



Valuation of Uninsured Ophthalmological Services

Report to the Canadian Ophthalmological Society

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I Context

I.1 Uninsured Services

Professional services provided by Canadian Ophthalmologists are regulated by provincial and territorial legislation and by professional standards established and maintained by regulatory colleges.

The professional services are either publicly insured by the provincial or territorial health insurance plans, or uninsured, as defined by the absence of coverage by the provincial or territorial plan or by a third party request. It is generally accepted that an insured service is characterized by the regulatory body as having constituent elements, none of which can be charged to a patient. Further, a physician is expected to inform a patient of uninsured billing practices, and to receive agreement of the fee, prior to the provision of the service.

Ultimately, individual physicians assign a value to the uninsured services that they provide, according to related costs to their individual practices, market forces, and geographic variation; all of these elements operate within the legislative and regulatory boundaries of the particular jurisdiction.

Technological advances over the past years have benefited the patients of Ophthalmologists through improved eye care and clinical outcomes. Some technologies are unequivocal in the clinical benefits; others appear to be beneficial but have not been classified as medically necessary by government health insurance programs.

It has been noted that the pricing of uninsured services has been inconsistent across and within jurisdictions. This, no doubt, reflects the impact of costing variables and the general absence of applied objective methodologies to assist individual Ophthalmologists in this decision process.

I.2 Mandate

The Canadian Ophthalmological Society (COS) has undertaken this project to be able to provide assistance in the valuation of certain uninsured services. Twelve services under consideration are considered within three categories:

A. Diagnostic Testing

1. Pre-operative laser measurements (IOL Master)
2. Optical coherence tomography (OCT)
3. Heidelberg retinal tomograph (HRT)
4. GDx eye test
5. Screening photography (interpretation, networking, and filing excluded, and only for a patient without pathology)
6. Corneal topography
7. Pachymetry
8. Diabetic screening photography

B. Therapeutic Procedures

9. Intra-ocular medication for injection (Avastin)
10. Cornea labeling and positioning for limbal relaxation surgery for astigmatism

C. Refractive Lens Implantation

11. Toric IOLs
12. Multifocal IOLs

The project mandate is to determine a fair value to the uninsured services to assist both patients and physicians in understanding the costing and the need for the charges.

II Methodology

II.1 Introduction

There is no single methodology that is universally accepted in deriving values for uninsured medical services. The approach taken in this study was designed to use the best available evidence to provide an objective assessment of such services provided by Canadian Ophthalmologists. The required analysis and its underpinning formula were built upon a foundation developed conceptually using an existing framework, a resource framework, and a validation framework. These will be discussed, in turn.

The **existing framework** provided analysis of the range of reported values for the cost of each uninsured service and the charge currently applied; both the costs and charges were examined within demographic subsets of the survey population.

Diagnostic Testing and Therapeutic Procedures and *Refractive Lens Implantation* were reviewed independently. An initial survey data provided a useful framework for analysis; the exception was the reported costing of toric and multifocal lenses and the inability to obtaining accurate pricing from the manufacturers, in part due to the existence of unpublished volume discount policies. As a result, the initial survey was supplemented by a subsequent survey of targeted and knowledgeable Ophthalmologists to better define the costs of toric and multifocal lenses, and to explore possible additional, related services.

The **resource framework** incorporated four elements:

- Professional inputs
- Resource inputs
- Costs of medical practice
- Relativity factor

The **validation framework** included six elements:

- Report of estimates of the value of twelve uninsured services in Quebec
- Report of valuations of three uninsured services in Ontario
- Comparators, where available, of insured values of those services that are uninsured in some jurisdictions and insured in others
- Review of the optometry approach
- Review of the pharmacy approach
- Review of the dental approach

The initial survey instrument was sent to all Canadian Ophthalmologists in May 2009. The questionnaire and interval reminders were distributed by the COS; responses were returned to the consultants. The survey requested information on current practice with respect to the 12 uninsured services, including whether or not each service was provided, annual frequency, amount charged to patients, and the cost of providing the service. The survey also requested information on time required for each service and evaluations of professional inputs. Evaluations of benchmark comparator services were also requested.

The second survey to supplement the database on *Refractive Lens Implantation* was derived during the fall of 2009 and administered during January 2010.

Copies of the two surveys are included as Appendix 3 and Appendix 4, respectively, of this report, along with data summaries from the initial survey.

II.2 Approach

The approach to this study can be further described by expanding the details in the resource framework, and subsequently applying the details in the validation framework and the existing framework.

The valuation process was initiated through the development of a resource framework, with the professional inputs modified by a relativity factor, adding in the direct resource cost, and adjusting this by an overhead factor.

The professional inputs quantify the profession's evaluation of the required knowledge and judgement (KJ), technical skills (TS), risk and stress (RS), and communication skills (CS) for each of the uninsured services. The relativity factor was derived through a benchmark analysis, in which two common ophthalmological services are also rated and matched with the relative value in the benefit schedules of the provincial jurisdictions. The impact of this part of the study values the **professional skills** brought to the particular service by the Ophthalmologist.

The direct resource cost is the cost to an Ophthalmologist for the specific uninsured item. There is an overall consistency evident in the surveys, albeit with outliers, enabling a reasonable cost to be assumed for the purposes of calculation. This part of the study values the **direct expenses** incurred by the Ophthalmologist.

These overhead costs cover all aspects of professional practice, including the key factors of office infrastructure, staff costs, and utility costs. This part of the study values the **general expenses** incurred by the Ophthalmologist and covers all related aspects of providing an uninsured service.

The costs of medical practice, or physician overhead, are defined here as the costs of providing a medical service, other than physician work, and usually exclude technical fees. The variables in quantifying these costs for an individual physician include:

- Specialty
- Case mix
- Geographic location
- Gross income, if the costs of medical practice are reported as a ratio
- Individual choice
- Contractual arrangements
- Local enhancements

Methodology

The costs of medical practice are a significant variable in reviewing physician compensation. The ratio of expenses-to-income will vary by specialty, geography, and compensation model. The specialty variable reflects factors such as case mix, office infrastructure, and access to hospital facilities. Regardless, the goal in practice cost allocation is to strive for reasonable costs in an efficient and typical practice, not adjusted for outliers. The geographic variable, at the broad level, is provincial, territorial, or regional. In addition, a more refined approach could apply rurality indices and geographic relocator methodologies used by governments and the private sector for compensation analyses. The compensation variables can be generalized, but must be considered on a contract-by-contract basis. Fee-for-service physicians usually pay their own costs of practice from their gross income; salaried physicians and those compensated, usually part-time, by sessional arrangements usually do not pay the costs of practice, although the professional elements provided can vary somewhat by individual contract; service contracts vary widely in the provision of the costs of medical practice, with some paying none and some paying all. The growing number of blended models can be organized for the costs of medical practice according to the type of models that are utilized in hybrid funding.

As already noted, the definitive study of the costs of medical practice has not been achieved in Canada or internationally. There is no universally accepted methodology; as well, contemporary studies are not geographically sensitive, with the exception of the 12-year process associated with the United States Medicare relative value schedule and its component parts. The Australian relative value schedule study of practice costs included a degree of geographic sensitivity through modeling by specialty and region. Neither the American nor Australian study results can be extrapolated to the Canadian setting, although both studies provide valuable lessons, should the definitive Canadian study be undertaken.

In keeping with the use of the best available data associated with transparent methodologies, three Canadian studies are presented for use in this analysis. Full methodological details are available for each study.

Methodology

The 2007 British Columbia study conducted by R. K. House & Associates for the British Columbia Medical Association (BCMA) updated the 1995 study, using the same methodology. The 2007 report reflected 2005 data and employed a standardized questionnaire and financial reporting across random stratified sampling of three income cohorts. In 2001, the Alberta Relative Value Guide (RVG) Commission reported on the costs of medical practice in Alberta, using a modeling methodology initiated by survey data and adjusted for 2000 dollars. The Ontario Resource-Based Relative Value Schedule (RBRVS) Commission used Revenue Canada (now the Canada Revenue Agency) data and Ontario Health Insurance Plan income data, both adjusted, where required, for anomalous results and changes in tax legislation, to derive practice cost ratios published in 2002.

While the three Canadian studies employed three different methodologies, they frequently yielded comparable practice cost ratios. The means satisfy a test of face validity and are suggested as reasonable practice expense ratios.

As the Alberta billing data were higher than British Columbia and Ontario at the time of the studies of practice costs, the overhead ratio for Alberta could be skewed; the mean selected for this study was that for British Columbia and Ontario.

II.2.1 Evaluation Formula

The assembled and adjusted data are brought together using the following formula:

$$\mathbf{USV = [(RR/RM) + DC] \times OA}$$

where:

USV

= Uninsured Service Valuation

RR

= Resource Rating

= time*[sum of means of rated resource inputs for each of knowledge and judgment (KJ), technical skills (TS), communication skills (CS), and risk and stress (RS)]

RM

= Relativity Modifier

= (consultation survey rating/value + cataract survey rating/value) / 2

DC

= Direct Cost

= trimmed mean of survey costs

OA

= Overhead Adjustment

= mean of practice cost estimates using the Ontario and British Columbia studies

III Data

Fifty-four ophthalmologists responded to the initial COS survey, with a regional breakdown as follows:

- Maritime Provinces - 8
- Quebec and Ontario - 28
- Western Canada - 17
- Other (Europe) - 1

The low response rate to the initial survey was balanced by statistical and validation processes that support the conclusions of the study. Further, the supplementary survey provided key, reliable data on the cost of toric and multifocal lenses.

Notable, as well, were the data in the supplementary survey that corroborated the initial data on toric and multifocal lenses, other than the cost data, and in greater detail on intra-operative and post-operative times. Significant variability in post-operative times were noted due to significant variability in post-operative testing, including subsequent investigations and services.

Seventy percent of respondents practiced in urban areas with a population of 250,000 or more; twenty percent practiced in urban areas of 50,000 to 250,000. Forty-four percent had mixed academic and non-academic status, twenty percent were academic and thirty percent did not have academic appointments. Fifty-six percent were in solo practice while thirty-five percent practiced in groups. Essentially, most respondents practiced in large urban areas, had academic affiliations, and were solo practitioners.

In view of the limited number of responses, the data from the initial survey were pooled for all respondents and are reported as averages at the national level. This approach maximizes the statistical utility of the data, whereas breakdowns by region or type of practice would be subject to a considerable degree of uncertainty

due to small sample sizes. Cost data for premium lenses were extracted from the supplementary survey and incorporated with the data analysis of the initial survey.

Data are reported as means calculated for all responses and trimmed to eliminate obvious outliers. The trimming procedure was based on judgment rather than percentages of low and high responses. Criteria to eliminate outliers were:

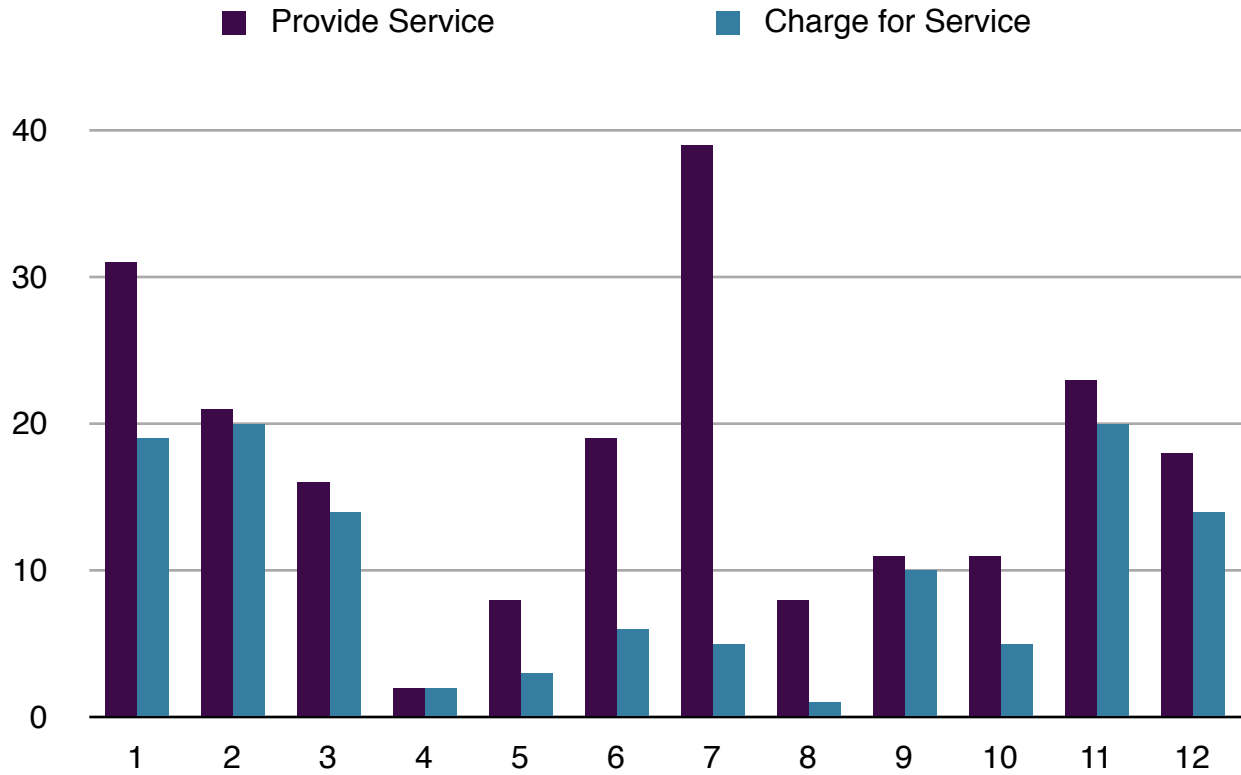
1. Evaluations outside the range of 1 – 7 used in the Likert scale. **One response for one uninsured service was eliminated.**
2. Unusually high estimates of time, price charged, or cost (e.g., one response of 60 minutes when all other responses were 30 minutes or less). **Four outlier responses were eliminated.**

Table 1 Frequency of Providing the 12 Uninsured Services		
Uninsured Service	% of Respondents	Average Annual Frequency
A. Diagnostic Testing		
1. Pre-operative Laser measurements (IOL Master)	57.4	459
2. Optical coherence tomography (OCT)	38.9	841
3. Heidelberg retinal tomograph (HRT)	29.6	366
4. GDx eye test	3.7	300
5. Screening photography (only for a patient without pathology, and to include interpretation, networking, and filing)	14.8	267
6. Corneal topography	35.2	273
7. Pachymetry	72.2	616
8. Diabetic screening photography	14.8	794
B. Therapeutic Procedures		
9. Intraocular medication for injection (Avastin)	20.4	326
10. Corneal labeling and positioning for limbal relaxation surgery for astigmatism	20.4	91

Table 1 Frequency of Providing the 12 Uninsured Services		
Uninsured Service	% of Respondents	Average Annual Frequency
C. Refractive Lens Implantation		
11. Toric IOLs	42.6	60
12. Multifocal IOLs	33.3	56

Figure 1

Survey Ophthalmologists Who Provide Services



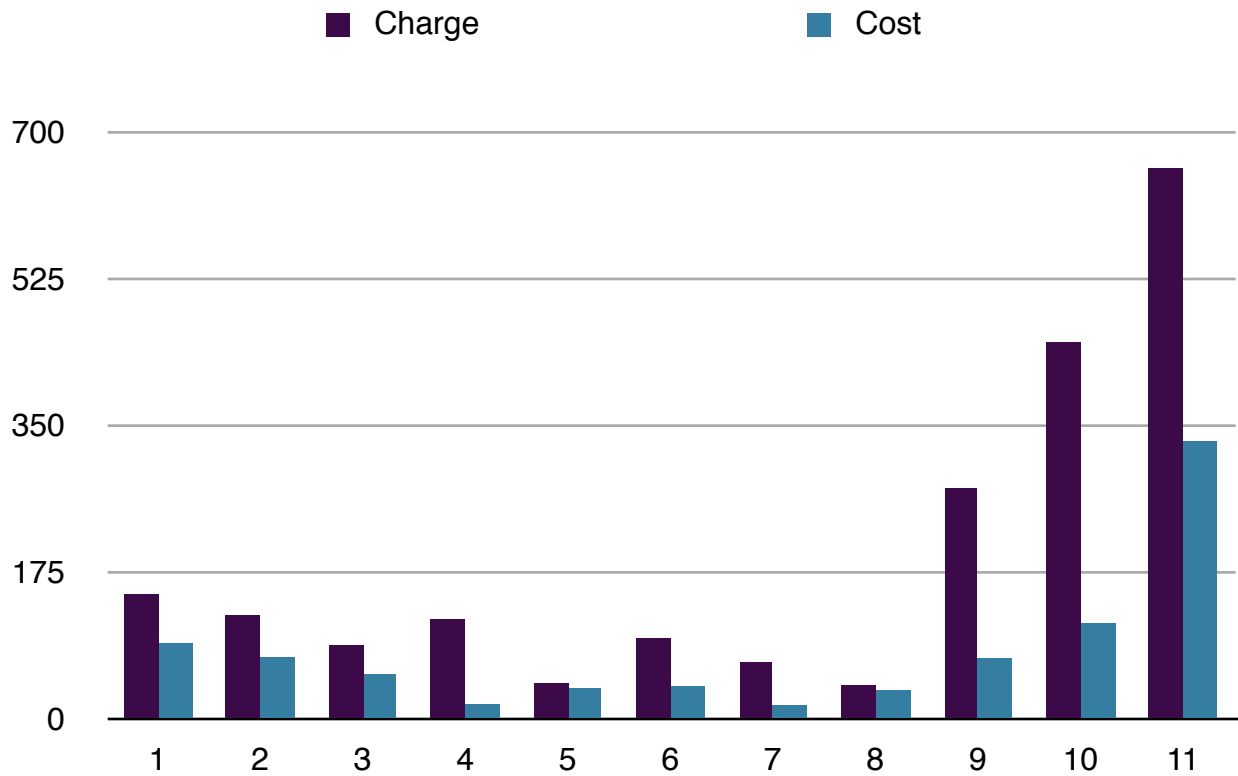
III.1 Existing Framework

III.1.1 Cost and Charge Data

Amounts charged to patients tended to be related to the actual or estimated cost of providing the service. Multifocal IOLs are not shown in Figure 2 as they are out of scale with the other services.

Figure 2

Average Charge and Cost Data



III.1.2 Costs of Medical Practice

It has been assumed that the costs of practice for ophthalmologists are inversely related to volume, due to large fixed (equipment) costs. The averaging of the British Columbia and Ontario values seemed most appropriate, with more similar average gross incomes than Alberta at the time the overhead costs were estimated.

The median overhead value for the three provinces is that of British Columbia, at 0.426. The mean using all three provincial studies is 0.438; using only British Columbia and Ontario, the mean is 0.4035.

The adjustment for the costs of medical practice used in this analysis is **0.4035**, acknowledging the geographic and methodology limitations summarized earlier in this report.

III.2 Resource Framework

Most of the uninsured services required from 6 to 12 minutes of Ophthalmologists' time. Average time varied from a low of 4.0 minutes for pachymetry to 17 minutes for multifocal IOLs.

III.2.1 Professional Resource Ratings

Results of the evaluation of professional inputs are shown in Table 2. Professional inputs in each resource dimension were measured using a Likert scale of 1 to 7. Ratings across the four dimensions tended to be similar for a specific service. Toric and multifocal lens implants received the highest ratings. The data demonstrate a strong correlation between time and complexity. Median complexity scores can be used to compare the relationship between average time and average complexity.

Table 2 Professional Resource Ratings				
A. Diagnostic Testing	Professional Resources			
	KJ	TS	RS	CS
1. Pre-operative Laser measurements (IOL Master)	4.4	3.9	3.2	3.8
2. Optical coherence tomography (OCT)	5.2	4.0	3.0	4.1
3. Heidelberg retinal tomograph (HRT)	5.2	4.0	3.0	4.4
4. GDx eye test	4.6	3.8	3.0	3.7
5. Screening photography (only for a patient without pathology, and to include interpretation, networking, and filing)	3.9	3.5	2.7	3.6
6. Corneal topography	5.0	4.1	3.4	4.2
7. Pachymetry	3.6	3.2	2.8	3.4
8. Diabetic screening photography	3.7	3.2	2.6	3.6
B. Therapeutic Procedures	Professional Resources			
	KJ	TS	RS	CS
9. Intraocular medication for injection (Avastin)	5.7	5.2	5.2	5.5
10. Corneal labeling and positioning for limbal relaxation surgery for astigmatism	5.7	5.6	5.3	5.1
C. Refractive Lens Implantation	Professional Resources			
	KJ	TS	RS	CS
11. Toric IOLs	6.0	5.7	5.6	6.0
12. Multifocal IOLs	6.2	5.8	6.1	6.3
Legend				
KJ - knowledge and judgment				
TS - technical skills				
RS - risk and stress				
CS - communication skills				

Data

The survey data for demographics, existing state, and resource evaluations are summarized in Appendix 1 and Appendix 2 of the report.

III.2.2 Relativity Modifier

Benchmark services included a procedure and an office consultation. Average time and professional resource ratings are shown in Table 3.

Table 3 Professional Resource Ratings for Benchmark Insured Services					
Insured Benchmark Service	Average Time (minutes)	Average Professional Resource Ratings			
		KJ	TS	RS	CS
1. Cataract with Lens Insertion	28.2	6.0	6.3	6.0	5.2
2. Office Consultation	16.7	6.0	4.7	4.3	6.0
Legend					
KJ - knowledge and judgment					
TS - technical skills					
RS - risk and stress					
CS - communication skills					

Data

The calculation of the relativity modifier for benchmark services is shown in Table 4. The value of each service is the median fee schedule value for the 10 provinces and 2 territories that list the benchmark fees in the Ophthalmology section of their fee schedules.

Table 4 Derivation of Relativity Modifier				
Insured Benchmark Service	Sum of Average Professional Resource Ratings	Time*Sum	Value \$	Rating (Value)
1. Cataract with lens insertion	23.5	661.8	532.79	1.24
2. Office consultation	21.0	350.9	80.29	4.37
Mean Rating (Value)				2.81

III.2.3 Supplementary Data

Table 5 Tests Performed to Determine the Suitability of a Patient for a Premium Lens					
	Percent Tested	Technical Cost Annual Unit		Staff Cost	Minutes
Refraction	100	18,000	72	15	5
Contact lens fitting for refraction	0-10	-	-	25	25
Wavefront testing	100	30,000	100	20	10
Corneal topography	100	20,000	60	15	5
Corneal pachymetry	50	25,000	-	15	5
Optical coherence biometry	100	37,500	120	15	5
Other: IOL master	100	50,000	200	15	5

Note: Percent tested uses patients who expressed an interest in having premium lenses as denominator

Comment:

There was a maximum of three out of six respondents for any question. Typically, there were fewer than three.

Technical costs were requested as either unit cost or annual cost and annual volume. Some respondents appeared to report only annual costs and those costs are reported in Table 1, along with unit costs where they could be calculated (volumes were not reported in all cases). Technical costs were inconsistent in some cases. The unit costs for corneal pachymetry appeared to vary from \$80 to \$8,000

for the three respondents who reported these costs. No amount is reported for this procedure as professional judgment is required to estimate an appropriate cost.

Table 6 Time Requirements and Costs for IOL Lens		
	Toric	Multifocal
Time in minutes to calculate refractive requirements	15.0	12.5
Staff costs - refraction (\$)	7.50	7.50
Supplier lens cost (\$)	550	1,200

Comment:

Lens costs were quite consistent among respondents for each type of lens. Other data from the supplementary survey were not useful from the perspective of incorporation into a final report. Revealed, however, were significant individual variations in the use of modifying incisions for each of the three types of lenses and related demands on time. Similarly, post-operative incidence and time varied for the frequency of tests, such as corneal topography, wavefront testing, corneal pachymetry, and other testing; variation was noted, as well, in the use, costs, and time required for the correction of residual astigmatism.¹

¹ Limbal Relaxing Incision (LRI) and LASIK correction

III.3 Validation Framework

III.3.1 Quebec Report

Representatives of Ophthalmologists in Quebec assigned values to ten uninsured services. These are reported in Table 7 as one of the approaches to validation of the study results.

Table 7 Values Assigned to Selected Uninsured Services in Quebec	
Uninsured Service	Assigned Value
2. Optical coherence tomography (OCT)	75-125
3. Heidelberg retinal tomograph (HRT)	75
4. GDx eye test	75
5. Screening photography (only for a patient without pathology, and to include interpretation, networking, and filing)	25
6. Corneal topography	60
7. Pachymetry	25
8. Diabetic screening photography	25
10. Corneal labeling and positioning for limbal relaxation surgery for astigmatism	200
11. Toric IOLs	400
12. Multifocal IOLs	400

III.3.2 Health Intelligence Report

In 2007, Health Intelligence conducted a valuation of three uninsured services for the Section on Ophthalmology of the Ontario Medical Association using a comparable methodology to this study. The results are reported in Table ² as a further validation tool.

Table 8 Values Assigned to Selected Uninsured Services in Ontario	
Uninsured Service	Assigned Value
1. Value-added lens implants	445
2. Pre-operative Laser measurements (IOL Master)	157
3. Intraocular medication for injection (Avastin)	179

III.3.3 Insured Comparators

The structure and function of the 13 health care systems in Canada has created 13 different fee and benefit schedules for insured medical services. The inclusion and valuation of the services are factors of negotiation, the quantum of financial settlements, and the allocation processes within medical associations and independent tariff commissions. The history of allocation has led to allocation decisions that have been as much political as evidence-based; this is starting to change as greater numbers of jurisdictions are adapting variations of relative value principles and related calculations.

Not surprisingly, services that are uninsured in some jurisdictions are insured in others. Table 9 summarizes the most recently published provincial and territorial schedules with respect to the list of uninsured services identified for this study. The values are of interest as a component of validation of the results, with the caveat that the underpinning forces behind insured services and uninsured services differ substantially.

² Numeric sequence reflects the master file of the current study

Further, provincial schedules are in a state of flux with respect to the application of negotiated settlements and the published versions may not be completely up to date. That notwithstanding, the table is generally representative; it also indicates the jurisdictions where these services are provided to patients through hospitals and, as such, can be considered insured although not a benefit to physicians.

Additional information was provided through the study survey tool.

Table 9 Variably Insured Services Provided by Ophthalmologists	
A. Diagnostic Testing	
1. Pre-operative Laser measurements (IOL Master)	
NL	<ul style="list-style-type: none"> Insured service - 42.76
SK	<ul style="list-style-type: none"> Reported as insured service but no benefit identified
2. Optical coherence tomography (OCT)	
NL	<ul style="list-style-type: none"> Insured service - 25.00
PE	<ul style="list-style-type: none"> Insured service - 57.05
ON	<ul style="list-style-type: none"> Will become insured service October 2009 - value not yet known
MB	<ul style="list-style-type: none"> OCT provided by hospital at no charge to the patient
SK	<ul style="list-style-type: none"> Insured service - 25.00
AB	<ul style="list-style-type: none"> OCT provided by hospital at no charge to the patient
3. Heidelberg retinal tomograph (HRT)	
PE	<ul style="list-style-type: none"> Insured service - 15.00
NB	<ul style="list-style-type: none"> Insured service - 12.76
BC	<ul style="list-style-type: none"> Insured service - 12.28
4. GDx eye test	
BC	<ul style="list-style-type: none"> Insured service - 12.28

Table 9 Variably Insured Services Provided by Ophthalmologists	
5. Screening photography (only for a patient without pathology, and to include interpretation, networking, and filing)	
NL	<ul style="list-style-type: none"> Screening photography provided by hospital at no charge to the patient
NB	<ul style="list-style-type: none"> Insured service - 23.20
SK	<ul style="list-style-type: none"> Reported as insured service but no benefit identified
6. Corneal topography	
NL	<ul style="list-style-type: none"> Corneal topography provided by hospital at no charge to the patient
ON	<ul style="list-style-type: none"> Insured service - 4.80
MB	<ul style="list-style-type: none"> Corneal topography provided by hospital at no charge to the patient
BC	<ul style="list-style-type: none"> Reported as insured service but no benefit identified
7. Pachymetry	
NL	<ul style="list-style-type: none"> Insured service - 2.50
PE	<ul style="list-style-type: none"> Insured service - 10.00
ON	<ul style="list-style-type: none"> Insured service - 5.10
MB	<ul style="list-style-type: none"> Pachymetry provided by hospital at no charge to the patient
SK	<ul style="list-style-type: none"> Insured service - 4.25
AB	<ul style="list-style-type: none"> Pachymetry provided by hospital at no charge to the patient
BC	<ul style="list-style-type: none"> Insured service - 10.00
8. Diabetic screening photography	
NB	<ul style="list-style-type: none"> Insured service - 23.20
SK	<ul style="list-style-type: none"> Reported as insured service but no benefit identified
AB	<ul style="list-style-type: none"> Diabetic screening photography provided by hospital at no charge to the patient

Table 9 Variably Insured Services Provided by Ophthalmologists	
B. Therapeutic Procedures	
9. Intraocular medication for injection (Avastin)	
PE	<ul style="list-style-type: none"> Avastin provided by hospital at no charge to the patient
10. Corneal labeling and positioning for limbal relaxation surgery for astigmatism	
MB	<ul style="list-style-type: none"> Corneal labeling provided by hospital at no charge to the patient
C. Refractive Lens Implantation	
11. Toric IOLs	
Data not applicable	
12. Multifocal IOLs	
Data not applicable	

III.3.4 Optometry

Representative interviews were conducted with optometry resources to determine policies and formulae utilized in the pricing of optometric agents. Specific attention was given to regulatory requirements and the use of typical market forces. The areas of interest were identified as dispensing fees and the margin applied to the wholesale price of a product.

This information assisted the consideration of issues such as product acquisition, dispensing, storage, handling, and stability. Consideration was given also to associated professional uninsured services linked to the product. This section of the study was developed as an additional reference point in validating the study. It is considered to be informative rather than statistical.

Optometry is a regulated profession, self-governed by the authority of provincial colleges. The colleges do not set fees; their role is to enforce the legislative

requirements of reasonableness and prior notification. The professional associations publish fee schedules, including recommendations for dispensing and laboratory costs. These are viewed as guidelines derived from internal valuation processes.

An individual Optometrist is able to charge in excess of the recommendations, generally dictated by market forces and geographic variation, but only after prior notification to the patient receiving the service(s). Anecdotal reports include significant mark-up on the sale of frames by Optometrists.

III.3.5 Pharmacy

Representative interviews were conducted with pharmacy resources to determine policies and formulae utilized in the pricing of pharmaceutical agents. Specific attention was given to regulatory requirements and the use of typical market forces. The areas of interest were identified as dispensing fees and the margin applied to the wholesale price of a pharmaceutical agent.

This information assisted the consideration of issues such as product acquisition, dispensing, storage, handling, and stability. Consideration was given also to associated professional uninsured services linked to the product. This section of the study was developed as an additional reference point in validating the study. It is considered to be informative rather than statistical. The information is most representative of the approach used by larger pharmacy chains; smaller independent pharmacies adhere to similar principles and approaches.

The two key findings are dispensing fees and the retail mark-up over wholesale pricing. The dispensing fees are not regulated, with the exception of products covered by provincial drug benefit plans. Market forces and central decision-making best characterize pharmacy practices. Even with the central decision-making, the actual fee for a single chain can vary across sites. As well, a geographic variation to fees has been observed.

The margin of retail over wholesale pricing is also determined centrally. There is minimal variation among the various chains, often with market forces being the key determinant. A not uncommon mark-up is in the 10-12% range.

III.3.6 Dental

Representative interviews were conducted with dental resources to determine policies and formulae utilized in the pricing of dental products available at a typical dental office. Specific attention was given to regulatory requirements and the use of typical market forces. The areas of interest were identified as dispensing fees and the margin applied to the wholesale price of a product.

This information assisted the consideration of issues such as product acquisition, dispensing, storage, handling, and stability. Consideration was given also to associated professional uninsured services linked to the product. This section of the study was developed as an additional reference point in validating the study. It is considered to be informative rather than statistical.

The majority of dental services can be considered as professional or laboratory. The professional fees are structured around provincial guidelines; they generally bundle services. The external laboratory services are predictable and are transferred to the patient without mark-up. Most dentists do not sell products, otherwise, and, as such, there is no margin considered in the provision of such services. Exceptions do exist but these are in the minority.

IV Valuations

The valuation formula, introduced in the *Methodology*, is reproduced, as follows, and applied in Table 10 to derive the recommended values.

$$\mathbf{USV = [(RR/RM) + DC] \times OA}$$

where:

USV

= Uninsured Service Valuation

RR

= Resource Rating

= time*[sum of means of rated resource inputs for each of knowledge and judgment (KJ), technical skills (TS), communication skills (CS), and risk and stress (RS)]

RM

= Relativity Modifier

= (consultation survey rating/value + cataract survey rating/value) / 2

DC

= Direct Cost

= trimmed mean of survey costs

OA

= Overhead Adjustment

= mean of practice cost estimates using the Ontario and British Columbia studies

Table 10 Summary Evaluations and Recommended Values					
Uninsured Service	RR	RM	DC	OA	USV
A. Diagnostic Testing					
1. Pre-operative Laser measurements (IOL Master)	133.9	2.81	90	1.4035	193
2. Optical coherence tomography (OCT)	186.6	2.81	74	1.4035	198
3. Heidelberg retinal tomograph (HRT)	174.2	2.81	54	1.4035	163
4. GDx eye test	192.9	2.81	18	1.4035	121
5. Screening photography (only for a patient without pathology, and to include interpretation, networking, and filing)	138.7	2.81	37	1.4035	121
6. Corneal topography	146.7	2.81	39	1.4035	127
7. Pachymetry	51.8	2.81	16	1.4035	48
8. Diabetic screening photography	135.4	2.81	35	1.4035	117
B. Therapeutic Procedures					
9. Intraocular medication for injection (Avastin)	352.4	2.81	72	1.4035	277
10. Corneal labeling and positioning for limbal relaxation surgery for astigmatism	204.1	2.81	114	1.4035	262
C. Refractive Lens Implantation					
11. Toric IOLs	358.4	2.81	550	1.4035	951
12. Multifocal IOLs	412.1	2.81	1200	1.4035	1,890

Valuations

Actual prices may be higher or lower, based on the actual purchase price from the lens supplier, including the impact of volume discounting, where available. As well, the supplementary survey confirmed that there may be additional charges beyond the calculated value for the refractive lens if the surgeon determines that it is necessary to perform additional preoperative testing to determine the optimum lens power. Further, additional charges can be associated with LRI surgery or Excimer refractive laser surgery to correct residual astigmatism. These variables converge to explain the significant variation in uninsured charges that may occur but are justifiable, based on variations in the levels of care provided.

V Validation Analysis

In addition to the validation framework, the recommended values are compared to the average survey charge or price in Table 11.

Table 11 Comparison between Recommended Value and Survey Charge or Price		
Uninsured Service	Recommended (\$)	Survey (\$)
A. Diagnostic Testing		
1. Pre-operative Laser measurements (IOL Master)	193	149
2. Optical coherence tomography (OCT)	198	124
3. Heidelberg retinal tomograph (HRT)	163	88
4. GDx eye test	121	119
5. Screening photography (only for a patient without pathology, and to include interpretation, networking, and filing)	121	43
6. Corneal topography	127	97
7. Pachymetry	48	68
8. Diabetic screening photography	117	40
B. Therapeutic Procedures		
9. Intraocular medication for injection (Avastin)	277	276
10. Corneal labeling and positioning for limbal relaxation surgery for astigmatism	262	450
C. Refractive Lens Implantation		
11. Toric IOLs	951	657
12. Multifocal IOLs	1,890	1,439
Pearson Correlation Coefficient		0.975

The overall Pearson Correlation Coefficient (PCC) is very high, suggesting validity when linking valuation data to time data. As noted in Appendix 2, the PCC for individual resource measures was also satisfactory with a low of 0.75 for risk and stress and a highs of 0.83 and 0.84 for knowledge and judgment and communication skills, respectively.³ The PCC for median scores was 0.82. Table 12 brings together the recommended values and the validation values, where available.

Table 12 Validation Data				
A. Diagnostic Testing				
1. Pre-operative Laser measurements (IOL Master)				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
193	149	--	157	42.76
2. Optical coherence tomography (OCT)				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
198	124	75-125	--	35.68
3. Heidelberg retinal tomograph (HRT)				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
163	88	75	--	13.35
4. GDx eye test				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
121	119	75	--	12.28
5. Screening photography (only for a patient without pathology, and to include interpretation, networking, and filing)				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
121	43	25	--	23.20

³ It is logical that risk and stress correlates to time lower than the other resource inputs since that resource does not automatically imply the expenditure of longer time

Table 12 Validation Data				
6. Corneal topography				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
127	97	60	--	4.80
7. Pachymetry				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
48	68	25	--	6.37
8. Diabetic screening photography				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
117	40	25	--	23.20
B. Therapeutic Procedures				
9. Intraocular medication for injection (Avastin)				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
277	276	--	179	--
10. Corneal labeling and positioning for limbal relaxation surgery for astigmatism				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
262	450	200	--	--
C. Refractive Lens Implantation				
11. Toric IOLs				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
951	657	400 per eye	--	--
12. Multifocal IOLs				
Recommended	Mean Survey Charge	Quebec	Health Intelligence	Mean Insured (limited data)
1,890	1,439	400 per eye	--	--

VI Schedule of Uninsured Services

VI.1 Preamble

A *Schedule of Uninsured Services* (the “Schedule”) is a guide rather than a prescriptive document. Implicit in the use of such a Schedule is prior notification to a patient of its use. This approach respects the absence of a single, accepted methodology for deriving such a schedule and the reality of geographic variation, market forces, and jurisdictional legislative and regulatory frameworks.

Without a universal methodology, the approach taken needs to be reasonable and to reflect the inputs for providing a service. Market forces cannot be accommodated easily and will continue to have an impact on the billing for such services; legislative and regulatory frameworks must be respected, including recognition that what is insured in one jurisdiction may be uninsured in another; further, the valuation of insured services not infrequently reflects processes of negotiation between a medical association and government, distribution of available funding by the various mechanisms and formulae within the medical association, and allocation by a specialty section. As such, an insured value for a service at any point in time may be more reflective of politics than objective evidence of the true value of the service.

Although not incorporated in this schedule, geographic variation can be addressed fairly using relocater or cost of living methodologies, available through government and the corporate sector, to balance compensation among jurisdictions and cities. The implication of applying such a methodology is that an agreed upon base value can be derived. With these caveats in mind, following is a *Schedule* for ophthalmological services in Canada, based on the best available evidence; ideally, the services will be re-evaluated on a regular basis, with the values adjusted accordingly. The use of tools of geographic variation is encouraged, where applicable and available. Following is one example (of many) of measuring geographic variation:

Consumer Price Index, by city (monthly)

	Decem ber 2008	Novem ber 2009	Decem ber 2009	November 2009 to December 2009	December 2008 to December 2009
	2002=100			% change	
All-items					
St. John's (N.L.)	113.3	115.6	115.2	-0.3	1.7
Charlottetown and Summerside (P.E.I.)	114.5	118.8	117.8	-0.8	2.9
Halifax (N.S.)	113.0	116.5	115.8	-0.6	2.5
Saint John (N.B.)	111.2	115.4	114.8	-0.5	3.2
Québec (Que.)	111.3	114.3	114.0	-0.3	2.4
Montréal (Que.)	111.8	114.4	114.0	-0.3	2.0
Ottawa Gatineau (Ont. part)	112.7	114.6	114.1	-0.4	1.2
Toronto (Ont.)	113.0	114.4	113.9	-0.4	0.8
Thunder Bay (Ont.)	110.1	110.9	110.4	-0.5	0.3
Winnipeg (Man.)	112.9	114.5	114.0	-0.4	1.0
Regina (Sask.)	115.6	117.8	117.3	-0.4	1.5
Saskatoon (Sask.)	116.9	118.6	118.1	-0.4	1.0
Edmonton (Alta.)	121.0	122.7	122.0	-0.6	0.8
Calgary (Alta.)	121.8	122.7	122.1	-0.5	0.2
Vancouver (B.C.)	111.9	113.1	112.7	-0.4	0.7
Victoria (B.C.)	111.0	111.9	111.5	-0.4	0.5
Whitehorse (Y.T.)	113.9	113.9	113.4	-0.4	-0.4
Yellowknife (N.W.T.)	115.4	116.7	116.8	0.1	1.2

Source: Statistics Canada, CANSIM, table (for fee) [326-0020](#) and Catalogue nos. [62-001-X](#) and [62-010-X](#).

Last modified: 2010-01-20.

VI.2 Schedule

This Schedule provides values derived for thirteen uninsured ophthalmological services⁴ identified by the Canadian Ophthalmological Society:

Service	Value (\$)
A. Diagnostic Testing	
1. Pre-operative Laser measurements (IOL Master)	193
2. Optical coherence tomography (OCT)	198
3. Heidelberg retinal tomograph (HRT)	163
4. GDx eye test	121
5. Screening photography (only for a patient without pathology, and to include interpretation, networking, and filing)	121
6. Corneal topography	127
7. Pachymetry	48
8. Diabetic screening photography	117
B. Therapeutic Procedures	
9. Intraocular medication for injection (Avastin)	277
10. Corneal labeling and positioning for limbal relaxation surgery for astigmatism	262
C. Refractive Lens Implantation	
11. Toric IOLs	951
12. Multifocal IOLs	1,890

⁴ Please note that some of these services are insured in some jurisdictions

A Appendices

- A.1 Current Practice Survey Data
- A.2 Evaluation Data for Uninsured Services
- A.3 Confidential Survey Format (Initial)
- A.4 Confidential Survey Format (Supplementary)