Appendix I

College of Optometrists' Survey

Section Three

Delivery of Primary Eye Care By Optometrists In Ontario

As Conducted By Research Overload

College of Optometrists of Ontario

TABLE OF CONTENTS

SURVEY RESULTS & ANALYSIS		Page #
I.	OBJECTIVES	1
II.	METHODOLOGY	1
	a) Patient Diaries	1
	b) Optometrist Profiles	2
	c) Projections	2
	d) Recruitment	2
	e) Sample	3
III.	KEY INFORMATION	4
	1. Frequency of optometric patients presenting with Anterior Segment Disease requiring treatment with pharmaceutical agents, both prescription and non-prescription.	4
	1a) Frequency of Anterior Segment Disease	4
	1b) Frequency of Use of Rx and Non-Rx Meds	5
	1c) Patient Age & Gender Analysis - Overall	5
	1d) Patient Age & Gender - Class of Meds Required	6
	1e) Use of Med Classes - by Patient Age & Gender	7
	1f) Foreign Body Removal Analysis	7
	2. Frequency of referrals	7
	3. Accessibility of referred practitioners	9
IV.	CONCLUSIONS	10
V.	SAMPLE PATIENT DIARY	12

SURVEY RESULTS & ANALYSIS

I. OBJECTIVES:

The College of Optometrists of Ontario commissioned this research study to determine the public need for prescribing of drugs by Optometrists and the removal of ocular foreign bodies by Optometrists.

Specific information needs include determination of...

- the frequency of optometric patients presenting for Anterior Segment Conditions requiring treatment with pharmaceutical agents, both prescription and non-prescription or treatment by removing foreign bodies.

- the frequency of referrals to practitioners with statutory authority to prescribe pharmaceuticals for the purpose of having a drug prescribed for Anterior Segment Disease or for removal of foreign bodies.

- the accessibility of the referred practitioners.

II. METHODOLOGY:

a) Patient Diaries

Patient diaries were completed by a representative sample of 147 Ontario Optometrists who see patients 30 or more hours per week. On average, 193 patient diaries were completed by each Optometrist - resulting in the collection of 28,332 diaries in total. The diaries represent a total of 2,117 days of seeing patients.

A pretest with 5 Optometrists was conducted to assess the ease and accuracy with which the diaries could be completed. This resulted in some small changes to the diary. Four of the five Optometrists produced useable results and were included in the final sample.

A diary was completed for every patient seen for diagnostic purposes for the time period it took to reach 200 diaries. A few practitioners submitted fewer than 200 diaries - in order to have them returned by the cut-off date.

The diaries represent patients seen throughout the pretest period - September 1997 - and the test period - which covered October 6, 1997 to January 21, 1998. Individual practitioners started and stopped at different times. The average practitioner completed the diaries in 14.4 days.

Practitioners returned copies of their appointment books along with the patient diaries, so that the appointments of the patients could be verified.

b) Optometrist Profiles

	Average Days Diaries Collected Per OD	Average Diaries Completed Per OD	Average Days / Year See Patients Per OD
By Area Code:			
519	15.1	195	237.1
905	13.4	189	257.3
416	13.8	195	252.8
613	16.6	198	243.4
705	13.6	191	230.9
807	20.0	168	242.5
By Community Size:			
Over 1 MM	14.0	192	256.5
570 - 680 K	14.9	196	234.3
405 - 420 K	13.8	196	239.1
220 - 300 K	15.7	179	246.6

c) Projections

Projections of the data in this study to estimate total Ontario on an annual basis may be done by applying the following factor to any of the numbers in the study.

$$\text{Projection Factor} = \frac{\text{997 total ODs}}{\text{147 ODs in sample}} \times \frac{\text{245.9 average days see patients per year}}{\text{14.4 average patient days represented}}$$

$$= 115.817$$

d) Recruitment

An initial letter from the College of Optometrists of Ontario was sent to ***all*** Optometrists in Ontario. This letter requested cooperation in the study by those who were to be contacted - at random - by *Research*

Overload. Recruitment was conducted by telephone. Diaries were distributed and collected by courier. Participation was voluntary. A credit of 5 hours of continuing education was granted to participants in

recognition for their time spent. Results have been reported in aggregate to keep individual practitioner results confidential.

e) Sample

Recruitment was carried out to match the distribution of Optometrists according to telephone area codes in Ontario. The final sample varied a little from the recruitment quotas for the reasons explained in the "Contacts and Final Sample" table following.

Area Code	All* ODs	% ODs	Sample ODs	% Sample
519	270	27.1	37	25.2
905	252	25.3	42	28.6
416	202	20.3	29	19.7
613	132	13.2	19	12.9
705	130	13.0	18	12.2
807	11	1.1	2	1.4
TOTAL	997	100	147	100

* Excludes University of Waterloo and Vision Institute of Canada staff.

Contacts 161	Final Sample 147	Reasons for not Participating 14
5 Pretest	4	Incorrect 1
6 Refusals	*	Too much work 5
		College employ 1
150 Yes	143	Never started 6
		Late 1

III. KEY INFORMATION

1. The frequency of optometric patients presenting with Anterior Segment Disease requiring treatment with pharmaceutical agents, both prescription and non-prescription.

1a) Frequency of Anterior Segment Disease

Of the 28,332 patients seen for diagnostic purposes in this study 4,149 (14.6%) were diagnosed with Anterior Segment disease and 3,366 (11.9%) required a non-prescription or prescription medication as "optimal treatment" for their Anterior Segment Disease.

When projected to all of Ontario annually, there were 3.28 million patient visits to Optometrists for diagnostic purposes, 480,500 visits for Anterior Segment disease and 389,800 patients with Anterior Segment conditions requiring treatment with prescription and non-prescription pharmaceuticals. The specific conditions diagnosed are found in the following table.

Specific Anterior Segment Conditions	Number of Patients (% All Anterior Segment Disease)	% New Diagnoses (Base: Specific Condition)
Total Corneal Disorders	2118 (51%)	79%
Keratoconjunctivitis Sicca	1423	80%
Keratopathy	264	76%
Keratitis	218	80%
Corneal Degeneration/ Dystrophy	140	77%
Contact Lens Complications	126	83%
Total Conjunctivitis	889 (21%)	82%
Allergic	499	81%
Bacterial	164	85%
Giant Papillary	68	78%
Viral	41	85%
Other	133	87%
Total Glaucoma	740 (18%)	74%
Patients at Risk-Ocular Hypertensives	332	76%
Chronic Open-Angle	319	72%
Pigmentary/ Pseudoexfoliative	37	68%
Acute Angle-Closure	22	82%
Other Glaucoma	31	81%
Other:		
Lid Disease	434	77%
Foreign Body	96	79%
Episcleritis/ Scleritis	46	83%
Blocked Naso-lacrimal duct	38	95%
Iritis	35	71%

1b) Frequency of Use of Prescription and Non-prescription Medications

The number of patients who required *prescription* class medications is shown in the following table - by class of medication required.

Rx Medications Required	Number of Study Patients	% All Patients (Base: 28,332)	Ontario Projected Yearly Patients (X 115.817)
Anti-infective	554	2.0%	64,160
Anti-glaucoma	381	1.3%	44,130
Anti-inflammatory	278	1.0%	32,200
Rx Antiallergy	221	0.8%	25,600

Patients required the following *non-prescription* classes of medications...

Non-Rx Medications Required	Number of Study Patients	% All Patients (Base: 28,332)	Ontario Projected Yearly Patients (X 115.817)
Artificial Tears/ lubricants	2,101	7.4%	243,330
Non-Rx Antiallergy	331	1.2%	38,340

1c) Patient Age and Gender Analysis - Overall

Younger patients required medication less often than older patients. This is shown in the table below where 7% of patients under age 25 and 22% of those age 65 or more (65+) required medication.

Although there were more overall visits by females than males (59% vs. 42%), about the same percentage of females (14%) as males (12%) required medications.

	% All Patients	% All Patients Requiring Medication This Visit	% Patients in Age / Gender Group Requiring Medication This Visit
Patient Age in Years:			
Under 25	25.5%	13%	7%
25 - 44	27.7%	28%	13%
45 - 64	28.4%	28%	13%
65+	18.5%	31%	22%
By Patient Gender:			
Male	41.5%	37%	12%
Female	58.5%	63%	14%

1d) Patient Age and Gender - Classes of Medication Required

Younger patients require different types of medications than older patients - although all ages required Artificial Tears more than any other class of medications.

For example, 3.6% of patients under the age of 25 required Artificial Tears, while only 1.8% of these required Anti-Allergy medication, 1.6% Anti-Infective medications, 0.7% Anti-Inflammatories and none required Anti-Glaucoma drugs.

Contrast this to patients aged 65+; 13.5% of whom required Artificial Tears, 5.2% who needed Anti-Glaucoma drugs, etc.

A higher percentage of Females than Males required Artificial Tears.

	Total Patients for Age / Gender Group	Artificial Tears	Anti-Allergy (OTC & Rx)	Anti-Glaucoma	Anti-Infective	Anti-Inflammator
Patient Age in Years:						
Under 25	100%	3.6%	1.8%	0%	1.6%	0.7%
25 - 44	100%	8.8%	2.7%	0.3%	2.8%	1.6%
45 - 64	100%	8.7%	1.9%	1.1%	1.7%	0.9%
65+	100%	13.5%	1.3%	5.2%	3.1%	1.8%
By Patient Gender:						
Male	100%	6.9%	1.8%	1.4%	2.4%	1.3%
Female	100%	9.3%	1.4%	1.4%	2.1%	1.2%

1e) Use of Medication Classes - by Patient Age and Gender

The following table uses the class of medication as the base of 100% - showing the use of a specific medication by age of the patients. For example, 70% of all Anti-Glaucoma drugs are used by patients age 65 +.

	Artificial Tears 100%	Anti-Allergy (OTC & Rx) 100%	Anti-Glaucoma 100%	Anti-Infective 100%	Anti-Inflammatory 100%
Patient Age in Years:					
Under 25	11%	23%	1%	18%	15%
25 - 44	29%	37%	6%	35%	36%
45 - 64	30%	26%	24%	22%	22%
65+	30%	12%	70%	25%	27%
By Patient Gender:					
Male	34%	38%	42%	44%	43%
Female	66%	62%	58%	66%	67%

1f) Foreign Body Removal Analysis

64 of the 96 (67%) foreign body removal diagnoses required medication. 33 (52%) required Artificial tears, 34 (53%) Anti-infectives and 5(8%) required Anti-inflammatories.

Of the 96 foreign body removals, 32 (33%) were referred to medical professionals. Whether it was for foreign body removal, or for a subsequent prescription drug is unknown.

2. The frequency of referrals to *practitioners with statutory authority to prescribe pharmaceuticals.*

For patients in the study with Anterior Segment Diagnoses, there were 708 referrals (2.4% of all patients) - representing 82,000 projected Ontario patients annually.

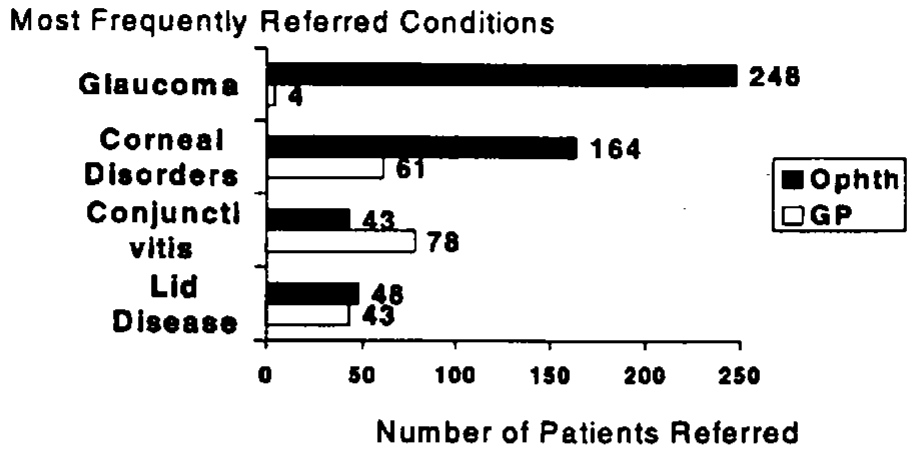
Referrals as a % of specific conditions are shown in the table below. The lowest level of referrals is required for conditions Corneal Disorders (11% referred) and Conjunctivitis (15%). Conditions requiring the highest levels of referral include Iritis (66%-New 68%) and Blocked Naso-lacrimal duct (50%-New 49%).

Anterior Segment Diagnoses	% Referred (Base: Specific Diagnosis)	% New Referred (Base: Specific New Diagnosis)	Patient Referrals (n=708)	Projected Ontario Referrals (82,000)
Total Corneal Disorders	11%	10%	229	26,520
Total Conjunctivitis	15%	15%	130	15,060
Total Glaucoma	35%	35%	258	29,880
Other:				
Lid Disease	21%	21%	93	10,770
Foreign Body	33%	34%	32	3,710
Iritis	66%	68%	23	2,660
Blocked Naso-lacrimal duct	50%	49%	19	3,120
Episcleritis/ Scleritis	26%	27%	12	1,390

73% of referrals are to Ophthalmologists and 23% to General Practitioners. These vary by area, with the highest percentage of referrals to Ophthalmologists (87%) in the 613 Area Code and the lowest (58%) in the 705 Area Code. Referrals to Ophthalmologists in the 416 Area Code are 76%. In the 905 and 519 Area Codes, referrals to Ophthalmologists are 70%.

Referrals to Ophthalmologists by Main Ontario Regions are 55% in Northern Ontario, 70% in Central Ontario, 76% in Southwestern Ontario and 87% in Eastern Ontario. The percentage of referrals to Ophthalmologists does not vary by Community Size.

Different diagnoses are referred in different proportions to the Ophthalmologists and GPs. For example, glaucoma is referred almost exclusively to Ophthalmologists while almost half of Lid Disease is referred to GPs.



3. Accessibility of the Referred Practitioners.

Accessibility of referred practitioners is measured by the time the patient is required to wait for their appointment.

Patients wait an average of 34 days to see a medical practitioner. This varies by specialty - 42 days for Ophthalmologists and 7 days for GPs.

Referral wait time also varies by diagnosis, as shown in the following table...

	Average Patient Wait Time (Days)		
Anterior Segment Diagnoses	All Diagnoses All Specialty Referrals	All Diagnoses -G.P.- (Base: 146)	All Diagnoses -Ophth- (Base: 545)
Total Corneal Disorders	24	4	31
Total Conjunctivitis	10	5	21
Total Glaucoma	48	34	49
Other:			
Lid Disease	21	3	34
Foreign Body	18	19	19
Iritis	4	1	4
Blocked Naso-lacrimal duct	57	10	64
Episcleritis/ Scleritis	8	10	4

Patients wait the longest for conditions such as Blocked Naso-lacrimal ducts and Glaucoma to be seen - an average of 57 wait days for the first condition and 48 days for the second. Shorter wait times can be seen for Episcleritis / Scleritis and Iritis - an average of 8 wait days for the first condition and 4 days for the second.

Patient wait time also varies by Area Code and Region...

	Average Patient Wait Time for Referrals(Days)		
Area Code	All Diagnoses -All Specialties-	All Diagnoses -G.P.-	All Diagnoses -Ophth-
807	62	-	62
705	48	11	76
416	37	2	42
613	34	6	37
905	31	8	37
519	26	5	36

	Average Patient Wait Time for Referrals(Days)		
Main Ontario Region	All Diagnoses -All Specialties-	All Diagnoses -G.P.-	All Diagnoses -Ophth-
North-West	62	-	62
North-East	50	14	85
Central	34	5	42
Eastern	34	6	37
Southwest	26	7	31

Travel distance was also considered for use as a measurement of accessibility. Patients travel an average of 25 km. to see an Ophthalmologist and 8 km. to see a GP.

IV. CONCLUSIONS:

- Patients are presenting to optometrists for eye care in large numbers.
- Optometrists are diagnosing considerable numbers and a broad variety of Anterior Segment disease.
- The prevalence of diagnosed Anterior Segment disease conditions in the population of patients presenting to optometrists in this study is greater than the known and published prevalence rates for the same diseases in the population in general. These differences were expected by virtue of the self-selection of optometric patient population.

- The prevalence of diagnosis of specific Anterior Segment disease conditions ***relative to each other*** within this study - including glaucoma and embedded foreign material - correlates with the expected proportions of the conditions ***relative to each other*** in the population in general.

- Optometrists are directly providing care to patients with these diseases or referring for care, a portion of which involves prescription medication.

- Waiting times for treatment from physicians, particularly specialized physicians is delaying the provision of immediate care for a broad range of eye diseases.

- Travel distances for referral could be seen as an impediment to accessible care.

- Elderly (65 or older) patients required higher rates of treatment with medication than the non-elderly.

PATIENT DIARY - for 3 patients

Study for College of Optometrists of Ontario

Practitioner Reference Number: ___ _____

DATE and PATIENT PROFILE *Complete in serial order by day.*	QUESTION TO ASK OF EVERY PATIENT...	IF PATIENT PREVIOUSLY ADMINISTERED MEDICATION(S)...	- DIAGNOSIS - DURING THIS VISIT... Document new or ongoing diagnoses from the codes listed on the back of this page. *[Indicate ALL that apply.]*	Is this the first presentation of this patient with this (these) condition(s) for this study ?	- TREATMENT - Indicate all medications and (listed) procedures required to optimally treat this patient *[Clearly write in Drug Names]*	- REFERRALS - If diagnoses required a referral to another health professional, indicate...
Date: _____ Patient Number: _____ Patient Age: _____ Patient Gender: M ☐ F ☐ *Continue across →*	Prior to this visit, did the patient administer either OTC or prescription medication(s) to their eye(s) in the past year ? OTC ☐ Rx ☐ None ☐	Write in the patient's words what condition(s) they think the medication(s) was (were) taken for. _____ _____ _____ _____	1st DIAGNOSIS: _____ [Code] 2nd DIAGNOSIS: _____ [Code] *If no diagnosis, go to next patient.*	... Yes ☐ No ☐ ... Yes ☐ No ☐	*DRUG CLASS(es)* / *DRUG NAME(s)* ☐ Artificial tear / lubricant ... _____ ☐ Anti-infective ... _____ ☐ Anti-inflammatory ... _____ ☐ Antiglaucoma ... _____ ☐ Antiallergy ... _____ ☐ Mydriatic ... _____ ☐ Vasoconstrictor ... _____ *PROCEDURE(s)* ☐ Punctal occlusion ☐ Foreign Body Removal ☐ Dilation & Irrigation of the nasa-lacrimal duct.	Type of Professional: ☐ General Practice MD ☐ Ophthalmologist ☐ Other MD Specialist ☐ Other (specify) _____ Patient wait time until referral appointment: _____ (days) Patient travel distance to referral appointment: _____ (km)
Date: _____ Patient Number: _____ Patient Age: _____ Patient Gender: M ☐ F ☐ *Continue across →*	Prior to this visit, did the patient administer either OTC or prescription medication(s) to their eye(s) in the past year ? OTC ☐ Rx ☐ None ☐	Write in the patient's words what condition(s) they think the medication(s) was (were) taken for. _____ _____ _____ _____	1st DIAGNOSIS: _____ [Code] 2nd DIAGNOSIS: _____ [Code] *If no diagnosis, go to next patient.*	... Yes ☐ No ☐ ... Yes ☐ No ☐	*DRUG CLASS(es)* / *DRUG NAME(s)* ☐ Artificial tear / lubricant ... _____ ☐ Anti-infective ... _____ ☐ Anti-inflammatory ... _____ ☐ Antiglaucoma ... _____ ☐ Antiallergy ... _____ ☐ Mydriatic ... _____ ☐ Vasoconstrictor ... _____ *PROCEDURE(s)* ☐ Punctal occlusion ☐ Foreign Body Removal ☐ Dilation & Irrigation of the nasa-lacrimal duct.	Type of Professional: ☐ General Practice MD ☐ Ophthalmologist ☐ Other MD Specialist ☐ Other (specify) _____ Patient wait time until referral appointment: _____ (days) Patient travel distance to referral appointment: _____ (km)
Date: _____ Patient Number: _____ Patient Age: _____ Patient Gender: M ☐ F ☐ *Continue across →*	Prior to this visit, did the patient administer either OTC or prescription medication(s) to their eye(s) in the past year ? OTC ☐ Rx ☐ None ☐	Write in the patient's words what condition(s) they think the medication(s) was (were) taken for. _____ _____ _____ _____	1st DIAGNOSIS: _____ [Code] 2nd DIAGNOSIS: _____ [Code] *If no diagnosis, go to next patient.*	... Yes ☐ No ☐ ... Yes ☐ No ☐	*DRUG CLASS(es)* / *DRUG NAME(s)* ☐ Artificial tear / lubricant ... _____ ☐ Anti-infective ... _____ ☐ Anti-inflammatory ... _____ ☐ Antiglaucoma ... _____ ☐ Antiallergy ... _____ ☐ Mydriatic ... _____ ☐ Vasoconstrictor ... _____ *PROCEDURE(s)* ☐ Punctal occlusion ☐ Foreign Body Removal ☐ Dilation & Irrigation of the nasa-lacrimal duct.	Type of Professional: ☐ General Practice MD ☐ Ophthalmologist ☐ Other MD Specialist ☐ Other (specify) _____ Patient wait time until referral appointment: _____ (days) Patient travel distance to referral appointment: _____ (km)

- DIAGNOSTIC CODES -

These Conditions may require therapeutic medications and / or therapeutic procedures.

Please document both .

Blocked Naso-lacrimal duct 10

Conjunctivitis
- allergic 20
- bacterial 21
- giant papillary 22
- viral 23
- other 24

Corneal Disorders
- keratoconjunctivitis sicca (all causes) 30
- keratitis
  - bacterial 40
  - viral 41
  - other 42
- corneal degeneration / dystrophy 43
- keratopathy
  - exposure 44
  - recurrent corneal erosion 45
  - trauma 46
- contact lens complications:
  - abrasion 47
  - corneal infiltrates 48
  - ulcerative keratitis 49

Episcleritis / Scleritis 50

Foreign Body 60

Glaucoma
- patients at risk (eg. ocular hypertensives) 70
- acute angle-closure 71
- chronic open-angle 72
- pigmentary / pseudoexfoliative 73
- other 74

Iritis
- inflammatory 80
- traumatic 81
- other iritis 82

Lid Disease
- blepharitis 90
- hordeolum 91

Other
(please write specifics on patient diary) 95