findings suggest that while the de-listing of services did affect utilization, the effect was not uniform across services, nor across populations. For example, while the demand for physiotherapy and eye exams decreased, the demand for speech therapy services and chiropractic services increased in some cases. Nor did people adjust along all margins. While the number of people using any physiotherapy services decreased, the number of visits among those who did use physiotherapy services increased. We do not find large difference for low-income individuals with the exception of optometry services, nor do we find large differences between the elderly and the general population with the exception of physiotherapy.</p>

Appendix 1: Description of Databases

CanLII¹⁶

CanLII (Canadian Legal Information Institute) is a free online legal website providing access to primary sources of Canadian law. The site contains consolidations of statutes and regulations as published by official printers from the federal and provincial jurisdictions. Legislative updates are carried out on a weekly basis.¹⁷ Sources include decisions of the Supreme Court of Canada from 1948 to date, plus some decisions prior to 1948, and all Ontario judgments since 1876. Practice rules are also provided.¹⁸

CINAHL¹⁹

The Cumulative Index to Nursing & Allied Health database provides authoritative coverage of the literature related to nursing and allied health. Virtually all English-language publications are indexed along with the publications of the American Nurses Association and the National League for Nursing. Selected journals are also indexed in the areas of consumer health, biomedicine, and health sciences librarianship. The database also provides access to healthcare books, nursing dissertations, selected conference proceedings, standards of professional practice, educational software and audiovisual materials in nursing.

The Cochrane Library

The Cochrane Library consists of a regularly updated collection of evidence-based medicine databases, including The Cochrane Database of Systemic Reviews. The database includes systemic reviews of healthcare interventions that are produced and disseminated by the Cochrane Collaboration. Cochrane reviews explore the evidence for and against the effectiveness and appropriateness of various treatments in specific circumstances. Multinational editorial teams ensure that a review is applicable in different parts of the world. Abstracts of Cochrane reviews are available free of charge and, where available, plain language summaries are also provided.²⁰

FindLaw²¹

FindLaw's "Cases and Codes" section provides links to U.S. state judicial opinions.²² Users can access the materials by jurisdiction. State opinions²³ made available by FindLaw are browsable by year and month or searchable by title or docket number.²⁴

Hein Online²⁵

Hein Online is a searchable image-based collection of legal periodicals that provides exact page images of law reviews and journals so that users can view the pages as they originally appeared in hardcopy. Each journal included in Hein Online is covered in full text since its inception.

¹⁶ http://rc.lsuc.on.ca/library/research_law_ca_cases.htm#canada

¹⁷ http://rc.lsuc.on.ca/library/research_law_ca_legis.htm

¹⁸ http://rc.lsuc.on.ca/library/research_law_ca_cases.htm#canada

¹⁹ <http://www.ebscohost.com/thisMarket.php?marketID=1>

²⁰ <http://www.cochrane.org/reviews/clibintro.htm>

²¹ http://rc.lsuc.on.ca/library/research_law_us.htm#state_opinions

²² Resources from all U.S. jurisdictions can be accessed at <http://www.findlaw.com/casecode/>.

²³ Unreported full text judgements from Canadian courts can be accessed through the "All Canadian Court Cases" group source. (QuickLaw Source Information).

²⁴ http://rc.lsuc.on.ca/library/research_law_us.htm#state_opinions

²⁵ http://rc.lsuc.on.ca/library/research_databases.htm

Hein Online includes such collections as: Legal Classics, Law Journal Library, U.S. Supreme Court Library, U.S. Federal Legislative History Library and Treaties and Agreements Library.²⁶

Index to Canadian Legal Literature²⁷

Westlaw Canada provides online access to the contents of Carswell's legal products, including the *Canadian Encyclopedic Digest*, the *Canadian Abridgment*, Carswell's law report series, as well as unreported cases, selected legislation, finding and updating tools (*KeyCiteCanada*, *Index to Canadian Legal Literature*), and journals. Under the Westlaw tab, users have access to U.S. case law and legislation from the state and federal levels, as well as American law reviews and other secondary sources.

LegalTrac²⁸

LegalTrac is an online index to legal periodical articles published in American and selected Canadian and Commonwealth law journals since 1980.

Quicklaw²⁹

LexisNexis Quicklaw offers access to a collection of databases including case law from all Canadian jurisdictions, administrative tribunal decisions, legislation and legal commentary in the form of texts, journals, newsletters, and indexes. In addition to Canadian materials, LexisNexis Quicklaw includes American case law and legislation and selected U.K. and Commonwealth judgments. Decisions are in the form of digests or full text. They may be either electronic versions of printed reports (e.g., *Ontario Reports*) or unreported current judgments³⁰ as received directly from the courts.³¹

²⁶ http://heinonline.org/home/content/General_Overview.html

²⁷ http://rc.isuc.on.ca/library/research_databases.htm

²⁸ http://rc.isuc.on.ca/library/research_databases.htm

²⁹ http://rc.isuc.on.ca/library/research_databases.htm

³⁰ Unreported full text judgements from Canadian courts can be accessed through the "All Canadian Court Cases" group source. (QuickLaw Source Information)

³¹ http://rc.isuc.on.ca/library/research_databases.htm

Appendix 2 : Translation of Article

English Translation of «Ophthalmologistes, optométristes et opticiens d'ordonnances : champs d'exercice et conflits interprofessionnels » Doyen, J-S. 1991 Revue de Droit, Université de Sherbrooke 175³².

From an analysis of statutes and regulations, the authors describe the three eye care professions in Québec as follows:

- Ophthalmologists are medical specialists of the eye. Their work is comprised mainly of medical consultations, prescribing treatment via medication and surgery. Ophthalmologists may also provide preventive advice.
- Optometrists are primarily concerned with vision. This includes ocular examinations to evaluate vision problems. Optometrists may also provide orthoptic treatment to re-educate a patient's eyes. Recommendations and advice are limited to topics related to vision. Optometrists are not competent to diagnose or treat ocular pathology. Québec optometrists are prohibited from prescribing medication.
- Opticians are providers of optical devices. Their knowledge lies in the fitting, adjustment, replacement and sale of ophthalmic lenses. Opticians may only dispense optical devices once the patient produces a prescription from an ophthalmologist or optometrist.

The author explains the restricted acts system in Québec, arguing that by its nature, the attempt to impart strict parameters on the scopes of practice of the eye professions may serve to encourage conflict between professionals. The author describes these conflicts to delineate the limits of the scopes of practice and to provide recommended solutions.

Ophthalmologists and Optometrists

The main area of conflict lies in the use of medication by Optometrists. Concerns are also raised by Ophthalmologists that some Optometrists feel competent to diagnose disease. In response, Optometrists tend to differentiate diagnostic from therapeutic drugs, arguing that diagnostics make up the work of Optometrists, and should, therefore, include diagnostic medication. With regard to the identification of pathology, Optometrists argue their training provides them with the qualifications to do so, with the goal of referring to Ophthalmologists for further assessment and possible treatment.

The author acknowledges that both professions claim protection as their underlying principle. Though the author feels physicians' groups support a strict reading of the law, optometrists' groups provide a compelling argument for an evolution in legislation.

The author recommends that in order to find a compromise between the two professions:

1. Public protection must remain the ultimate goal of regulation and of the professions, as their work evolves.
2. The definition of Optometry must be adapted to reflect the reality of their skills, where patient welfare is assured.
3. Restricted use of diagnostic drugs by Optometrists should be permitted. Participation by Ophthalmology in the creation of these parameters is essential.
4. Judicious use of regulations will be needed when redefining Optometry.
5. Clinical pharmacology must be increased in the education of Optometrists.

³² Translated at HPRAC, November 2009

6. Direct collaboration should guide the rapport between the two professions. The author cites a pilot program proposed by the association of Ophthalmologists, which seeks to integrate Optometry in the hospital setting.
7. Government and academic authorities should control the workforce in order to maintain adequate balance of supply and demand.
8. Once Optometry is redefined, authorities must strictly promote and control the scope of practice of the profession.

Optometrists and Opticians

The author finds that conflict between these professions arises due to the overlap in scopes of practice and a long history of legal battles in defense of a profession's scope of practice. Prior to 1973, the law defined both professions in the same manner. Both optometrists and opticians could dispense optical devices, based on the prescription of an ophthalmologist or an optometrist. With less strict regulation of titles, these would often become interchangeable, which led to significant public confusion over the difference between each profession. As technical courses began emerging to teach optician candidates "techniques in visual orthoses", optometry groups initiated aggressive legal challenges, arguing the Opticianry program infringed on the scope of practice of Optometry. The 50% increase in admissions to this technical program in 1989 further exacerbated the animosity between the groups. The author notes the effects of a rapid increase of opticians in the workforce in the 1980s and 1990s formed a significant determinant of the conflict between professional groups.

Prior to 1982, Optometrists were not obligated to provide patients with their prescription. This concerned opticians' groups, who claimed Optometry was attempting to protect a monopoly on dispensing.

Citing *Grenon v. the College of Optometrists of Québec*, wherein Mr. Grenon, a dispensing optician, provided a customer with contact lenses based on the prescription for eye glasses provided to him by the customer, the author finds that the court judged that dispensing contact lens in this manner did not fall within the authority of opticians to duplicate a prescription. This was partly due to the physiological differences and risks posed by contact lenses as opposed to eye glasses. This decision, combined with the prohibition on eye examinations, significantly limits that which opticians are authorized to do.

To help resolve conflicts between the professions, the author recommends mediation over battles in the courts. Though the author acknowledges the clear overlap in scopes of practice, she finds current definitions and restrictions on the profession of Opticianry to be reasonable and appropriate. The removal of "dispensing" from the "dispensing optician" title is found by the author to circumvent the technical basis of the profession and contribute to public confusion over the two professions.