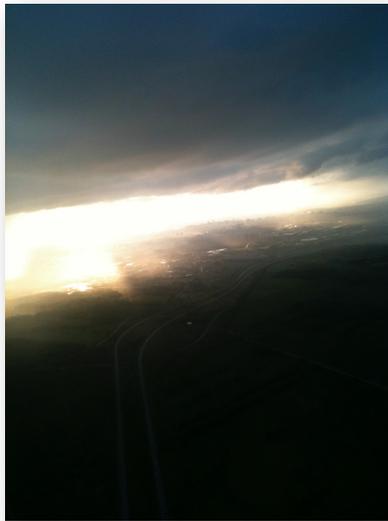


healthintelligenceinc.

VALUATION OF UNINSURED OPHTHALMOLOGICAL SERVICES

Report

Submitted to Canadian Ophthalmological Society



June 17, 2016

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i Letter of Introduction

June 17, 2016

Jennifer Brunet-Colvey

Executive Director and CEO | Chef de direction

Canadian Ophthalmological Society

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Dear Ms. Brunet-Colvey:

Following is an advisory report on the valuation of selected uninsured services provided by Ophthalmologists in Canada. Particularly significant has been the autonomy afforded to the consulting process and the importance to COS that the assessment be independent and evidence-based.

Many individuals contributed to the understanding of the issues, challenges, and history of the elements under consideration. Acquisition and assimilation of the qualitative and quantitative data would not have been possible without their commitment and participation in concert with the leadership and members of COS.

Vern Hicks provided substantial expertise in data management, statistical analyses, and protection of the integrity of the data. This was an essential component of the analyses due to the good response rate and variable information brought forward by the respondents across the large number of questions posed.

I am especially indebted to the perseverance, energy, and skill sets brought to the study by Rosalind O'Connell and Susan Gemmell.

While the benefit from the input of these resources was substantial, accountability for the acquisition, collation, and interpretation of the qualitative and quantitative data, and the subsequent analytics is that of Health Intelligence Inc. alone and should not be attributed elsewhere.

The six appendices, including three with raw survey data and calculations, provide COS with the underpinning data to the study and related working tables.

Please do not hesitate to contact me regarding any clarifications.

Respectfully submitted,

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ii Executive Summary

ES.1 Introduction

Canadian ophthalmologists have asked the Canadian Ophthalmological Society (COS) to provide guidance with regard to physician fees for services that are presently uninsured by provincial and territorial health insurance in many jurisdictions.

COS commissioned Health Intelligence Inc, an independent and well-respected health research firm, to conduct a study using recognized methodologies to determine fair market value for these uninsured services. Their report, along with the underpinning formulae, are provided following this summary.

ES.2 Historically Uninsured Eye Care Services

Some components of eye health care have traditionally fallen outside of the provisions of the *Canada Health Act*, while other eye care services have been removed gradually from public coverage. An example of the former is that glasses or contact lenses required to treat refractive problems are not insured by provincial health plans. An example of the latter is the de-listing of routine eye examinations for healthy patients between the ages of 20 to 64 years (depending on the jurisdiction).

ES.3 Cataract Surgery

Cataract surgery is one of the most common insured ophthalmological surgical procedures performed in Canada. As a medically necessary procedure, it involves surgically removing a cloudy natural lens, called a cataract, followed by the implantation of an artificial lens. Artificial lenses are made from a variety of materials and are available in a multitude of focusing strengths to meet patient needs. It is possible to select a lens that will reduce or eliminate a patient's need for glasses by correcting underlying near or far-sightedness.

ES.4 Interface Between Insured Cataract Surgery and Uninsured Refractive Surgery

New technologies and implants have evolved, making it possible to eliminate or reduce post-cataract surgery astigmatism and other higher order optical aberrations, such as asphericity, thereby reducing reliance on spectacles in some cataract patients. Opting for greater spectacle independence is a lifestyle choice.

Post-operative visual blur cannot always be corrected with cataract surgery using the standard lens implants alone as currently provided by provincial and territorial health insurance programs. In recent years, these conditions leading to visual blur have become treatable with uninsured procedures such as the implantation of a specialized refractive intraocular lens, incisional refractive surgical procedures, refractive laser procedures, or some combination of these advanced techniques, depending on the complexity of the problem. Specialized additional assessments are also required to determine if the patient is a suitable candidate for

refractive treatment. Complex calculations are needed to determine the appropriate refractive intraocular lens and possible adjustments in surgical technique. Multiple, extra time-consuming steps, and additional uninsured technologies, are required before and during surgery in order to obtain the desired refractive outcome, and postoperatively to assess and possibly modify the refractive outcome. While the extra counseling (or “chair time”) needed to explain these optional uninsured services is covered in the provincial payment for an office visit and counselling, the refractive portion is not.

ES.5 Additional Uninsured Eye Care Services

Newly available diagnostic technologies improve the ability to diagnose and treat eye disease and to provide ongoing care to ophthalmic patients. New technologies are applied judiciously when warranted for the provision of the highest level of eye care for emergent and complex care patients, along with preventive care for patients. Provincial and territorial health insurance plans may not insure some new technologies or preventive care examinations (for patients aged 20-64 years).

ES.6 COS Position on Patient Access to New Technologies

When patients have medical conditions or seek preventive care that warrant the use of the new uninsured diagnostic technologies, COS believes that patients should have access to these advances. Similarly, when pre-existing refractive errors as well as clinically significant cataracts co-exist, COS believes that patients should have the option to pay for uninsured refractive diagnostics and interventions coupled with the cataract surgery in order to reduce or eliminate reliance on spectacles.

ES.7 The Ophthalmologist’s Obligation to Patients

Ophthalmologists in Canada have a fiduciary duty to act in the best interest of the patient and are trusted by the public to provide patients with the information they need to make informed decisions. Many Canadians want access to new technologies and devices that may not be insured under provincial health insurance programs, and Canadian ophthalmologists often purchase new diagnostic devices to be able to better provide these uninsured refractive services to patients. Providers may be offering some or all of these new refractive procedures, if medically appropriate, as optional uninsured services applied to cataract surgery. Eye care providers should ensure that any potential financial conflict of interest relating to the purchase of new diagnostic devices does not influence conversations with patients on uninsured services; all decisions surrounding cataract surgery options must be in the best interest of the patient. Providers should be aware of the vulnerability of patients with visual impairment from cataracts, which may interfere with their ability to drive, work, or function.

These vulnerabilities may influence a patient’s understanding of the possible benefits of uninsured refractive and other services, as well as their optional nature. Ophthalmologists should take care to explain the expected relative benefits from each uninsured service offered to patients and to clarify that these optional services do not influence safety or corrected visual

outcomes. Patients should be provided with a description including detailed accounting of expected costs for each uninsured diagnostic or surgical/refractive service including possible postoperative enhancement procedures in advance of any intervention.¹

ES.8 Determination of Fair Market Value:

Determination of fair market value for any uninsured service is not an easy task for any individual ophthalmologist because they do not routinely determine the charges for the insured services they provide; these fees are set by negotiations between the provincial medical associations and governments. To assist Canadian ophthalmologists with this complicated task, the COS commissioned Health Intelligence Inc. (HII) to survey the COS membership and to assist in establishing values for uninsured ophthalmic services. HII was chosen because it is an independent healthcare consulting firm with recognized expertise in determining relative values for medical tariffs.

The complete HII report follows this document. The summary valuation table is provided in the table below. It is important to recognize that these are not absolute tariffs that are being recommended by COS. Rather, what is provided is an example of a methodology that can be used to arrive at a fair market value for these services. It is anticipated that the amounts charged by individual ophthalmologists will vary since these calculations were based on averaging the weighting of overhead for ophthalmologists within two provinces. It is expected that individual ophthalmologists will use their own personal overhead costs in performing the calculations. Overhead cost will vary significantly depending on the style of medical practice plus the cost of living in the location where the ophthalmologist is located. Direct costs will also likely vary and will affect the final amount charged. Handling fees will vary unless stipulated by provincial guidelines (as is the case in Alberta).

The values in the HII report for refractive lens implantation are based on the situation where the ophthalmologist purchases the lens from the manufacturer and then sells the lens to the patient along with providing the extra services necessary to obtain the desired refractive result. This pattern of practice is not uniform across Canada since some provinces require the lens to be sold by the hospital. To assist surgeons in those provinces, the total value of the service has been broken down into the cost of the lens, a handling fee (set at 12% based on guidelines established by the Alberta Ministry of Health and Wellness) and the value of the refractive services provided.

From this information, it is apparent that the charges for patients with different refractive problems may vary significantly, not only from province to province, but also within a single community.

1

Please see Appendix A.7 for an example of a patient handout and consent form for an ophthalmological procedure (femto laser assisted refractive cataract surgery) that is not currently insured in the province of Ontario [reproduced with permission of the Eye Physicians and Surgeons of Ontario (EPSO)]

ES.9 HII Recommended Values Compared to Changes Reported by COS Members in an HII Survey

| Evaluation Elements for Uninsured Ophthalmological Services | | | | | | | | | | |
|---|--|--|--------------|------------------------|----------------|----------|------------|-----------------|-------------------------------|-------------------------|
| |  or  | Sum | Time *Sum | Relativity Modifier | Direct Cost | Overhead | Value | Survey Price | Revised Direct Cost (1) | Revised Value (1) |
| 1.1 |  | Femtosecond laser for refractive cataract surgery (per eye) | | | | | | | | |
| | | 22.2 | 332.3 | 3.07 | 585.9 | 1.4035 | 974 | 1,220 | 1,013 | 1,165 |
| 1.2 |  | Cataract refractive suites, including Verion and Calysto | | | | | | | | |
| | | 21.7 | 325.8 | 3.07 | 336.3 | 1.4035 | 621 | 1,315 | | |
| 2.1 |  | Potential Acuity Meter (PAM) | | | | | | | | |
| | | 13.2 | 66.2 | 3.07 | 145.9 | 1.4035 | 235 | 94 | 7 | 37 |
| 2.2 |  | Tear film osmolarity for aspheric, toric, and multifocal lenses, and dry eye | | | | | | | | |
| | | 15.3 | 191.7 | 3.07 | 23.7 | 1.4035 | 121 | 81 | | |
| 2.3 |  | Specular microscopy | | | | | | | | |
| | | 14.4 | 180.5 | 3.07 | 51.4 | 1.4035 | 154 | 86 | | |
| 2.4 |  | Wavefront aberrometry | | | | | | | | |
| | | 15.9 | 159.2 | 3.07 | 45.0 | 1.4035 | 136 | 132 | | |
| 2.5 |  | Laser refractive biometry measurements | | | | | | | | |
| | | 17.2 | 171.6 | 3.07 | 60.6 | 1.4035 | 163 | 201 | | |
| 2.6 |  | Corneal topography | | | | | | | | |
| | | 17.2 | 172.1 | 3.07 | 56.6 | 1.4035 | 158 | 113 | | |
| 2.7 |  | Pentacam | | | | | | | | |
| | | 16.2 | 162.0 | 3.07 | 43.8 | 1.4035 | 135 | 112 | | |
| 2.8 |  | Optical coherence tomography (OCT) testing | | | | | | | | |
| | | 17.4 | 173.8 | 3.07 | 71.5 | 1.4035 | 180 | 81 | 49 | 128 |
| 3.1 |  | Toric IOL (per eye) | | | | | | | | |
| | | 23.3 | 350.1 | 3.07 | 482.2 | 1.4035 | 837 | 565 | 665 | 825 |
| 3.1.a |  | Multifocal IOL (per eye) | | | | | | | | |
| | | | | | | | | | 1,066 | 1,226 |
| 3.1.b |  | Multifocal toric IOL (per eye) | | | | | | | | |

| Evaluation Elements for Uninsured Ophthalmological Services | | | | | | | | | | |
|---|--|---|-------|------|-------------|--------|--------------|-------|-------|--------------|
| 3.1.D |  | | | | | | | | 1,409 | 1,569 |
| 3.2 |  | Corneal relaxing incision (per eye) | | | | | | | | |
| | | 21.6 | 151.1 | 3.07 | 103.4 | 1.4035 | 214 | 363 | | |
| 4.1 |  | Wide field retinal imaging (Optos and OCT angiography) | | | | | | | | |
| | | 17.8 | 177.5 | 3.07 | 86.7 | 1.4035 | 203 | 107 | 169 | 250 |
| 4.2 |  | Avastin - intravitreal (per eye) | | | | | | | | |
| | | 20.9 | 208.8 | 3.07 | 45.7 | 1.4035 | 159 | 100 | | |
| 5.1 |  | Heidelberg retinal tomography (HRT) | | | | | | | | |
| | | 17.5 | 261.8 | 3.07 | 56.0 | 1.4035 | 198 | 100 | 35 | 154 |
| 5.2 |  | GDx | | | | | | | | |
| | | 15.0 | 97.5 | 3.07 | --- | 1.4035 | --- | --- | | |
| 5.3 |  | OCT for glaucoma suspects | | | | | | | | |
| | | 16.8 | 167.5 | 3.07 | 45.8 | 1.4035 | 141 | 74 | | |
| 6.1 |  | Punctal plugs - dissolving (per eye) | | | | | | | | |
| | | 15.7 | 78.5 | 3.07 | 38.7 | 1.4035 | 90 | 83 | | |
| 6.2 |  | Punctal plugs - non-dissolving (per eye) | | | | | | | | |
| | | 15.5 | 155.2 | 3.07 | 68.7 | 1.4035 | 167 | 125 | | |
| 7.1 |  | Corneal crosslinking (per eye) | | | | | | | | |
| | | 19.6 | 882.0 | 3.07 | 725.0 | 1.4035 | 1,420 | 1,407 | | |
| 7.2 |  | Intacs (per eye) | | | | | | | | |
| | | 22.8 | 455.0 | 3.07 | Note | | | | | |
| 7.3 |  | Avastin - corneal (per eye) | | | | | | | | |
| | | 18.6 | 186.3 | 3.07 | 25.0 | 1.4035 | 120 | 144 | | |
| 8.1 |  | Uninsured eye examinations | | | | | | | | |
| | | 19.0 | 285.6 | 3.07 | 29.9 | 1.4035 | 172 | 127 | | |
| Note | | Two respondents on Intacs (per eye) - for costs, one was unknown and one was covered by study protocol - valuation and survey price are not valid or meaningful | | | | | | | | |
| 1 |  or  | In addition to an expanded list of uninsured services, the methodology now includes, where available, supplementary data from industry on costing data. | | | | | | | | |

| Evaluation Elements for Uninsured Ophthalmological Services | | |
|---|----|---|
| Legend | | |
| Sum | is | Sum of means of the four professional resource ratings |
| Time*Sum | is | Median times of resource ratings*sum (as defined) |
| Relativity Modifier | is | Calculated relativity formula derived from the professional resource ratings for benchmark services |
| Direct Cost | is | Mean acquisition cost of the uninsured service element(s) |
| Overhead | is | Overhead adjustment factor using Canadian study means for Ophthalmology |
| Value | is | Calculated valuation of the uninsured ophthalmological service |
| Survey Price | is | Mean charge to patients for that service by those who provide it |

ES.10 Future Trends

The values for uninsured services can be expected to shift over time due to the changing costs of service provision and possible changes in the direct costs for diagnostic technologies or the refractive lens options. However, as new technologies and treatments develop, this methodology will continue to be helpful in establishing fair market value for ophthalmological services not covered by provincial and territorial health insurance.

ES.11 Conclusions

Patients attach great value to vision. New ophthalmic technologies provide ophthalmologists with the exciting opportunity to improve the quality of life for our patients. Once the safety and effectiveness of technologies and procedures are demonstrated, a professional responsibility is to inform and offer these choices to patients. When these treatment options are not insured under provincial or territorial health plans, patients should be allowed to access these services at reasonable fees. The optional nature of these services, evidence-based risks, benefits, and alternatives, and associated uninsured costs, need to be clearly delineated to patients in a fair and transparent manner. Eye care providers should be cognizant of the specific vulnerabilities of patients with visual impairment and should consider how these vulnerabilities might influence a patient's understanding of all insured and uninsured services. It must always be made clear to patients that any uninsured service is optional, not medically necessary, and will not influence the access, safety or corrected visual outcomes of ophthalmic care including cataract surgery.

This report is intended to provide Canadian ophthalmologists with an overview of guiding principles for patient billing practices for uninsured services. It offers examples of reasonable costs for some uninsured services. It is not intended to define fixed charges for uninsured services but, instead, to explain why there will be differences in fees for ophthalmic services

(as for any other goods or services) due to factors such as variation in cost of living among regions, and variations related to equipment costs, volumes and overheads. It is not a prescriptive document. It is not intended to be legal advice since it is not exhaustive of all questions or nuances that may arise.²

2

Some surgeons offer an insurance option to their patients, agreeing to perform a refractive laser procedure to reduce or eliminate any residual refractive errors that exist following their original surgery. As an example, if a surgeon finds that 10% of patients could benefit from a LASIK procedure following a refractive lens implantation and the charge for this treatment is normally \$2000, the surgeon may offer all patients the option to pay \$200 prior to surgery and be guaranteed to receive the service at no additional cost, as opposed to no prepayment but a further \$2000, if the service is warranted.

iii Résumé

R.1 Introduction

Les ophtalmologistes canadiens ont demandé à la Société canadienne d'ophtalmologie (SCO) de leur fournir des orientations quant aux honoraires médicaux applicables aux services que plusieurs régimes d'assurance maladie provinciaux ou territoriaux ne couvrent pas.

La SCO a confié à Health Intelligence Inc. (HII), cabinet de recherche en santé indépendant et respecté, le mandat de réaliser une étude, au moyen de méthodologies reconnues, pour déterminer la juste valeur marchande de ces services non assurés. Le rapport de HII et les formules utilisées sont présentés à la suite du présent résumé.

R.2 Soins oculaires historiquement non assurés

Certains éléments des soins oculaires sont toujours restés en dehors du champ d'application de la Loi canadienne sur la santé. Les lunettes et les lentilles de contact nécessaires pour traiter des problèmes de réfraction, par exemple, ne sont pas couvertes par les régimes d'assurance maladie provinciaux. Par ailleurs, d'autres services ont été graduellement retirés de la couverture des régimes publics. Le retrait des examens de la vue de base pour les patients en santé de 20 à 64 ans (selon la province) en est un exemple.

R.3 Chirurgie de la cataracte

La chirurgie de la cataracte est l'une des opérations chirurgicales assurées les plus couramment pratiquées au Canada. Cette opération médicalement nécessaire consiste en l'ablation d'un cristallin opacifié, appelé cataracte, suivie de l'implantation d'un cristallin artificiel.

Les implants peuvent être faits de différents matériaux et sont offerts dans toute une gamme de puissances de focalisation. Il est possible d'en choisir une qui réduira ou éliminera le besoin de porter des lunettes en corrigeant la myopie ou la presbytie sous-jacente.

R.4 Relation entre la chirurgie de la cataracte assurée et la chirurgie réfractive non assurée

Avec l'évolution des technologies et des implants, il devient possible d'éliminer ou de réduire l'astigmatisme et des aberrations optiques d'ordre supérieur comme l'asphéricité après une chirurgie de la cataracte, ce qui réduit le besoin de porter des lunettes pour certains patients opérés pour des cataractes. Pour le patient, opter pour une intervention qui le rend moins dépendant de verres correcteurs est un choix personnel, une question de style de vie.

Dans le contexte de la chirurgie de la cataracte, le flou visuel postopératoire n'est pas toujours corrigé avec des implants standard seulement, soit ceux que couvrent actuellement les régimes provinciaux et territoriaux d'assurance maladie. Depuis quelques années, on peut traiter les conditions causant ce flou visuel avec des interventions non assurées telles que l'implantation de lentilles réfractives spécialisées, des techniques de chirurgie réfractive incisionnelle, des techniques de chirurgie réfractive au laser ou une combinaison de ces méthodes avancées, selon la complexité du problème. Des évaluations additionnelles spécialisées sont requises pour déterminer si le patient est un bon candidat pour un traitement réfractif. Des calculs complexes doivent aussi être faits pour choisir l'implant intraoculaire qui convient et déterminer les ajustements à apporter, au besoin, à la technique chirurgicale. En plus des technologies non assurées, il s'ajoute donc de multiples étapes qui demandent du temps avant et pendant l'intervention, pour obtenir le résultat réfractif désiré, ainsi qu'à l'étape postopératoire, pour évaluer et éventuellement modifier le résultat obtenu. Le temps de consultation additionnel requis pour expliquer les services non assurés optionnels est couvert dans les honoraires pour visite et consultation, mais le reste des services réfractifs ne l'est pas.

R.5 Autres soins oculaires non assurés

Les technologies de diagnostic récentes améliorent la capacité de diagnostiquer et de traiter des maladies oculaires et de fournir des soins continus en ophtalmologie. L'utilisation judicieuse des nouvelles technologies permet, lorsque requise, d'offrir les soins oculaires les plus avancés aux patients présentant des cas complexes ou urgents, et pour dispenser des soins préventifs. Les régimes d'assurance maladie provinciaux et territoriaux ne couvrent pas nécessairement certaines nouvelles technologies ou certains examens préventifs (pour les 20-64 ans).

R.6 Position de la SCO sur l'accès des patients aux nouvelles technologies

La SCO est d'avis que, si un patient présente une pathologie ou demande des soins préventifs qui justifient l'utilisation de nouvelles technologies de diagnostic non assurées, il devrait avoir accès à ces méthodes avancées. De même, la SCO pense que, quand des erreurs réfractives préexistantes coexistent avec des cataractes significatives au plan clinique, les patients devraient avoir la possibilité de payer pour des tests diagnostiques et des interventions réfractives non assurés, combinés avec la chirurgie de la cataracte, afin de réduire ou d'éliminer le besoin de porter des lunettes.

R.7 L'obligation de l'ophtalmologiste à l'égard du patient

Au Canada, les ophtalmologistes ont un devoir fiduciaire d'agir au mieux des intérêts de leurs patients, et le public attend d'eux qu'ils fournissent à leurs patients les informations dont ils ont besoin pour prendre des décisions éclairées. De nombreux Canadiens souhaitent avoir accès à des technologies et à des appareils nouveaux qui ne sont pas nécessairement couverts par les régimes provinciaux et territoriaux, et bien des ophtalmologistes canadiens ont acheté de nouveaux appareils de diagnostic pour pouvoir fournir ces services réfractifs

non assurés à leurs patients. Un prestataire de soins peut offrir une partie ou l'ensemble de ces nouvelles interventions réfractives, si elles sont médicalement appropriées, à titre de services non assurés optionnels combinés avec la chirurgie de la cataracte. Il doit cependant s'assurer qu'aucun conflit d'intérêts potentiel d'ordre financier lié à l'achat de nouveaux appareils de diagnostic n'influence les discussions avec ses patients au sujet des services non assurés; toutes les décisions qui concernent les services optionnels entourant la chirurgie de la cataracte doivent être prises au mieux des intérêts du patient.

Les prestataires de soins doivent être conscients de la vulnérabilité des patients ayant une déficience visuelle due à des cataractes, laquelle peut nuire à leur capacité de conduire, de travailler ou de fonctionner en général.

Cette vulnérabilité des patients peut influencer leur compréhension de la nature facultative et des avantages possibles des services non assurés, réfractifs ou autres. Les ophtalmologistes doivent prendre soin d'expliquer les avantages relatifs attendus de chaque service non assuré offert et de bien préciser que ces services facultatifs n'ont pas d'incidence sur la sécurité ni sur les résultats visuels corrigés. Le patient doit se voir présenter, avant toute intervention, une ventilation détaillée du coût prévu de chaque service diagnostique et réfractif (chirurgical) non assuré, y compris le coût d'éventuelles interventions d'amélioration postopératoires.

R.8 Détermination de la juste valeur marchande

Déterminer la juste valeur marchande de services non assurés n'est pas chose facile pour les ophtalmologistes, car ceux-ci ne sont pas appelés à calculer fréquemment le coût des services assurés qu'ils fournissent; ces montants sont déterminés dans le cadre des négociations entre les associations médicales provinciales et les gouvernements. Pour aider les ophtalmologistes canadiens dans cette tâche complexe, la SCO a demandé à Health Intelligence Inc. de réaliser une enquête auprès de ses membres et d'aider à déterminer la valeur des services ophtalmiques non assurés. HII a été retenu parce qu'il s'agit d'un cabinet de recherche en santé indépendant qui possède une expertise reconnue dans la détermination de la valeur relative de services médicaux.

Le rapport complet de HII suit le présent document. Un tableau d'évaluation récapitulatif est présenté ci-après. Il importe de comprendre que les valeurs indiquées ne représentent pas des tarifs absolus que recommande la SCO. Ce qui est présenté est plutôt un exemple de méthodologie pouvant être utilisée pour déterminer une juste valeur marchande pour les différents services. On peut s'attendre à ce que les montants facturés varient d'un ophtalmologiste à l'autre, puisque les calculs sont fondés sur une moyenne pondérée des coûts indirects des ophtalmologistes de deux provinces. Il appartient donc à chaque ophtalmologiste de faire ses calculs selon ses propres coûts indirects. Ceux-ci peuvent varier fortement selon le style de pratique médicale et le coût de la vie là où l'ophtalmologiste pratique. Les coûts directs peuvent aussi varier et avoir une incidence sur le montant final

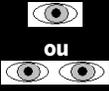
facturé. Les frais de manutention varieront également, sauf s'ils sont prescrits par des lignes directrices provinciales (comme c'est le cas en Alberta).

Les valeurs présentées dans le rapport de HII pour l'implantation de lentilles réfractives sont fondées sur le cas où l'ophtalmologiste achète les lentilles d'un fabricant puis les vend au patient tout en fournissant les services additionnels nécessaires à l'obtention du résultat réfractif souhaité. On ne trouve pas ce mode de pratique partout au Canada, certaines provinces exigeant que les lentilles soient vendues par l'hôpital. Pour faciliter le calcul pour les chirurgiens de ces provinces, la valeur totale du service a été ventilée -

coût des lentilles, frais de manutention (12% selon les lignes directrices du ministère de la Santé et du Bien-Être de l'Alberta), valeur des services réfractifs fournis.

Ces informations montrent que les coûts pour des patients ayant différents problèmes réfractifs peuvent varier considérablement, non seulement d'une province à l'autre, mais aussi au sein d'une même collectivité.

R.9 Valeurs recommandées par HII et frais indiqués par les membres de la SCO dans une enquête de HII

| Composantes de la valeur des services ophtalmologiques non assurés | | | | | | | | | | |
|--|--|--|-------|------|-------|--------|------------|-------|------------------------|--------------------|
| |  ou  | S | T*S | FR | CD | CI | V | FSE | Coût direct révisé (1) | Valeur révisée (1) |
| 1.1 |  | Laser femtoseconde pour chirurgie réfractive de la cataracte (par oeil) | | | | | | | | |
| | | 22,2 | 332,3 | 3,07 | 585,9 | 1,4035 | 974 | 1 220 | 1 013 | 1 165 |
| 1.2 |  | Suites réfractives pour cataractes, y compris Verion et Calysto | | | | | | | | |
| | | 21,7 | 325,8 | 3,07 | 336,3 | 1,4035 | 621 | 1 315 | | |
| 2.1 |  | Appareil de mesure de l'acuité potentielle (PAM) | | | | | | | | |
| | | 13,2 | 66,2 | 3,07 | 145,9 | 1,4035 | 235 | 94 | 7 | 37 |
| 2.2 |  | Osmolarité des larmes, lentilles asphériques, toriques et multifocales et oeil sec | | | | | | | | |
| | | 15,3 | 191,7 | 3,07 | 23,7 | 1,4035 | 121 | 81 | | |
| 2.3 |  | Microscopie spéculaire | | | | | | | | |
| | | 14,4 | 180,5 | 3,07 | 51,4 | 1,4035 | 154 | 86 | | |

| Composantes de la valeur des services ophtalmologiques non assurés | | | | | | | | | |
|--|---|---|-------|------|-------|--------|------------|-----|-------|
| 2.4 |  | Aberrométrie du front d'onde | | | | | | | |
| | | 15,9 | 159,2 | 3,07 | 45,0 | 1,4035 | 136 | 132 | |
| 2.5 |  | Mesures biométriques réfractives par laser | | | | | | | |
| | | 17,2 | 171,6 | 3,07 | 60,6 | 1,4035 | 163 | 201 | |
| 2.6 |  | Topographie cornéenne | | | | | | | |
| | | 17,2 | 172,1 | 3,07 | 56,6 | 1,4035 | 158 | 113 | |
| 2.7 |  | Pentacam | | | | | | | |
| | | 16,2 | 162,0 | 3,07 | 43,8 | 1,4035 | 135 | 112 | |
| 2.8 |  | Tomographie de cohérence optique (OCT) | | | | | | | |
| | | 17,4 | 173,8 | 3,07 | 71,5 | 1,4035 | 180 | 81 | 49 |
| 3.1 |  | LIO toriques (par oeil) | | | | | | | |
| | | 23,3 | 350,1 | 3,07 | 482,2 | 1,4035 | 837 | 565 | 665 |
| 3.1.a |  | LIO multifocales (par oeil) | | | | | | | |
| | | | | | | | | | 1 066 |
| 3.1.b |  | LIO toriques multifocales (par oeil) | | | | | | | |
| | | | | | | | | | 1 409 |
| 3.2 |  | Incision cornéenne relaxante (par oeil) | | | | | | | |
| | | 21,6 | 151,1 | 3,07 | 103,4 | 1,4035 | 214 | 363 | |
| 4.1 |  | Imagerie rétinienne grand angle (angiographie Optos et OCT) | | | | | | | |
| | | 17,8 | 177,5 | 3,07 | 86,7 | 1,4035 | 203 | 107 | 169 |
| 4.2 |  | Avastin - intravitréen (par oeil) | | | | | | | |
| | | 20,9 | 208,8 | 3,07 | 45,7 | 1,4035 | 159 | 100 | |
| 5.1 |  | Tomographie rétinienne Heidelberg (HRT) | | | | | | | |
| | | 17,5 | 261,8 | 3,07 | 56,0 | 1,4035 | 198 | 100 | 35 |
| 5.2 |  | GDx | | | | | | | |
| | | 15,0 | 97,5 | 3,07 | --- | 1,4035 | --- | --- | |
| 5.3 |  | OCT pour cas soupçonnés de glaucome | | | | | | | |
| | | 16,8 | 167,5 | 3,07 | 45,8 | 1,4035 | 141 | 74 | |

| Composantes de la valeur des services ophtalmologiques non assurés | | | | | | | | | |
|--|--|--|-------|------|-------------|--------|--------------|-------|--|
| 6.1 |  | Bouchons méatiques - résorbables (par oeil) | | | | | | | |
| | | 15,7 | 78,5 | 3,07 | 38,7 | 1,4035 | 90 | 83 | |
| 6.2 |  | Bouchons méatiques - non résorbables (par oeil) | | | | | | | |
| | | 15,5 | 155,2 | 3,07 | 68,7 | 1,4035 | 167 | 125 | |
| 7.1 |  | Réticulation de la cornée (par oeil) | | | | | | | |
| | | 19,6 | 882,0 | 3,07 | 725,0 | 1,4035 | 1 420 | 1 407 | |
| 7.2 |  | Implants Intacs (par oeil) | | | | | | | |
| | | 22,8 | 455,0 | 3,07 | Note | | | | |
| 7.3 |  | Avastin - cornéen (par oeil) | | | | | | | |
| | | 18,6 | 186,3 | 3,07 | 25,0 | 1,4035 | 120 | 144 | |
| 8.1 |  | Examens oculaires non assurés | | | | | | | |
| | | 19,0 | 285,6 | 3,07 | 29,9 | 1,4035 | 172 | 127 | |
| Note | | Deux répondants pour Implants Intacs (par oeil). Le coût était inconnu pour un cas, et l'autre était couvert par un protocole d'étude. La valeur et les frais selon l'enquête ne sont pas valables ou significatifs. | | | | | | | |
| 1 |  or  | En plus d'une liste de services non assurés, la méthodologie inclut maintenant, là où cela s'applique, des données supplémentaires provenant du secteur sur l'établissement des coûts. | | | | | | | |
| Légende | | | | | | | | | |
| S (Somme) | | signifie somme des notations moyennes des quatre dimensions professionnelles | | | | | | | |
| T*S (Temps*Somme) | | signifie temps médian associé aux ressources notées multiplié par la somme (telle que définie) | | | | | | | |
| FR (Facteur de relativité) | | signifie formule de relativité calculée dérivée des notations des dimensions professionnelles pour des services assurés de référence | | | | | | | |
| CD (Coût direct) | | signifie coût d'acquisition moyen du service non assuré | | | | | | | |
| CI (Coûts indirects) | | signifie facteur d'ajustement basé sur des moyennes de l'étude canadienne pour l'ophtalmologie | | | | | | | |

| Composantes de la valeur des services ophtalmologiques non assurés | |
|---|--|
| V (Valeur) | signifie valeur calculée du service ophtalmologique non assuré |
| FSE (Frais selon l'enquête) | signifie frais moyens facturés au patient pour ce service par les ophtalmologistes qui l'offrent |

1 Context

1.1 Background

In 2009, the Canadian Ophthalmological Society (COS) commissioned a study to evaluate selected uninsured services provided by Ophthalmologists. The results of the study were released in 2010, following confirmation of the methodology and tabling of the results with the COS leadership.

The discipline of Ophthalmology continues to apply technological advances to the benefit of patients. Notable are the substantial and ongoing gains to the care provided using these rapidly evolving technologies to improve outcomes. Even further improvement will naturally follow future advances; an ongoing challenge will be the rapid evolution of technological developments for ophthalmological services and their impact on quality, insurability at a time when governments are constraining expenditures, and a real-time update of the valuation of uninsured services.

For all disciplines, the valuation and pricing of uninsured services has been inconsistent across and within jurisdictions; this reflects costing variables and the historical absence of objective methodologies to assist the decision-making process. This was the genesis of the 2009 study sponsored by COS as part of its mandate to provide assistance in valuation and understanding to the profession, industry, and provincial and territorial governments.³ Through the study and valuations published in 2010, COS took a leadership role among all disciplines and national specialty societies across Canada;

Five years following the original study and valuations,, COS is continuing with its leadership in support of timely access to the evidenced-based pricing of uninsured services. This is the genesis of this second independent study and valuations of an expanded list of uninsured services.

The original results will be considered as comparators for the current study, where applicable.

In addition to an expanded list of uninsured services, the methodology now includes, where available, supplementary data from industry on costing data. This approach is noted when used; however, the data were not intended to replace survey data as replacement values, unless an obvious discrepancy required attention. Each uninsured service was addressed, in this regard, on its own merit.

3

Valuation of Uninsured Ophthalmological Services. Report to the Canadian Ophthalmological Society; Health Intelligence Inc., March 1, 2010

1.2 Uninsured Services⁴

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, an individual physician assigns a value to an uninsured service, according to related costs to the individual practice, 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.

Professionalism impels Ophthalmologists to be comprehensive in the full disclosure of all accepted technology and related benefits and risks that are associated, regardless of the insured status. The core issues of ensuring transparent and fair treatment for patients have been evident in the COS approach to uninsured services. The issues of quality outcomes, incorporation of uninsured services with publicly funded services, and the related ethical challenges are further detailed in a recent article published in the Canadian Medical Association Journal.⁵

1.3 Mandate

COS has undertaken this project to reaffirm the underpinning methodology and to assign value to selected uninsured services provided by Canadian Ophthalmologists.

4

This italicized section is reproduced from the March 1, 2010 report by Health Intelligence to the Canadian Ophthalmological Society

5

McAlister CN, Ahmed IIK. *Noninsured services provided with insured cataract surgery in Canada: ensuring transparent and fair treatment for patients.* CMAJ, August 11, 2015; 187(11) 813-816

It is recognized that Canadian jurisdictions are not uniform in determining what is insured and what is uninsured. As well, there is no uniformity in the provision or costing of these services; In the past, the value of uninsured services has been noted to vary across and within jurisdictions.

The objective of undertaking the project is to assist both patients and physicians in understanding the costing and the need for charges.

There are four project deliverables:

- Preamble for an uninsured services schedule
- Schedule of Uninsured Services
- Supporting data files
- Working tables for the valuations and validations

1.4 Services for Valuation

Following is a list of uninsured services identified for valuation by the project governance:

| Category | N | n | Services |
|---|------------|-----------|--|
| 1 Refractive Procedures | 1.1 | 1 | Femtosecond laser for refractive cataract surgery (per eye) |
| | 1.2 | 2 | Cataract refractive suites, including Verion and Calysto |
| 2 Preoperative Testing | 2.1 | 3 | Potential Acuity Meter (PAM) |
| | 2.2 | 4 | Tear film osmolarity for aspheric, toric, and multifocal lenses, and dry eye |
| | 2.3 | 5 | Specular microscopy |
| | 2.4 | 6 | Wavefront aberrometry |
| | 2.5 | 7 | Laser refractive biometry measurements |
| | 2.6 | 8 | Corneal topography |
| | 2.7 | 9 | Pentacam |
| | 2.8 | 10 | Optical coherence tomography (OCT) testing |
| 3 Astigmatism Management Operative | 3.1 | 11 | Toric IOL (per eye) |
| | 3.2 | 12 | Corneal relaxing incision (per eye) |
| 4 Retinal Procedures | 4.1 | 13 | Wide field retinal imaging (Optos and OCT angiography) |
| | 4.2 | 14 | Avastin - intravitreal (per eye) |

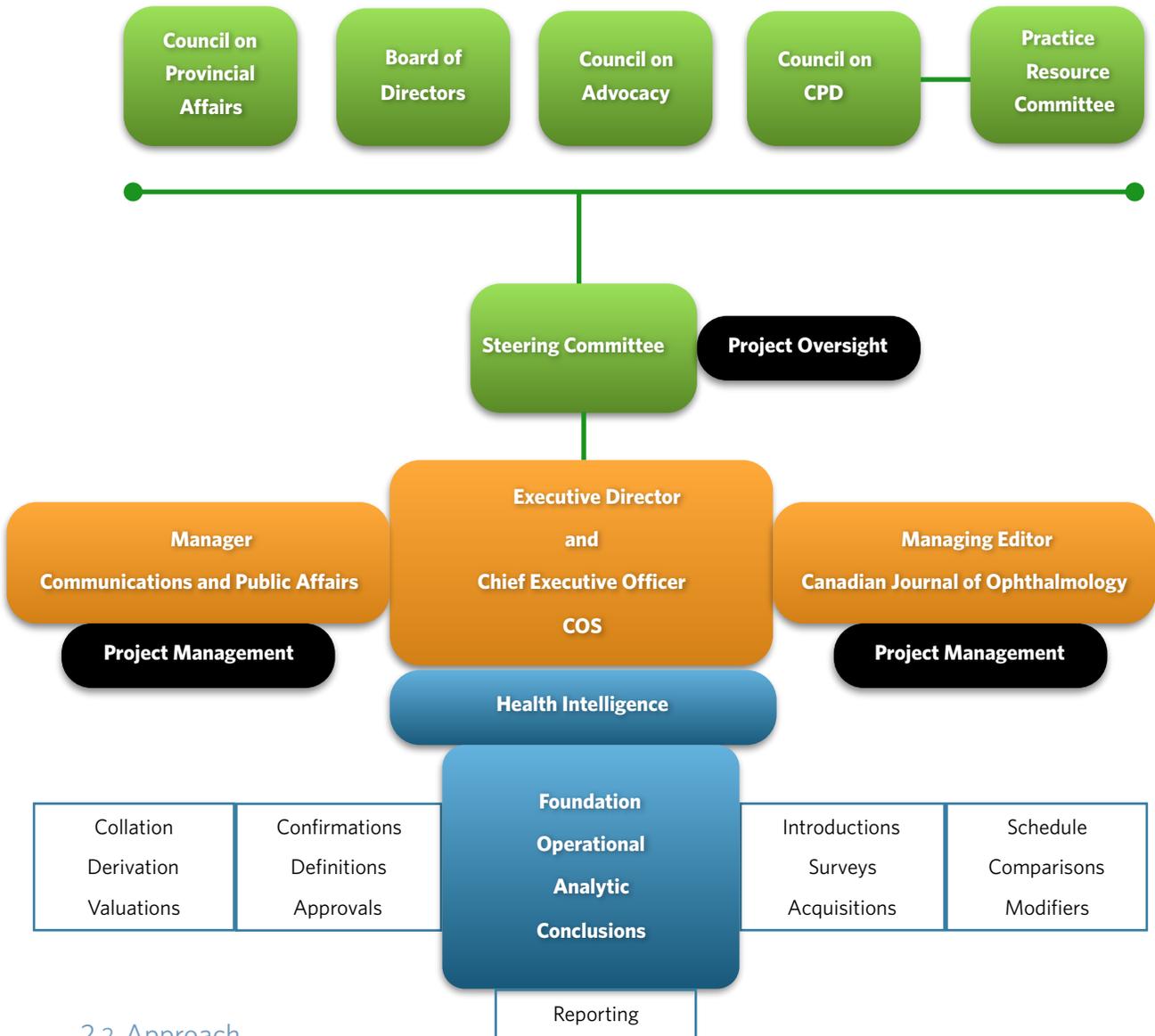
| | | | |
|---|------------|-----------|---|
| 5 Glaucoma Diagnostic Tests and Procedures | 5.1 | 15 | Heidelberg retinal tomography (HRT) |
| | 5.2 | 16 | GDx |
| | 5.3 | 17 | OCT for glaucoma suspects |
| 6 Tearing and Eyelid Procedures | 6.1 | 18 | Punctal plugs - dissolving (per eye) |
| | 6.2 | 19 | Punctal plugs - non-dissolving (per eye) |
| 7 Other Procedures | 7.1 | 20 | Corneal crosslinking (per eye) |
| | 7.2 | 21 | Intacs (per eye) |
| | 7.3 | 22 | Avastin - corneal (per eye) |
| 8 Examinations | 8.1 | 23 | Uninsured eye examinations |

2 Methodology

2.1 Introduction

The methodology mirrors that of the 2009 study, providing both consistency and comparator reliability. While there is no universal approach to the derivation of values for uninsured services, the methodology is considered valid for the provision of an objective assessment.

2.1.1 Project Governance and Schematic



2.2 Approach

The project hinges on the collection and assessment of both qualitative and quantitative data. This incorporates the opinions and experience of Canadian Ophthalmologists through confidential surveys, benchmark services, and jurisdictional reviews.

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 is derived through a benchmark analysis, in which well known and related services are also rated and aligned with the value in the jurisdictional payment schedules. This part of the study values the professional skills brought to the particular service by the Ophthalmologist.

The **acquisition cost** is the cost to the Ophthalmologist for the specific uninsured item. This part of the study places a value on the direct expense incurred by the Ophthalmologist.⁶

The **overhead factor** used in the study will reflect the best Canadian data and 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.

Additional comments provided in response to the open-ended questions in the Ophthalmologist survey were included as points of observation.

2.3 Valuation Formula

The valuation formula is, as follows:

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

where:

USV

is Uninsured Service Valuation

RR

is 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

is Relativity Modifier

= (consultation survey rating/value + cataract with lens insertion survey rating/value + complete examination (e.g., diabetes mellitus or glaucoma other than by referral) survey rating/value) / 3

6

As noted in the *Background* section 1.1 on page 2, industry costing was also reviewed as supplementary data and validation, to be considered where survey data required further understanding

AC

is Acquisition Cost (technology and materials)
 = trimmed mean of survey costs⁷

OA

is Overhead Adjustment
 = the mean of practice cost estimates using Ontario and British Columbia studies
 (please refer to explanatory notes in **Section 3.6**)

2.4 Data Sources

Following is a table that links constituent elements of the valuation formula to data sources:

| Element | Descriptors and Sources |
|--|---|
| <p>USV Uninsured Service Value</p> | <p>This is a value recommended to the Canadian Ophthalmological Association for each uninsured service. In the aggregate, the values constitute the Uninsured Services Schedule, which is linked further to a Preamble.</p> |
| <p>RR Resource Rating</p> | <p>The Resource Rating multiplies the median total service time for each uninsured service by the sum of the means of the professional inputs for each of Knowledge and Judgment (KJ), Technical Skill (TS), Risk and Stress (RS), and Communication Skills (CS). Each resource is defined within the survey and is ranked on a Likert scale from 1 to 7 by Ophthalmologists responding to the survey. The objective of this rating is to assess the resources required to provide each uninsured service from the perspective of those who provide the service through the application of accepted measures of physician work, namely time*intensity(KJ+TS +RS+CS) and to apply these using jurisdictional values.</p> |
| <p>RM Relativity Modifier</p> | <p>Using the same measures of physician work, a Relativity Modifier is derived using data inputs from Ophthalmologists for three commonly performed and understood benchmark clinical services. As a measure of relativity, this modifier anchors the uninsured services resource rating.</p> |
| <p>AC Acquisition Cost</p> | <p>Acquisition Cost is the trimmed mean of survey data, reflecting the costs of providing each uninsured service through estimates of the costs of technology and materials for each uninsured service (on a per service basis). The technology cost (where applicable) is [(cost of equipment + annual maintenance cost)/(life span estimated to be seven years)/(number of per eye services per year)]. Material cost is the cost per unit paid to a supplier directly associated with the uninsured service.</p> |

7

Op. cit. *Background* section 1.1 on page 2

| | |
|---|---|
| <p>OA Overhead Adjustment</p> | <p>The estimated time and overhead cost is that cost attributable to providing the uninsured service, including the cost of staff time, divided by the number of the particular services provided annually (but excluding professional time, which is evaluated elsewhere). Equivalent is a facility fee that is paid to cover (materials + time + overhead costs).</p> <p>The assigned data are a general overhead factor derived from earlier studies in British Columbia and Ontario and used across-the-board to incorporate practice costs (overhead). Further explanatory notes are provided in Section 3.6.</p> |
|---|---|

In addition to these tabulated data, qualitative and quantitative data were acquired by Health Intelligence to further inform the project, as follows:

- Determination of which services are variably insured; namely insured in some jurisdictions and uninsured in others
- Determination of the insured value of three benchmark services from each jurisdiction: consultation when patient is referred: cataract with lens insertion, and complete examination (e.g., a diabetic assessment or glaucoma assessment, when not a referred service)
- Approaches to costing services by other disciplines where the process of providing services is not dissimilar from that of an Ophthalmologist providing an uninsured service; namely, optometry, pharmacy, and dental services
- Assimilation of legacy data from the earlier COS study and secondary data that further informed that study
- An overview of practice costs for medical practice
- Geographic modifiers that are not used as part of the valuation formula, but can be of interest to Ophthalmologists in different geographic locations in Canada; these can be detailed relocation data used by governments and the corporate sector, or can be more straightforward using current month-over-month data and percentage changes in the consumer price index (all-items), by city

2.5 Data Limitations

The survey appears to have been received with interest by Ophthalmologists. In some cases, responses were more detailed than expected, which may assist those who wish to review the detailed responses (see **Appendix A.3**, Custom Report Restructured). Unfortunately, these responses sometimes were unusable in statistical analyses (e.g., where a respondent indicated that a certain percentage of patients receive the service without indicating the total number of patients). This section discusses data limitations and is followed by data management and decision rules, developed to deal with unexpected responses.

As is usually the case in an on-line survey, the **sample** of those who responded should not be considered random. On the other hand, those who responded are most likely to be those who perform the uninsured services selected for survey and analysis; however, in the case of some services, the **number** of respondents who performed the service was small and the data resulting from their responses should be treated with caution. The top one-half of services, by volume, have been analyzed and compared in greater detail in a separate section of the report.

The survey was structured using three sections: (1) practice characteristics and demographics; (2) uninsured service utilization and economic data; and (3) resource ratings. There were **two services for which no respondents provided utilization data** in section two (services number 5.2 and 5.6). Nonetheless, in section three, four physicians indicated that they performed the services and provided resource ratings. These ratings are reported, although recommended prices are not given due to the lack of data on service cost.

A number of respondents indicated that they performed at least some of the services in hospital. In these cases, the patient often would be charged a professional fee and the hospital would also administer a fee. In some cases, the hospital fee would be a percentage of the professional fee while, in others, the hospital made a separate charge to the patient for use of its facilities. **Charges levied by hospitals** would tend to be based on overall hospital costs for out-patient diagnostic or curative services and, if so, would not be an accurate indication of the resource costs of performing a specific uninsured service.

In calculating **total service cost**, {acquisition cost + practice cost} was used where information on both variables was provided. **Facility fees** were not included in the calculation. Estimates of **practice costs**⁸ per uninsured service were provided by respondents; the reporting was variable and unstable, and there was not a consistent actuarial method applied to develop these estimates. The survey practice cost data in this field were not considered valid due to a diversity of responses, including several responses that were limited to total equipment cost linked to acquisition cost. These data were analyzed further to derive a valid cost per service; it was evident that this value is sensitive to service volume and shared equipment. In the latter case, the response of any one individual overstated or misrepresented the actual cost per service. The impact on the final valuation would be significant and, as such, the default position was to apply the best available Canadian data, as in the original study. This approach provided greater validity and less inconsistency than the intended use of related survey data.

Acquisition cost was defined as the total cost of materials and equipment used, with equipment cost amortized over seven years and the annual cost divided by number of services performed. In many cases, respondents provided only the total cost of technical equipment. In those cases we made the calculation of annual cost and cost per service. This should be an

⁸ Practice costs, or overhead, are the costs of providing a medical service, other than physician work (as defined by time and intensity); these include but are not limited to rent, supplies, staff salaries, utilities and all other costs of conducting the business of administering a medical office

accurate estimate in cases of solo practice, but it may overestimate cost per service where Ophthalmologists practice in groups and share equipment.⁹

References to **trimmed data** in the analysis refer to cases where unusual values were deleted. Some of these unusual values may result from features of the software used by the survey provider to process responses (e.g., numbers that appear in date format in results downloaded from the survey site). Other instances involved deleting responses that were not specific enough to be used (e.g., the response, “hundreds”, which was given for the frequency variable in a few cases). A percentage or arbitrary cut-off was not applied to trim numerical responses.

Averages in section two were examined for possible bias due to unusually high estimates and were determined to be satisfactory, subject to modifications made through the decision rules listed below. In section three, all ratings were within the appropriate range (1 - 7) and there appeared to be no need to trim the data.

Time estimates contained a few unusually high or low estimates but most responses were clustered around the median. Accordingly, median times were used rather than mean times (and comparator graphics were provided as context).

2.6 Data Management and Decision Rules

A large data response in the survey and the data limitations, as identified, made necessary the development of decision rules to be used in dealing with unexpected responses and to protect the integrity of the data. The objective in applying these rules was to use all valid responses, wherever possible, and to avoid data skewing.

Following are the **eleven decision rules**:

1. If a range of numbers was given, the average value was used (e.g., ‘100-150’ = 125)
2. If comments such as “just started” were entered, the frequency field was left blank but charge and cost data were retained
3. In cases where respondent indicated that a facility paid the acquisition cost, or where the respondent didn’t know, acquisition cost was left blank
4. If “n/a” was entered, the variable value was changed to blank or “0” depending on the circumstances (e.g., for acquisition cost it would be blank; for facility fee where practice cost was entered it would be 0).
5. If “don't know,” “?,” or a similar phrase is entered, the field was left blank
6. If “<10” or a similar response was entered, the number given was used (e.g., 10 in this example)

⁹ Op. cit. *Background* section 1.1 on page 2

7. Acquisition cost was often entered as purchase price of technical equipment; in these cases, cost was calculated as “*cost/seven/services*” since equipment is depreciated over seven years
8. In the practice cost question, some respondents provided total practice cost (several thousand) or staff hourly salary; the field was changed to blank
9. Facility fee was sometimes entered as a percentage of the professional charge to patient; facility fee was calculated, in those cases, based on the percentage and charge fields
10. In some cases, respondents indicated that costs were covered by departmental funding or by research funds
11. In the facility fee column, there were many instances where respondents entered the hospital fee charged to patients, or indicated that the hospital charged the fee without providing an amount; in the former case, the fee entered was used in the analysis while, in the latter case, the field was left blank

Comment

Each uninsured service has two distinct elements that determine the recommended fee:

1. A professional fee, which is calculated from median time spent by the physician and resource ratings along the four dimensions discussed in Section Four.
2. The direct cost of materials and technology required for the service.

Direct cost of materials used is expected to be reasonably consistent across practice venues and can be estimated with an acceptable level of precision in surveys such as the one carried out for this study. Technology costs per service will vary as a result of the initial cost of the technology, number of years in which it will be used and frequency of use.

In this survey, we have assumed an amortization period of seven years. There will be exceptions, however, since technological progress and innovation often result in replacement of diagnostic or therapeutic technology within a shorter time frame. Cost per service in the survey was to be calculated as cost per year divided by number of services or patients treated. Cost per patient for individual survey respondents could vary depending on whether the respondent was in solo or group practice - in the latter case data should be based on total services performed by the entire practice where equipment is shared among group members.

The following schedule shows separate charges for professional fees and direct costs; both elements include the average overhead estimate of 0.4035. This breakdown can provide guidance in determining the most appropriate fee structure for individual practices. For example, where direct costs are determined by the cost and utilization of expensive technology it will be most appropriate for each practice to perform a cost analysis based on the expected useful lifetime of the technology and the number of patients to be treated and to use the results of that analysis to establish the direct cost component of service charges.

3 Data Acquisition and Applications

3.1 Response Profiles

The 2015 COS survey requested specific information, as follows:

- Characteristics of practice
- Whether or not responding physicians performed any or all of the 23 uninsured services, and, if so, annual frequency, amount charged to patients, and the cost of providing the service; costs were broken down into acquisition cost (material and technology), practice cost, and facility fee (if one was charged)
- Information on total time required for each service and evaluations of professional inputs
- Evaluations of benchmark comparator services

Ontario Ophthalmologists represented 44% of total respondents, followed by Quebec and British Columbia, each with 15%. All provinces were represented; no territorial data were submitted.¹⁰

In total, **413** Ophthalmologists responded to the survey. A number of respondents supplied information only about practice characteristics and their responses were considered incomplete. Information on some or all of the 26 uninsured services was provided by 278 respondents, and the subsequent data summaries and analyses are based on these responses.

Data Table 1 and **Data Figure 1** present these data for the **278** “complete” responses (one of whom self-identified as Yukon Territory and was included in the British Columbia data). This response rate is considerably greater than the 2010 study.

¹⁰ There is one resident Ophthalmologist in Northwest Territories and none in either Yukon Territory or Nunavut; territorial ophthalmological services are otherwise provided by visiting specialists, including two adult Ophthalmologists and one paediatric Ophthalmologist in Yukon territory

Data Table 1
Response counts and percentages by jurisdiction

| Province | CMA Count | Number Respondents | Provincial response % | % of survey responses |
|---------------------------|--------------|--------------------|-----------------------|-----------------------|
| Newfoundland and Labrador | 16 | 6 | 37.5 | 2 |
| Prince Edward Island | 6 | 5 | 83.3 | 2 |
| Nova Scotia | 44 | 14 | 31.8 | 5 |
| New Brunswick | 25 | 4 | 16.0 | 1 |
| Quebec | 347 | 41 | 11.8 | 15 |
| Ontario | 424 | 123 | 29.0 | 44 |
| Manitoba | 31 | 13 | 41.9 | 5 |
| Saskatchewan | 25 | 8 | 32.0 | 3 |
| Alberta | 106 | 22 | 20.8 | 8 |
| British Columbia | 196 | 42 | 21.4 | 15 |
| Territories | 1 | --- | --- | --- |
| Totals | 1,221 | 278 | 22.9% | 100% |

3.2 Demographics and Practice Characteristics

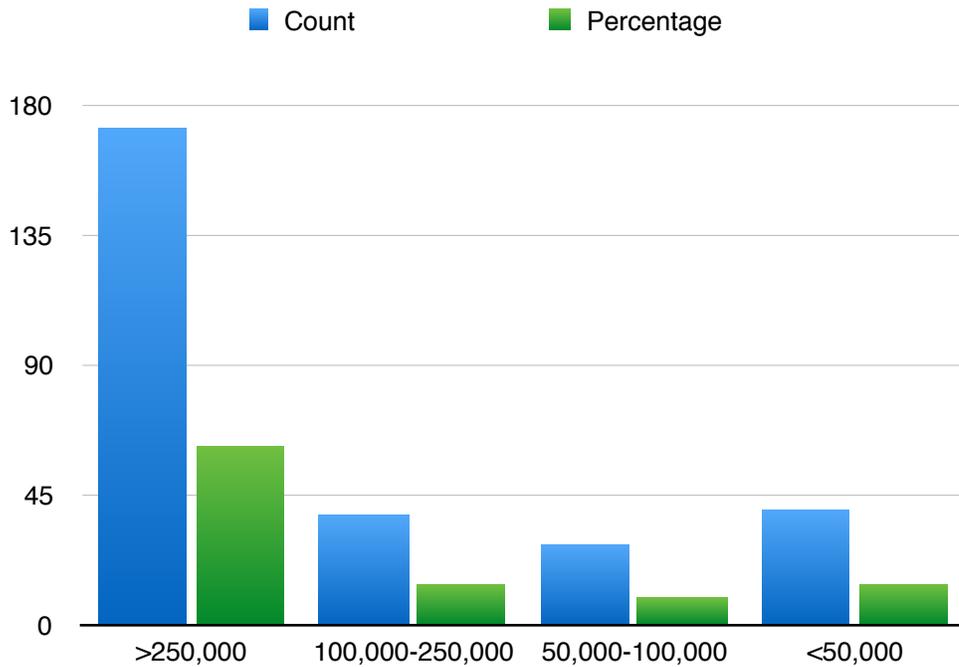
Sixty-two percent of respondents practice in urban areas with a population of 250,000 or greater.¹¹ Populations of 100,000-250,000 and less than 50,000 each accounted for 14%; the remaining respondents practice in an area with a population of 50,000-100,000. These data are demonstrated graphically in [Data Table 2](#) and [Data Figure 2](#).

Data Table 2
Respondents by practice area population

| Population of Practice Area | Count | Percentage |
|-----------------------------|------------|-------------|
| 250,000 and over | 172 | 62% |
| 100,000-250,000 | 38 | 14% |
| 50,000-100,000 | 28 | 10% |
| Less than 50,000 | 40 | 14% |
| Totals | 278 | 100% |

¹¹ In the 2009 survey (2010 report), the corresponding percentage was 70%

Data Figure 1
Respondents by practice area population



Do teaching and/or research as part of an academic appointment constitute 20% or greater of your professional activities?

| Response | Chart | Count | Percentage |
|---------------|-------|-------|------------|
| Yes | | 94 | 33% |
| No | | 184 | 67% |
| Totals | | 278 | 100% |

Thirty-three percent of respondents reported that at least 20% of their professional time was required by teaching and/or research responsibilities as part of an academic appointment.

Do you share practice costs (overhead) with one or more other Ophthalmologists?

| Response | Chart | Count | Percentage |
|---------------|-------|-------|------------|
| Yes | | 139 | 50% |
| No | | 139 | 50% |
| Totals | | 278 | 100% |

Fifty percent of respondents practised in groups where practice costs were shared among group members. In total, there were 645 physicians practising in these groups, with an average of five physicians in each group.

Do you own the facility where you provide uninsured services?

| Response | Chart | Count | Percentage |
|---------------|-------|-------|------------|
| Yes | | 67 | 24% |
| No | | 211 | 76% |
| Totals | | 278 | 100% |

Approximately three-quarters (76%) of survey respondents did not own the facility where they practised. In comments that accompanied the survey, a number said that they performed some or all of their services in hospital settings.

Are any of these uninsured services covered by an annual fee to the patient?

There were 49 responses to this question; no respondent charged an annual fee to patients.

3.3 Uninsured Services

3.3.1 Utilization Data

The number of respondents reporting each uninsured service and average annual number of services per respondent are shown in **Data Table 3**. Toric IOL, corneal topography and laser refractive biometry measurements were the most frequently reported services, with 28% to 38% of responding Ophthalmologists reporting these services. The average annual frequency of services was highest for Optical Coherence Tomography (OCT) testing (971 services), followed by laser refractive biometry measurements (521 services).

It is anticipated that data skewing would occur as a reflection of those services that are provided as insured services and not reported upon in this section.

Data Table 3
Frequency of providing the 26 uninsured services

| N | n | Services | Percentage of 278 Respondents | Average Annual Frequency |
|-----|---|--|-------------------------------|--------------------------|
| 1.1 | 1 | Femtosecond laser for refractive cataract surgery (per eye) | 14.0% | 324 |
| 1.2 | 2 | Cataract refractive suites, including Verion and Calysto | 6.1% | 286 |
| 2.1 | 3 | Potential Acuity Meter (PAM) | 9.4% | 139 |

| N | n | Services | Percentage of 278 Respondents | Average Annual Frequency |
|-------------|---|--|-------------------------------|--------------------------|
| 2.2 | 4 | Tear film osmolarity for aspheric, toric, and multifocal lenses, and dry eye | 5.8% | 121 |
| 2.3 | 5 | Specular microscopy | 5.4% | 165 |
| 2.4 | 6 | Wavefront aberrometry | 10.4% | 407 |
| 2.5 | 7 | Laser refractive biometry measurements (per patient) | 27.7% | 521 |
| 2.6 | 8 | Corneal topography | 29.5% | 372 |
| 2.7 | 9 | Pentacam | 7.6% | 258 |
| 2.8 | 10 | Optical coherence tomography (OCT) testing | 20.1% | 971 |
| 3.1 | 11 | Toric IOL (per eye) | 38.5% | 119 |
| 3.2 | 12 | Corneal relaxing incision (per eye) | 7.2% | 129 |
| 4.1 | 13 | Wide field retinal imaging (Optos and OCT angiography) | 3.2% | 281 |
| 4.2 | 14 | Avastin - intravitreal (per eye) | 15.8% | 502 |
| 5.1 | 15 | Heidelberg retinal tomography (HRT) | 12.9% | 445 |
| 5.2 | 16 | GDx (Note) | --- | --- |
| 5.3 | 17 | OCT for glaucoma suspects | 9.4% | 341 |
| 6.1 | 21 | Punctal plugs - dissolving (per eye) | 14.7% | 44 |
| 6.2 | 22 | Punctal plugs - non-dissolving (per eye) | 18.0% | 32 |
| 7.1 | 23 | Corneal crosslinking (per eye) | 2.9% | 43 |
| 7.2 | 24 | Intacs (per eye) | 0.7% | 10 |
| 7.3 | 25 | Avastin - corneal (per eye) | 2.2% | 313 |
| 8.1 | 26 | Uninsured eye examinations | 19.4% | 93 |
| Note | There were 213 responses on GDx (none) provided the service) | | | |

3.3.2 Selected Economic Data

All services underwent subsequent valuation, using the formulaic methodology. To provide context, the top one-half of services (as measured by the number of respondents who reported as providing the service) were selected for more detailed and graphic comparative analysis.

Data Table 4 summarizes the underpinning data for the 13 services.

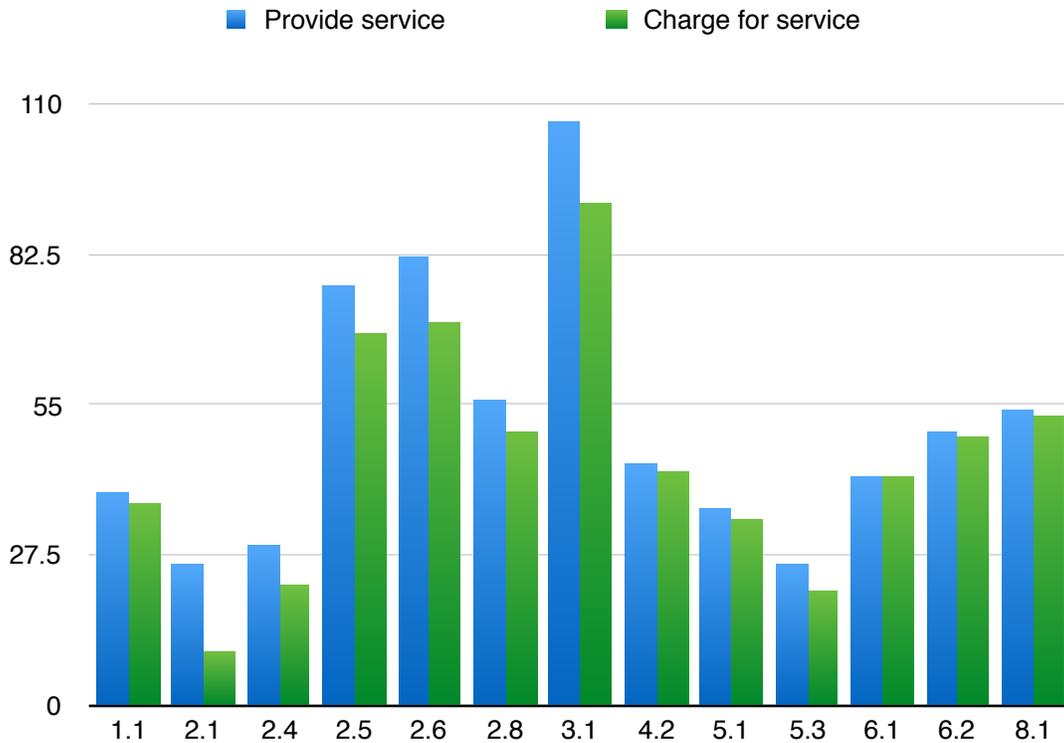
At least 9.4% of respondents reported providing these services; the median reporting frequency for the 13 services was **15.8%**. Most physicians who reported these services also reported charging patients for the service, as demonstrated in **Data Figure 2**. The exception was Potential Acuity Meter (PAM), where only 38% who reported as providing the service also reported charging patients for it. For the selected 13 services, **Data Figure 3** demonstrates the average charge to the patient and the average total cost of providing the service.

Data Table 4**Utilization and economic survey data for the 13 most frequently reported uninsured services**

| N | n physicians | % physicians | Annual frequency | n who charge | Mean charge | Mean acquisition cost | Mean practice cost** | Mean total cost | Facility fee cost |
|------------|--|--------------|------------------|--------------|-------------|-----------------------|----------------------|-----------------|-------------------|
| 1.1 | Femtosecond laser for refractive cataract surgery (per eye) | | | | | | | | |
| | 39 | 14.0% | 324 | 37 | \$1,220 | \$586 | \$481 | \$1,067 | \$858 |
| 2.1 | Potential Acuity Meter (PAM) | | | | | | | | |
| | 26 | 9.4% | 139 | 10 | \$94 | \$146 | \$41 | \$187 | \$28 |
| 2.4 | Wavefront aberrometry | | | | | | | | |
| | 29 | 10.4% | 407 | 22 | \$132 | \$45 | \$184 | \$229 | \$69 |
| 2.5 | Laser refractive biometry measurements | | | | | | | | |
| | 77 | 27.7% | 521 | 68 | \$201 | \$61 | \$75 | \$135 | \$141 |
| 2.6 | Corneal topography | | | | | | | | |
| | 82 | 29.5% | 372 | 70 | \$113 | \$57 | \$125 | \$182 | \$69 |
| 2.8 | Optical coherence tomography (OCT) testing | | | | | | | | |
| | 56 | 20.1% | 971 | 50 | \$81 | \$72 | \$30 | \$101 | \$47 |
| 3.1 | Toric IOL (per eye) | | | | | | | | |
| | 107 | 38.5% | 119 | 92 | \$565 | \$482 | \$151 | \$633 | \$318 |
| 4.2 | Avastin - intravitreal (per eye) | | | | | | | | |
| | 44 | 15.8% | 502 | 43 | \$100 | \$46 | \$41 | \$87 | \$392 |
| 5.1 | Heidelberg retinal tomography (HRT) | | | | | | | | |
| | 36 | 12.9% | 445 | 34 | \$100 | \$56 | \$33 | \$89 | \$62 |
| 5.3 | OCT for glaucoma suspects | | | | | | | | |
| | 26 | 9.4% | 341 | 21 | \$74 | \$46 | \$24 | \$70 | \$66 |
| 6.1 | Punctal plugs - dissolving (per eye) | | | | | | | | |
| | 42 | 15.1% | 44 | 42 | \$83 | \$39 | \$29 | \$68 | \$92 |

| N | n physicians | % physicians | Annual frequency | n who charge | Mean charge | Mean acquisition cost | Mean practice cost** | Mean total cost | Facility fee cost |
|---|--------------|--------------|------------------|--------------|-------------|-----------------------|----------------------|-----------------|-------------------|
| 6.2 Punctal plugs - non-dissolving (per eye) | | | | | | | | | |
| | 50 | 18.0% | 32 | 49 | \$125 | \$69 | \$47 | \$116 | \$74 |
| 8.1 Uninsured eye examinations | | | | | | | | | |
| | 54 | 19.4% | 93 | 53 | \$127 | \$30 | \$30 | \$60 | \$51 |
| ** Practice costs are further defined on pages 16 and 17, and in Appendix A.5 | | | | | | | | | |

Data Figure 2
Number of Ophthalmologists who provided the 13 most frequently reported uninsured services



Or, stated as those who charge as a percentage of those who provide each service:

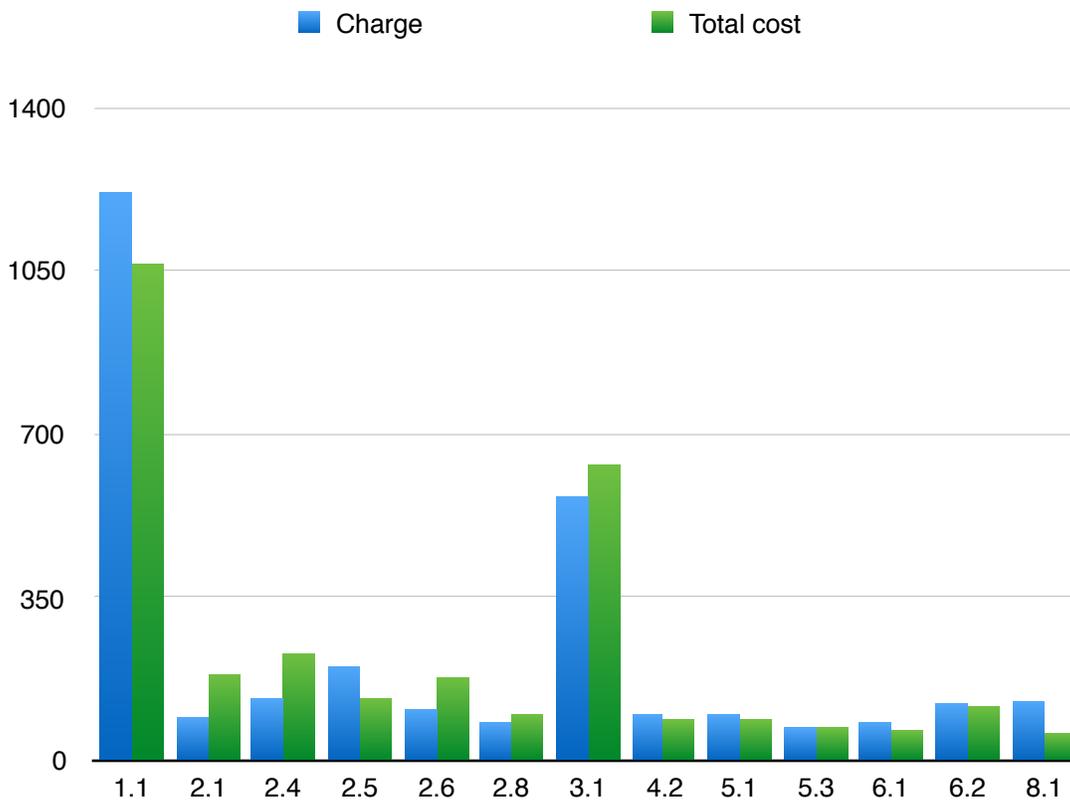
| | | |
|------------|---|-----|
| 1.1 | Femtosecond laser for refractive cataract surgery (per eye) | 95% |
| 2.1 | Potential Acuity Meter (PAM) | 38% |
| 2.4 | Wavefront aberrometry | 76% |
| 2.5 | Laser refractive biometry measurements | 88% |
| 2.6 | Corneal topography | 85% |

| | | |
|------------|---|------|
| 2.8 | Optical coherence tomography (OCT) testing | 89% |
| 3.1 | Toric IOL (per eye) | 86% |
| 4.2 | Avastin - intravitreal (per eye) | 96% |
| 5.1 | Heidelberg retinal tomography (HRT) | 94% |
| 5.3 | OCT for glaucoma suspects | 81% |
| 6.1 | Punctal plugs - dissolving (per eye) | 100% |
| 6.2 | Punctal plugs - non-dissolving (per eye) | 98% |
| 8.1 | Uninsured eye examinations | 99% |

Data Figure 3

Mean charge and total cost per patient of the 13 most frequently reported uninsured services

Notable is the relative comparability between charge data and cost data; in fact, the cost exceeds the charge for five of the 13 services (2.1, 2.4, 2.6, 2.8, and 3.1).

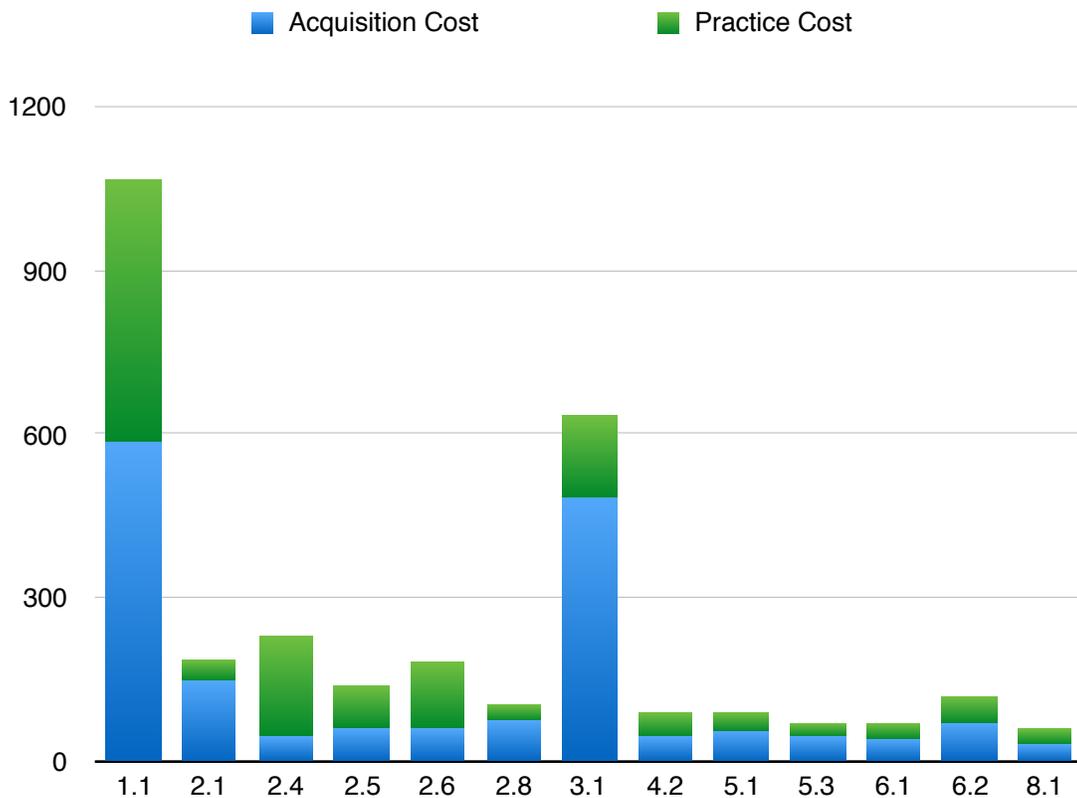


Respondents were asked to provide cost data as two components: (1) acquisition cost, per service, of materials and technical equipment required to provide the service; and, (2) practice costs, consisting of staff salaries and other items of practice overhead. The data should be interpreted as estimates of the professionals who provide the service, since there was not a consistent actuarial method applied to the estimate of practice costs. As referenced, we have

used overhead estimates calculated by financial consultants to medical associations and commissions in calculating service valuations.

Data Figure 4 demonstrates the acquisition and practice cost components of the total service cost each of the 13 services.

Data Figure 4
Components of total service cost¹²



3.3.3 Professional Resource Ratings

Data Table 5 is a summary of the survey data that rated uninsured services for time and for professional resource ratings (using a Likert Scale of 1-7 for each of knowledge and judgment, technical skills, risk and stress, and communication skills). Parallel data for the benchmark services are included in the next section (**Data Table 6**).

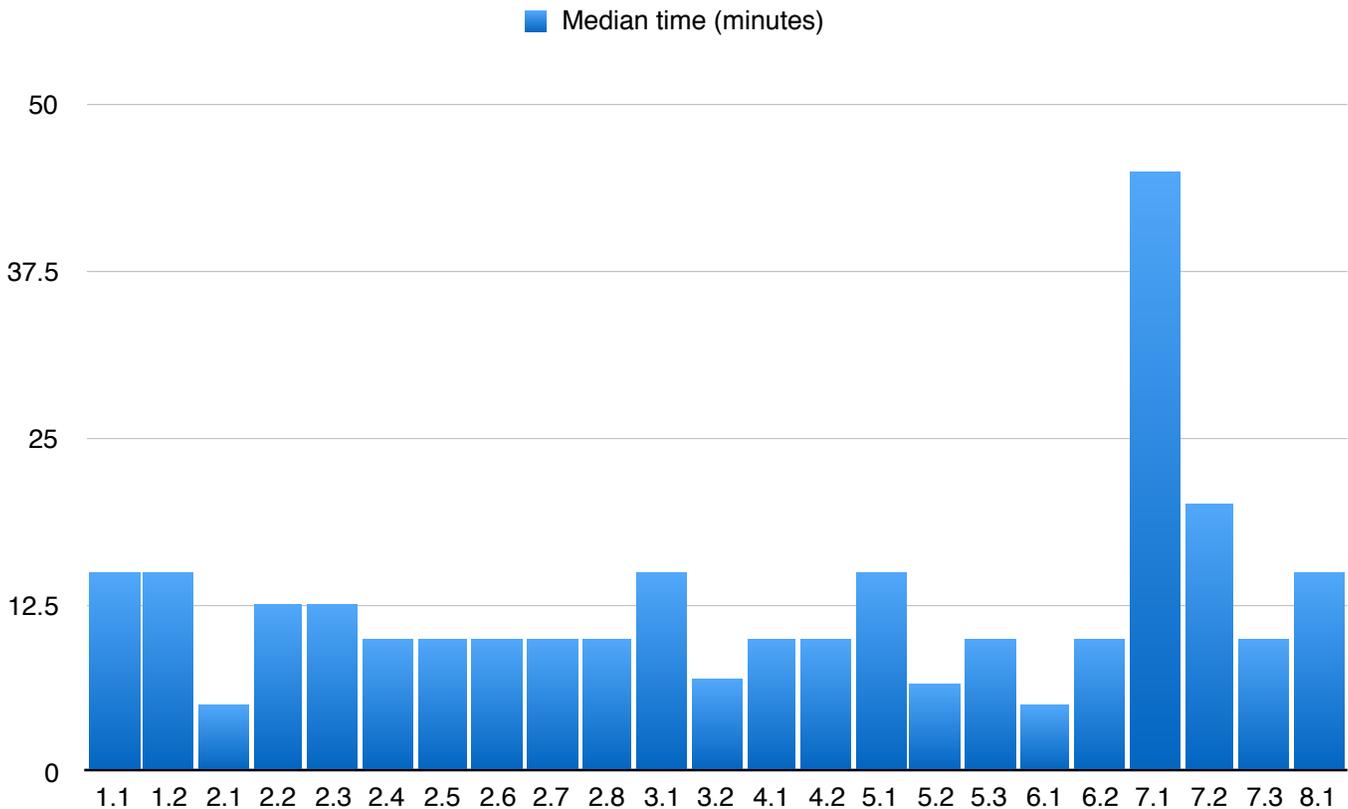
¹² Op.cit. Op. cit. *Background* section 1.1 on page 2

Data Table 5
Professional resource ratings for uninsured ophthalmological services

| Professional Resource Ratings for Uninsured Ophthalmological Services | | | | | | |
|---|--|---------------------|------------------------------------|-----|-----|-----|
| Service | Median Time (minutes) | Mean Time (minutes) | Mean Professional Resource Ratings | | | |
| | | | KJ | TS | RS | CS |
| 1.1 | Femtosecond laser for refractive cataract surgery (per eye) | | | | | |
| | 15 | 22 | 5.6 | 5.5 | 5.6 | 5.4 |
| 1.2 | Cataract refractive suites, including Verion and Calysto | | | | | |
| | 15 | 15 | 5.5 | 5.6 | 5.3 | 5.4 |
| 2.1 | Potential Acuity Meter (PAM) | | | | | |
| | 5 | 7 | 3.4 | 3.4 | 2.5 | 4.0 |
| 2.2 | Tear film osmolarity for aspheric, toric, and multifocal lenses, and dry eye | | | | | |
| | 12.5 | 13 | 4.1 | 3.8 | 3.2 | 4.3 |
| 2.3 | Specular microscopy | | | | | |
| | 12.5 | 14 | 4.4 | 3.5 | 2.8 | 3.8 |
| 2.4 | Wavefront aberrometry | | | | | |
| | 10 | 10 | 4.9 | 3.7 | 3.2 | 4.1 |
| 2.5 | Laser refractive biometry measurements | | | | | |
| | 10 | 13 | 4.9 | 4.3 | 3.5 | 4.5 |
| 2.6 | Corneal topography | | | | | |
| | 10 | 11 | 5.1 | 4.0 | 3.6 | 4.5 |
| 2.7 | Pentacam | | | | | |
| | 10 | 11 | 5.2 | 4.3 | 3.3 | 3.5 |
| 2.8 | Optical coherence tomography (OCT) testing | | | | | |
| | 10 | 10 | 5.2 | 4.1 | 3.5 | 4.6 |
| 3.1 | Toric IOL (per eye) | | | | | |
| | 15 | 19 | 6.1 | 6.0 | 5.6 | 5.6 |
| 3.2 | Corneal relaxing incision (per eye) | | | | | |
| | 7 | 10 | 5.8 | 5.7 | 5.2 | 4.9 |

| Professional Resource Ratings for Uninsured Ophthalmological Services | | | | | | |
|---|--|---------------------|------------------------------------|-----|-----|-----|
| Service | Median Time (minutes) | Mean Time (minutes) | Mean Professional Resource Ratings | | | |
| | | | KJ | TS | RS | CS |
| 4.1 | Wide field retinal imaging (Optos and OCT angiography) | | | | | |
| | 10 | 13 | 5.2 | 3.9 | 3.2 | 5.5 |
| 4.2 | Avastin - intravitreal (per eye) | | | | | |
| | 10 | 10 | 5.7 | 4.9 | 5.0 | 5.3 |
| 5.1 | Heidelberg retinal tomography (HRT) | | | | | |
| | 15 | 13 | 5.0 | 4.1 | 3.5 | 4.9 |
| 5.2 | GDx | | | | | |
| | 6.5 | 10 | 3.8 | 3.3 | 3.8 | 4.3 |
| 5.3 | OCT for glaucoma suspects | | | | | |
| | 10 | 10 | 5.1 | 3.6 | 3.5 | 4.6 |
| 6.1 | Punctal plugs - dissolving (per eye) | | | | | |
| | 5 | 9 | 4.0 | 4.2 | 3.1 | 4.5 |
| 6.2 | Punctal plugs - non-dissolving (per eye) | | | | | |
| | 10 | 10 | 4.1 | 4.2 | 3.0 | 4.2 |
| 7.1 | Corneal crosslinking (per eye) | | | | | |
| | 45 | 51 | 5.7 | 4.1 | 4.6 | 5.2 |
| 7.2 | Intacs (per eye) | | | | | |
| | 20 | 30 | 6.0 | 5.8 | 5.0 | 6.0 |
| 7.3 | Avastin - corneal (per eye) | | | | | |
| | 10 | 14 | 5.1 | 4.0 | 4.0 | 5.5 |
| 8.1 | Uninsured eye examinations | | | | | |
| | 15 | 18 | 5.3 | 4.5 | 4.0 | 5.3 |
| Legend | | | | | | |
| KJ | Knowledge and judgment | | | | | |
| TS | Technical skills | | | | | |
| RS | Risk and stress | | | | | |
| CS | Communication skills | | | | | |

Data Figure 5
Median time evaluations for uninsured ophthalmological services



3.4 Benchmark Services and Relativity Modifier

The benchmark services included a procedure and two office examinations; the application of benchmark data in the valuation formula was to determine a relativity modifier (RM) that was generated using schedule data from all jurisdictions, based on services that are easily identified by survey respondents.

A benchmark data table is provided as **Appendix A.4.1**.

The RM was based on survey data, as described in the methodology; for each service, the data were used to derive the median time (minutes) and the mean value for each of the identified professional resource ratings (each resource having been defined, and using a Likert scale of 1-7). The mean resource ratings were multiplied by median time (minutes), with the product for each service divided by the median pan-Canadian schedule value. The mean of the three rating values is the RM used in the formulaic determinations for the uninsured services.

Data Table 6
Professional resource ratings for insured benchmark services

| Professional Resource Ratings for Insured Benchmark Services | | | | | | |
|--|------------------------|---------------------|------------------------------------|-----|-----|-----|
| Service | Median Time (minutes) | Mean Time (minutes) | Mean Professional Resource Ratings | | | |
| | | | KJ | TS | RS | CS |
| 1 Cataract with lens insertion | 20 | 28 | 5.9 | 6.2 | 5.8 | 5.3 |
| 2 Office consultation | 15 | 19 | 6.0 | 4.5 | 3.9 | 5.9 |
| 3 Office complete examination | 15 | 18 | 5.8 | 4.6 | 3.9 | 5.7 |
| Legend | | | | | | |
| KJ | Knowledge and judgment | | | | | |
| TS | Technical skills | | | | | |
| RS | Risk and stress | | | | | |
| CS | Communication skills | | | | | |

Data Table 7
Derivation of relativity modifier

| Derivation of Relativity Modifier | | | | |
|--|---|------------------------|-----------------------|------------------------|
| Service | Sum of Mean Professional Resource Ratings | Time*Sum (median time) | Median Schedule Value | Rating: Time*Sum/Value |
| 1 Cataract with lens insertion | 23.2 | 464.90 | 482.36 | 0.96 |
| 2 Office consultation | 20.3 | 304.50 | 93.90 | 3.24 |
| 3 Office complete examination | 20.1 | 301.20 | 60.00 | 5.02 |
| Mean Value Rating (Relativity Modifier) | | | | 3.08 |

3.5 Variably Insured Services

Variably insured services across jurisdictions, based on those ophthalmological services being evaluated as uninsured services, are summarized in a tabular form as **Appendix A.3.2**; this provides a reference point for jurisdictional approaches to insured ophthalmological services.

3.6 Overhead and Practice Costs¹³

The financial impact of practice costs can be very significant, particularly as incurred by most fee-for-service physicians. The impact is less acute in many non-fee-for-service arrangements. Complicating the non-fee-for-service challenges is the lack of homogeneity across different models and jurisdictions.

The data acquired through survey in the current study included a targeted effort to assign practice costs to each individual service rather than application of a general overhead adjustment. The data in this field were not considered valid due to a diversity of responses, including several responses that were limited to total equipment cost linked to acquisition cost. These data were analyzed further to derive a valid cost per service; it was evident that this value is sensitive to service volume and shared equipment, and that the response of any one individual overstated or misrepresented the actual cost per service. The impact on the final valuation would be significant and, as such, the default position was to apply the best available Canadian data, as in the original study. This approach provided greater validity and less inconsistency than the intended use of survey data.

The results for Ophthalmology are summarized, as follows:

- Alberta (2001)

0.507

- Ontario (2002)

0.381

- British Columbia (2007)

0.426

| | |
|---------------|-------|
| Mean | 0.438 |
| Median | 0.426 |

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 (**0.4035**).

3.7 Geographic Modifiers

Although not incorporated in this study, geographic variation can be addressed using relocater or cost-of-living methodologies, available through government and the corporate sector, to further balance compensation among jurisdictions and cities. The implication of applying such a methodology is that an agreed upon base value can be derived.

The use of tools of geographic variation is encouraged, if deemed applicable as further context. It is important to consider the large number of potential modifiers. Following is one example of measuring geographic variation:

¹³ For a more detailed review of an approach to practice costs, please refer to **Appendix A.5**

Data Table 8
Consumer Price Index (all items) by City (2002 = 100)

| Consumer Price Index (all items) by City (2002 = 100) | | | | | |
|---|---|-------|-------|-------|-------|
| City | 2010 | 2011 | 2012 | 2013 | 2014 |
| St. John's (NL) | 117.4 | 121.3 | 123.8 | 125.8 | 128.2 |
| Charlottetown and Summerside (PE) | 119.2 | 122.4 | 124.7 | 127.2 | 129.3 |
| Halifax (NS) | 117.6 | 121.7 | 123.8 | 125.2 | 127.5 |
| Saint John (NB) | 116.3 | 120.2 | 122.1 | 122.9 | 124.7 |
| Québec (QC) | 114.8 | 118.2 | 120.8 | 121.9 | 123.5 |
| Montréal (QC) | 114.8 | 118.0 | 120.4 | 121.4 | 123.2 |
| Ottawa-Gatineau (ON part) | 116.6 | 120.1 | 121.7 | 122.9 | 125.3 |
| Toronto (ON) | 116.5 | 120.0 | 121.8 | 123.3 | 126.4 |
| Thunder Bay (ON) | 112.8 | 116.3 | 117.4 | 118.4 | 121.0 |
| Winnipeg (MB) | 114.8 | 118.1 | 119.9 | 122.6 | 124.9 |
| Regina (SK) | 118.9 | 122.4 | 124.6 | 126.7 | 129.7 |
| Saskatoon (SK) | 119.6 | 122.6 | 124.4 | 125.7 | 128.6 |
| Edmonton (AB) | 122.9 | 126.0 | 127.4 | 129.0 | 131.8 |
| Calgary (AB) | 122.7 | 125.4 | 126.7 | 128.8 | 132.7 |
| Vancouver (BC) | 114.9 | 117.5 | 119.0 | 119.2 | 120.5 |
| Victoria (BC) | 113.1 | 115.5 | 116.7 | 116.3 | 117.3 |
| Whitehorse (YT) | 114.7 | 118.1 | 120.8 | 122.8 | 124.4 |
| Yellowknife (NT) | 117.9 | 121.6 | 124.3 | 126.2 | 128.4 |
| Note | Annual average indices are obtained by averaging the indices for the 12 months of the calendar year. Source: Statistics Canada, CANSIM, table 326-0021, last modified 2015-01-23 | | | | |

3.8 Secondary Validation Framework

Little has changed in the secondary validation framework.

3.8.1 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.

A current, and not atypical, example of an overlapping service and cost is an **\$80.00 fee charged for OCT performed at an Optometrist office.**

3.8.2 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.**

3.8.3 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.

4 Valuations

4.1 Derivations

Derivations of the values applied the study elements by populating the previously stated formula for each uninsured service:

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

where:

USV

is Uninsured Service Valuation

RR

is 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

is Relativity Modifier

= (consultation survey rating/value + cataract with lens insertion survey rating/value + complete examination (e.g., diabetes mellitus or glaucoma other than by referral) survey rating/value) / 3

AC

is Acquisition Cost (technology and materials)

= trimmed mean of survey costs

OA

is Overhead Adjustment

= the mean of practice cost estimates using Ontario and British Columbia studies (please refer to explanatory notes in **Section 3.6**)

4.2 Values

Data Table 9
Valuation elements for uninsured ophthalmological services

| Evaluation Elements for Uninsured Ophthalmological Services | | | | | | | | | | |
|---|--|--|-----------|---------------------|-------------|----------|------------|--------------|-------------------------|-------------------|
| |  or  | Sum | Time *Sum | Relativity Modifier | Direct Cost | Overhead | Value | Survey Price | Revised Direct Cost (1) | Revised Value (1) |
| 1.1 |  | Femtosecond laser for refractive cataract surgery (per eye) | | | | | | | | |
| | | 22.2 | 332.3 | 3.07 | 585.9 | 1.4035 | 974 | 1,220 | 1,013 | 1,165 |
| 1.2 |  | Cataract refractive suites, including Verion and Calysto | | | | | | | | |
| | | 21.7 | 325.8 | 3.07 | 336.3 | 1.4035 | 621 | 1,315 | | |
| 2.1 |  | Potential Acuity Meter (PAM) | | | | | | | | |
| | | 13.2 | 66.2 | 3.07 | 145.9 | 1.4035 | 235 | 94 | 7 | 37 |
| 2.2 |  | Tear film osmolarity for aspheric, toric, and multifocal lenses, and dry eye | | | | | | | | |
| | | 15.3 | 191.7 | 3.07 | 23.7 | 1.4035 | 121 | 81 | | |
| 2.3 |  | Specular microscopy | | | | | | | | |
| | | 14.4 | 180.5 | 3.07 | 51.4 | 1.4035 | 154 | 86 | | |
| 2.4 |  | Wavefront aberrometry | | | | | | | | |
| | | 15.9 | 159.2 | 3.07 | 45.0 | 1.4035 | 136 | 132 | | |
| 2.5 |  | Laser refractive biometry measurements | | | | | | | | |
| | | 17.2 | 171.6 | 3.07 | 60.6 | 1.4035 | 163 | 201 | | |
| 2.6 |  | Corneal topography | | | | | | | | |
| | | 17.2 | 172.1 | 3.07 | 56.6 | 1.4035 | 158 | 113 | | |
| 2.7 |  | Pentacam | | | | | | | | |
| | | 16.2 | 162.0 | 3.07 | 43.8 | 1.4035 | 135 | 112 | | |
| 2.8 |  | Optical coherence tomography (OCT) testing | | | | | | | | |
| | | 17.4 | 173.8 | 3.07 | 71.5 | 1.4035 | 180 | 81 | 49 | 128 |
| 3.1 |  | Toric IOL (per eye) | | | | | | | | |
| | | 23.3 | 350.1 | 3.07 | 482.2 | 1.4035 | 837 | 565 | 665 | 825 |
| 3.1.a |  | Multifocal IOL (per eye) | | | | | | | | |
| | | | | | | | | | 1,066 | 1,226 |

| Evaluation Elements for Uninsured Ophthalmological Services | | | | | | | | | |
|---|---|---|-------|------|-------------|--------|--------------|-------|--------------|
| 3.1.b |  | Multifocal toric IOL (per eye) | | | | | | | |
| | | | | | | | | 1,409 | 1,569 |
| 3.2 |  | Corneal relaxing incision (per eye) | | | | | | | |
| | | 21.6 | 151.1 | 3.07 | 103.4 | 1.4035 | 214 | 363 | |
| 4.1 |  | Wide field retinal imaging (Optos and OCT angiography) | | | | | | | |
| | | 17.8 | 177.5 | 3.07 | 86.7 | 1.4035 | 203 | 107 | 169 |
| 4.2 |  | Avastin - intravitreal (per eye) | | | | | | | |
| | | 20.9 | 208.8 | 3.07 | 45.7 | 1.4035 | 159 | 100 | |
| 5.1 |  | Heidelberg retinal tomography (HRT) | | | | | | | |
| | | 17.5 | 261.8 | 3.07 | 56.0 | 1.4035 | 198 | 100 | 35 |
| 5.2 |  | GDx | | | | | | | |
| | | 15.0 | 97.5 | 3.07 | --- | 1.4035 | --- | --- | |
| 5.3 |  | OCT for glaucoma suspects | | | | | | | |
| | | 16.8 | 167.5 | 3.07 | 45.8 | 1.4035 | 141 | 74 | |
| 6.1 |  | Punctal plugs - dissolving (per eye) | | | | | | | |
| | | 15.7 | 78.5 | 3.07 | 38.7 | 1.4035 | 90 | 83 | |
| 6.2 |  | Punctal plugs - non-dissolving (per eye) | | | | | | | |
| | | 15.5 | 155.2 | 3.07 | 68.7 | 1.4035 | 167 | 125 | |
| 7.1 |  | Corneal crosslinking (per eye) | | | | | | | |
| | | 19.6 | 882.0 | 3.07 | 725.0 | 1.4035 | 1,420 | 1,407 | |
| 7.2 |  | Intacs (per eye) | | | | | | | |
| | | 22.8 | 455.0 | 3.07 | Note | | | | |
| 7.3 |  | Avastin - corneal (per eye) | | | | | | | |
| | | 18.6 | 186.3 | 3.07 | 25.0 | 1.4035 | 120 | 144 | |
| 8.1 |  | Uninsured eye examinations | | | | | | | |
| | | 19.0 | 285.6 | 3.07 | 29.9 | 1.4035 | 172 | 127 | |
| Note | | Two respondents on Intacs (per eye) - for costs, one was unknown and one was covered by study protocol - valuation and survey price are not valid or meaningful | | | | | | | |

| Evaluation Elements for Uninsured Ophthalmological Services | | |
|---|--|---|
| 1 |  or  | In addition to an expanded list of uninsured services, the methodology now includes, where available, supplementary data from industry on costing data. |
| Legend | | |
| Sum | is | Sum of means of the four professional resource ratings |
| Time*Sum | is | Median times of resource ratings*sum (as defined) |
| Relativity Modifier | is | Calculated relativity formula derived from the professional resource ratings for benchmark services |
| Direct Cost | is | Mean acquisition cost of the uninsured service element(s) |
| Overhead | is | Overhead adjustment factor using Canadian study means for Ophthalmology |
| Value | is | Calculated valuation of the uninsured ophthalmological service |
| Survey Price | is | Mean charge to patients for that service by those who provide it |

Or, seen in a compressed version, using the same legend, and incorporating the computed professional fee, mean direct cost, primary total, revised direct cost where confirmed and applicable, and a revised total:

Data Table 10
Compressed Version of Data Table 9

| Evaluation Elements for Uninsured Ophthalmological Services | | | | | | |
|---|---|--|------------------|------------|-------------------------|-------------------|
| |  | Professional Fee | Mean Direct Cost | Total | Revised Direct Cost (1) | Revised Value (1) |
| 1.1 |  | Femtosecond laser for refractive cataract surgery (per eye) | | | | |
| | | 152 | 822 | 974 | 1,013 | 1,165 |
| 1.2 |  | Cataract refractive suites, including Verion and Calysto | | | | |
| | | 149 | 472 | 621 | | |
| 2.1 |  | Potential Acuity Meter (PAM) | | | | |
| | | 30 | 205 | 235 | 7 | 37 |
| 2.2 |  | Tear film osmolarity for aspheric, toric, and multifocal lenses, and dry eye | | | | |
| | | 88 | 33 | 121 | | |
| 2.3 |  | Specular microscopy | | | | |
| | | 83 | 72 | 155 | | |
| 2.4 |  | Wavefront aberrometry | | | | |
| | | 73 | 63 | 136 | | |
| 2.5 |  | Laser refractive biometry measurements | | | | |
| | | 78 | 85 | 163 | | |
| 2.6 |  | Corneal topography | | | | |
| | | 79 | 80 | 158 | | |
| 2.7 |  | Pentacam | | | | |
| | | 74 | 61 | 135 | | |
| 2.8 |  | Optical coherence tomography (OCT) testing | | | | |
| | | 79 | 100 | 180 | 49 | 128 |
| 3.1 |  | Toric IOL (per eye) | | | | |
| | | 160 | 677 | 837 | 665 | 825 |
| 3.1.a |  | Multifocal IOL (per eye) | | | | |
| | | 160 | | | 1,066 | 1,226 |

| Evaluation Elements for Uninsured Ophthalmological Services | | | | | |
|---|---|--|-------------|--------------|-------|
| 3.1.b |  | Multifocal toric IOL (per eye) | | | |
| | | 160 | | | 1,409 |
| 3.2 |  | Corneal relaxing incision (per eye) | | | |
| | | 69 | 145 | 214 | |
| 4.1 |  | Wide field retinal imaging (Optos and OCT angiography) | | | |
| | | 81 | 122 | 203 | 169 |
| 4.2 |  | Avastin - intravitreal (per eye) | | | |
| | | 95 | 64 | 159 | |
| 5.1 |  | Heidelberg retinal tomography (HRT) | | | |
| | | 120 | 79 | 198 | 35 |
| 5.2 |  | GDx | | | |
| | | 45 | | | |
| 5.3 |  | OCT for glaucoma suspects | | | |
| | | 77 | 64 | 141 | |
| 6.1 |  | Punctal plugs - dissolving (per eye) | | | |
| | | 36 | 54 | 90 | |
| 6.2 |  | Punctal plugs - non-dissolving (per eye) | | | |
| | | 71 | 96 | 167 | |
| 7.1 |  | Corneal crosslinking (per eye) | | | |
| | | 403 | 1,018 | 1,421 | |
| 7.2 |  | Intacs (per eye) | | | |
| | | 208 | Note | | |
| 7.3 |  | Avastin - corneal (per eye) | | | |
| | | 85 | 35 | 120 | |
| 8.1 |  | Uninsured eye examinations | | | |
| | | 131 | 42 | 173 | |
| Note | | Two respondents on Intacs (per eye) - for costs, one was unknown and one was covered by study protocol - valuation and survey price are not valid or meaningful | | | |

| Evaluation Elements for Uninsured Ophthalmological Services | |
|---|---|
| 1 | In addition to an expanded list of uninsured services, the methodology now includes, where available, supplementary data from industry on costing data. |

The aggregate of the tables provided as **Data Table 9** are the source files that become summarized as the recommended schedule that follows in Section Five of the report.

Comment

The survey captured the professional component for insertion of the IOL's. This does not include the price for refractive suites which is listed already in the survey results. This has led to the notation in the preamble that, often times, multiple tests are required in preparation of the surgical refractive procedure.

The consensus opinion was that the resource requirements for placement of any IOL are equivalent. As such, the professional component should remain a standard valuation, as arrived at through the survey. The difference in valuation for different IOL's directly reflects the market price for the device.

The computed value of "**7.3 Avastin - corneal (per eye)**" was examined further in light of the decrease in value assigned here (\$120) compared to the 2010 study (\$277). There are four statistical issues identified:

1. The current study had only five respondents who reported this service (compared to 20 in 2010)
2. The median time in the current study was 10 minutes; in 2010, the median time was 15 minutes (and the mean, 16.3 minutes)
3. The resource ratings in the current study were lower than 2010 (18.6 and 21.6, respectively)
4. The direct cost in the current study was \$25, compared to \$72 in 2010; it is not evident whether this is sample size or a real cost difference; however, the acquisition cost in the current study was consistent for each of the five respondents (20, 25, 30, 25, 25)

The first and fourth factors are the most significant. If the drop in value reflects only the smaller sample size, it would not be prudent to recommend a decreased value; If the cost reduction is accurate (as suggested by the consistent reporting), then the decreased value would be appropriate.

Comment:

Value has been calculated as the sum of:

1. Professional component (time * sum of resource ratings) / relativity modifier

and

2. Direct cost reported by survey respondents.

The evaluation of these items is discussed further in Section 5.

The survey price is the average charge reported by respondents who provided the service.

5 Schedule of Uninsured Services

5.1 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.

Note:

Multiple tests are required in preparation of a surgical refractive procedure. The survey results that underpin the IOL insertions exclude the price for refractive suites, as listed separately.

The recommended values in the ensuing Schedule are best considered in the context of issues raised in the full report to COS.¹⁴

{The issues of quality outcomes, incorporation of uninsured services with publicly funded services, and the related ethical challenges were further detailed in a recent article published in

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Valuation of Uninsured Ophthalmological Services. Report to the Canadian Ophthalmological Society; Health Intelligence Inc., December 1, 2015

the Canadian Medical Association Journal.¹⁵ These issues are all essential and warrant review by Ophthalmologists who provide uninsured services}

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McAlister CN, Ahmed IIK. *Noninsured services provided with insured cataract surgery in Canada: ensuring transparent and fair treatment for patients*. CMAJ, August 11, 2015; 187(11) 813-816

5.2 Schedule

| Services | | Value (\$) | | |
|---|--|------------|-------|-------|
| | | P | DC | T |
| Where: | | | | |
| P = Professional Fee | | | | |
| DC = Direct Cost | | | | |
| T = Total | | | | |
| 1 Refractive Procedures | | | | |
| 1.1 | Femtosecond laser for refractive cataract surgery (per eye) | 152 | 1,013 | 1,165 |
| 1.2 | Cataract refractive suites, including Verion and Calysto | 149 | 472 | 621 |
| 2 Preoperative Testing | | | | |
| 2.1 | Potential Acuity Meter (PAM) | 30 | 7 | 37 |
| 2.2 | Tear film osmolarity for aspheric, toric, and multifocal lenses, and dry eye | 88 | 33 | 121 |
| 2.3 | Specular microscopy | 83 | 72 | 155 |
| 2.4 | Wavefront aberrometry | 73 | 63 | 136 |
| 2.5 | Laser refractive biometry measurements (IOL Master) | 78 | 85 | 163 |
| 2.6 | Corneal topography | 79 | 80 | 159 |
| 2.7 | Pentacam | 74 | 61 | 135 |
| 2.8 | Optical coherence tomography (OCT) testing | 79 | 49 | 128 |
| 3 Astigmatism Management Operative | | | | |
| 3.1 | Toric IOL (per eye) | 160 | 665 | 825 |
| 3.1.a | Multifocal IOL (per eye) | 160 | 1,066 | 1,226 |
| 3.1.b | Multifocal toric IOL (per eye) | 160 | 1,409 | 1,569 |
| 3.2 | Corneal relaxing incision (per eye) | 69 | 145 | 214 |
| 4 Retinal Procedures | | | | |
| 4.1 | Wide field retinal imaging (Optos and OCT angiography) | 81 | 169 | 250 |
| 4.2 | Avastin - intravitreal (per eye) | 95 | 64 | 159 |
| 5 Glaucoma Diagnostic Tests and Procedures | | | | |
| 5.1 | Heidelberg retinal tomography (HRT) | 120 | 35 | 155 |
| 5.2 | GDx | 45 | | ISD |
| 5.3 | OCT for glaucoma suspects | 77 | 64 | 141 |

Schedule of Uninsured Services

| Services | | Value (\$) | | |
|--|---|------------|-------|-------|
| | | P | DC | T |
| Where: | | | | |
| P = Professional Fee | | | | |
| DC = Direct Cost | | | | |
| T = Total | | | | |
| 6 Tearing and Eyelid Procedures | | | | |
| 6.1 | Punctal plugs - dissolving (per eye) | 36 | 54 | 90 |
| 6.2 | Punctal plugs - non-dissolving (per eye) | 71 | 96 | 167 |
| 7 Other Procedures | | | | |
| 7.1 | Corneal crosslinking (per eye) | 403 | 1,018 | 1,421 |
| 7.2 | Intacs (per eye) | 208 | | ISD |
| 7.3 | Avastin - corneal (per eye) | 85 | 35 | 120 |
| 8 Examinations | | | | |
| 8.1 | Uninsured eye examinations | 131 | 42 | 173 |
| Note | | | | |
| Includes overhead | | | | |
| ISD | Insufficient data to evaluate; this reflects the very infrequent use of GDx in 2016 (due to accessible and more accurate technology) | | | |

A Appendices

A.1 Survey

Please see **Appendix A.1 - Survey** provided as a **companion document**.

A.2 Survey Data

Please see **Appendix A.2 - Survey Data** provided as a **companion document**

A.3 Custom Report Restructured

Please see **Appendix A.3 - Analysis** provided as a **companion document**

A.4 Benchmarks and Variably Insured Services

A.4.1 Benchmark Services

Values are most current published.

| Service | Cataract with Lens Insertion | | Office Consultation | |
|--------------|------------------------------|--|---------------------|----------|
| Jurisdiction | Fee Code | Value | Fee Code | Value |
| NL | 98930 + 98934 | \$574.47 (\$473.09 + \$101.38) | 101, 201 | \$85.97 |
| PE | 7210 | \$555.55 | 860 | \$103.00 |
| NS | 27.72 | \$617.70 | 3.08 | \$90.99 |
| NB | 2398 | \$512.00 (includes 30 days pre- and post-care) | 69 | \$105.00 |
| QC | 7261 | \$325.00 | 9254 | \$93.90 |
| ON | E140 | \$397.50 | A235 | \$82.30 |
| MB | 5612 | \$450.00 | 8556 | \$100.85 |
| SK | 135S + 136S | \$461.00 (\$375.00 + \$86.00) | 9S | \$83.70 |
| AB | 27.72 | \$482.36 | 3.08A | \$119.78 |
| BC | 2188 + 2190 | \$420.00 (\$332.49+\$87.51) | 2010 | \$91.42 |
| YT | 2188 + 2190 | \$1,041.30 (\$788.00 + \$253.30) | 2010 | \$140.90 |
| Service | Complete examination | | | |
| Jurisdiction | Fee Code | Value | | |
| NL | 113 | \$57.32 | | |
| PE | 810 | \$60.00 | | |
| NS | 20.3 | \$49.13 | | |
| NB | 66, 229, 299, 232 | \$74.00 | | |
| QC | 9252 | \$72.65 | | |
| ON | A233 | \$57.70 | | |
| MB | 8543 | \$78.95 | | |
| SK | 5S (not referred) | \$53.00 | | |
| AB | 3.04A | \$96.71 | | |

| | | |
|-----------|-------------|---------|
| BC | 2015 | \$49.88 |
| YT | 2015 | \$90.50 |

A.4.2 Variably Insured Services

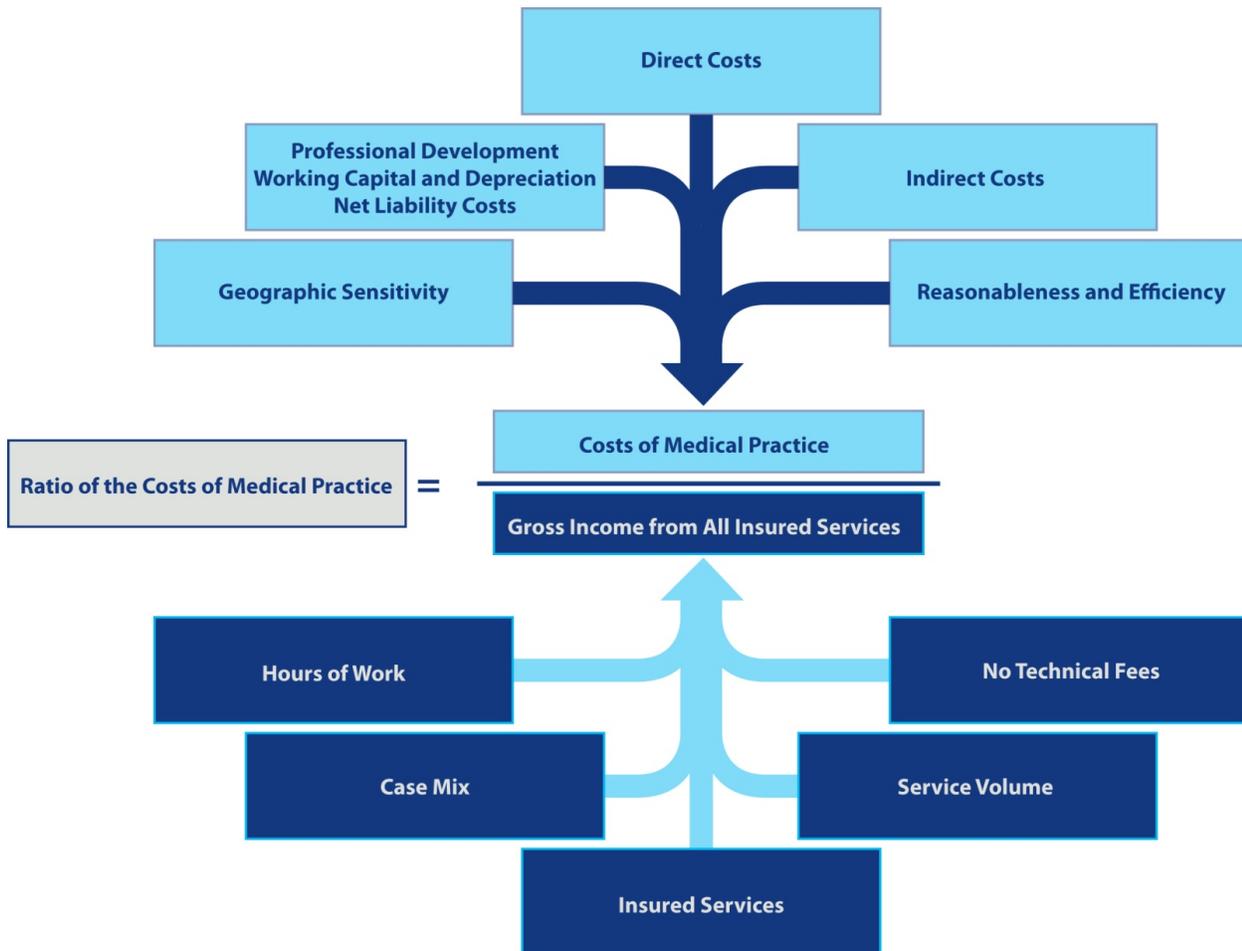
The following table summarizes the services which are uninsured in some jurisdictions and insured in others. Data sources were jurisdictional schedules and jurisdictional Ophthalmological surveys; not all surveys were completed.

| N | n | Services |
|------------|-----------|---|
| 1.1 | 1 | Femtosecond laser for refractive cataract surgery (per eye) <i>In QC under ministerial review</i> |
| 1.2 | 2 | Cataract refractive suites, including Verion and Calysto |
| 2.1 | 3 | Potential Acuity Meter (PAM) <i>Insured in BC, SK, AB</i> |
| 2.2 | 4 | Tear film osmolarity for aspheric, toric, and multifocal lenses, and dry eye |
| 2.3 | 5 | Specular microscopy <i>Insured in BC, QC, ON (defined services), SK, AB, YT</i> |
| 2.4 | 6 | Wavefront aberrometry |
| 2.5 | 7 | Laser refractive biometry measurements <i>Insured in BC (for axial length), QC, PE, SK (technical fee), AB</i> |
| 2.6 | 8 | Corneal Topography <i>Insured in ON, SK</i> |
| 2.7 | 9 | Pentacam |
| 2.8 | 10 | Optical coherence tomography (OCT) testing <i>Insured in BC (not cataract), QC (hospital and intravitreal injection), NS (interpretation from macular degeneration and glaucoma - 1/2 if combined), PE, NL, ON, SK, AB, YT, NB</i> |
| 3.1 | 11 | Toric IOL (per eye) |
| 3.2 | 12 | Corneal relaxing incision (per eye) |

| N | n | Services |
|------------|-----------|--|
| | | Insured in SK |
| 4.1 | 13 | Wide field retinal imaging (Optos and OCT angiography) |
| | | Insured in BC (for Optos fundus and for OCT and fluorescein angiography), PE, NL (fluorescein angiography), NL (fluorescein angiography), SK (fluorescein angiography), YT (fluorescein angiography) |
| 4.2 | 14 | Avastin - intravitreal (per eye) |
| | | Insured in BC, QC (drug charged to patient), PE |
| 5.1 | 15 | Heidelberg retinal tomography (HRT) |
| | | Insured in BC, QC (in hospital), PE |
| 5.2 | 16 | GDX |
| | | Insured in BC, QC (in hospital) |
| 5.3 | 17 | OCT for glaucoma suspects |
| | | Insured in BC, QC (in hospital), PE, NL (in hospital), ON, SK (once per year), AB, NB |
| 6.1 | 21 | Punctal plugs - dissolving (per eye) |
| | | Insured in QC, SK, NB |
| 6.2 | 22 | Punctal plugs - non-dissolving (per eye) |
| | | Insured in QC, SK, NB |
| 7.1 | 23 | Corneal crosslinking (per eye) |
| | | Insured in BC (limited conditions), QC, SK |
| 7.2 | 24 | Intacs (per eye) |
| | | Insured in QC |
| 7.3 | 25 | Avastin - corneal (per eye) |
| | | Insured in BC, NB |
| 8.1 | 26 | Uninsured eye examinations |
| | | Insured in QC (<18 and >65), ON (<19 and >65) |

A.5 An Approach to Practice Costs

Constituent elements of deriving the ratio of the costs of medical practice



The costs of medical practice, also referred to as physician overhead, are defined here as the costs of providing an insured medical service, other than physician work (further defined by time and intensity). Despite the significant impact on the medical profession, these costs have never been studied or reported, nationally or internationally, in a manner that is universally considered satisfactory. The approach and results should aim to satisfy particular criteria:

- Use of objective data
- Geographic sensitivity
- Fair and reasonable conclusions
- Applicable or modifiable depending on the compensation model
- Representative of a typical medical practice

These criteria have not been fulfilled in any single study to date. In the absence of a definitive study in Canada or elsewhere, existing relevant studies were reviewed for methodological lessons and analyzed to better interpret the conclusions.

Three Canadian studies were scrutinized, particularly, with attention to methodological strengths and limitation. Two international studies provide more general lessons that are of value to this review. The actual results from those studies are less applicable to the current undertaking than are the three Canadian studies. The American study, spanning more than a decade includes micro-costing to calculate practice expenses in relative value units for individual service codes, distinguished by site of service. The Australian study demonstrates an intriguing modeling methodology, but with specialty and regional results reported in Australian dollars and not linked immediately to income data.

A fourth Canadian study has been undertaken in Alberta, applying a methodology not unlike that in Australia. The approach taken suggests these results are valuable in the pan-Canadian reviews, although replication of the methodology would appear to be problematic in other jurisdictions. Underlying any approach to compensating the costs of providing insured medical services is the premise that reasonable compensation should be provided to support the provision of those services.

A further consideration for data refinement could be geographic modifiers derived from Statistics Canada data sets, augmented by provincial and territorial re-locator formulae and data, used not infrequently by jurisdictional governments as adjustment factors for compensation and comparisons.

The data issues associated with practice costs can be summarized, as follows:

- Geographic variations, across and within jurisdictions, have not been incorporated successfully in studies of the costs of medical practice
- No single data source exists to provide objective and reliable data
- Self-reporting by physicians precludes conclusions that can be considered representative or a measure of a base, typical practice
- Data models have not taken advantage of independent expert opinion and publicly available indicators
- The costs of medical practice have not addressed individual services, as this would require stringent cost accounting studies applied to accurate average times and resources required in the provision of a medical service. Arguably, among the cost categories defined earlier, only direct costs vary systematically with individual services
- Physicians allocate overhead costs over the entire mix of services provided
- Variations in practice costs occur within and across specialties, often reflecting case mix, use of technology, and the intensity of the services provided

- Individual services provided by more than one specialty may entail different practice costs for each specialty
- Group and solo practices will provide different costs of practice on the basis of economies of scale, distorting the impact of averaging (economic theory suggests that marginal rather than average rates should be applied in related studies – the measurement of marginal costs and their application to compensation models is difficult)
- The site of service is significant, particularly when comparing services provided in a private office to those provided in a public institution
- Part-time physicians can incur similar practice costs as full-time physicians but with substantially different service volumes and relative gross incomes
- The costs of liability coverage for physicians represents specialty, regional geography, and provincial or territorial reimbursement programs; this dictates that these costs should be summarized as net costs and scrutinized in practice cost estimates to ensure that there is no double-counting
- Uninsured services are significant for some specialties and may distort overhead data, particularly if patients contribute to that overhead expense

Variability in the provincial results can be expected as a consequence of differences in methodologies, reference periods, and, in some specialties, relatively small sample sizes. Nonetheless, the three studies provide an opportunity to examine the costs of medical practice from different perspectives and points in time to see if there are any obvious trends that can be generalized for analysis. It was not possible to establish statistically significant confidence intervals for the specialty estimates in the absence of measures of variance within each specialty and province. Confidence intervals would have been a preferred approach if sufficient data were available, as they would indicate a 'normal' range of variability within each specialty.

Estimates of overhead ratios should not be treated as point estimates, but rather as an approximation of practice costs relative to income. Differences should be expected across specialties as the result of factors such as the use of medical technology (self-financed or publicly-financed) and the extent to which practices are based in hospitals or in private office settings.

Within specialties, efficiency in practice organization can be expected to affect practice overhead ratios. Much could be learned from comparative studies that controlled for practice characteristics such as group or solo practice and composition of professional and support staff. Geographic location could also lead to systematic differences in overhead, but there is some uncertainty about how different factors associated with practice location would affect overhead ratios. Practices located in urban areas could expect higher costs for rent and salary levels but these factors might be offset by more efficient use of physician time due to easier access to diagnostic facilities and to other specialties for consultations.

Specialty comparisons suggest there are consistent differences across specialties and that the range of differences tends to be greater in surgical specialties, which could reflect differences in hospital-based practice among private practice physicians in the surgical specialties, as well as regional differences, especially when some specialties locate only in large urban centres.

Pragmatic conclusions to the review of practice costs and their application in deriving economic indicators are, as follows:

- Practice costs are a significant element of the economic consideration of physician compensation.
- The ultimate pan-Canadian study of practice costs, reflecting geography, compensation models, and reasonableness has not been undertaken. The existing studies in the public domain provide benchmark values; a further provincial study utilizes a sophisticated methodology but is unlikely to be replicated in other jurisdictions or nationally.
- Ranges can be derived from the published studies and provide benchmarks that are reasonable; these can be further enhanced through the application of a geographic modifier, although no single geographic modifier methodology is accepted across jurisdictions.

A.6 Comparison with 2010 Valuations

| N | n | Services | 2010 (\$) | 2015 (\$) |
|-------------|-----------|--|------------------|------------------|
| 1.1 | 1 | Femtosecond laser for refractive cataract surgery (per eye) | n/a | 974 |
| 2010 | | Pachymetry | 48 | n/a |
| 1.2 | 2 | Cataract refractive suites, including Verion and Calysto | n/a | 621 |
| 2.1 | 3 | Potential Acuity Meter (PAM) | n/a | 235 |
| 2.2 | 4 | Tear film osmolarity for aspheric, toric, and multifocal lenses, dry eye | n/a | 121 |
| 2.3 | 5 | Specular microscopy | n/a | 155 |
| 2.4 | 6 | Wavefront aberrometry | n/a | 136 |
| 2.5 | 7 | Laser refractive biometry measurements (IOL Master) | 193 | 163 |
| 2.6 | 8 | Corneal topography | 127 | 159 |
| 2.7 | 9 | Pentacam | n/a | 135 |
| 2010 | | Screening photography (no pathology - interpretation and filing) | 121 | n/a |
| 2010 | | Diabetic screening photography | 117 | n/a |
| 2.8 | 10 | Optical coherence tomography (OCT) testing | 198 | 179 |
| 3.1 | 11 | Toric IOL (per eye) | n/a | 837 |
| 2010 | | Toric IOLs | 951 | n/a |
| 2010 | | Multifocal IOLs | 1,890 | n/a |
| 3.2 | 12 | Corneal relaxing incision (per eye) | n/a | 214 |
| 2010 | | Corneal labeling and positioning for limbal relaxation surgery for astigmatism | 262 | n/a |
| 4.1 | 13 | Wide field retinal imaging (Optos and OCT angiography) | n/a | 203 |
| 4.2 | 14 | Avastin - intravitreal (per eye) | n/a | 159 |
| 5.1 | 15 | Heidelberg retinal tomography (HRT) | 163 | 199 |
| 5.2 | 16 | GDx | 121 | ISD |
| 5.3 | 17 | OCT for glaucoma suspects | n/a | 141 |
| 6.1 | 21 | Punctal plugs - dissolving (per eye) | n/a | 90 |
| 6.2 | 22 | Punctal plugs - non-dissolving (per eye) | n/a | 167 |
| 7.1 | 23 | Corneal crosslinking (per eye) | n/a | 1,420 |
| 7.2 | 24 | Intacs (per eye) | n/a | ISD |

| N | n | Services | 2010 (\$) | 2015 (\$) |
|-------------|--------------------------------------|-----------------------------|------------------|------------------|
| 7.3 | 25 | Avastin - corneal (per eye) | 277 | 120 |
| 8.1 | 26 | Uninsured eye examinations | n/a | 173 |
| Note | | | | |
| ISD | Insufficient data to evaluate | | | |

A.7 Sample Patient Handout and Consent Form¹⁶

**Cataract Surgery in Ontario
EPSO Patient Handout
2016 Final**



Cataract Surgery in Ontario

What is covered by OHIP? What are the uninsured options? How much should it cost? Can I pay to get faster surgery? Patients with cataracts in Ontario have many options to consider with surgery. Cataract is the progressive hazing of the natural crystalline lens in the eye. It causes decreased vision that can impact your ability to read, drive, work, and function.

Cataract surgery is the most commonly performed surgery in Canada, during which your cataract is removed and an artificial intraocular lens is implanted. Technological advances have revolutionized cataract surgery allowing for improved safety, the costs of which are funded by provincial health insurance plans, such as OHIP in Ontario.

Patients with cataracts in Ontario can have their vision restored by OHIP funded surgery without paying extra money out of pocket.

Several newer innovations in cataract surgery are not covered by OHIP and are optional choices for all patients in Ontario. These uninsured services are not medically necessary and are designed to reduce dependence on glasses/contact lenses, and/or to potentially enhance the quality of your vision.



What are my uninsured options?

Your ophthalmologist may discuss optional uninsured testing, procedures, and special feature lens implants if appropriate to your individual situation. Every patient has a right to know their options and to make well informed decisions about which options, if any, they wish to choose and the costs involved.

Uninsured cataract services are paid for directly by the patient to the surgeon's clinic or hospital and include specialized diagnostic eye measurements; special feature lens implants; and certain surgical procedures, diagnostics and lasers.

¹⁶



Preoperative measurements in the office

Eye measurements are needed to select the appropriate lens implant used during surgery. OHIP covers testing using ultrasound. Uninsured alternative and/or additional eye testing may provide more accurate eye measurements.

Optional uninsured preoperative testing may permit a more customized vision correction with lens implants and reduce your dependence on glasses at the focus point of your choice (distance or near).

Preoperative testing takes place in your surgeon's office, where payment for these optional services is made.

Procedures & devices in the surgical facility

OHIP covers cataract surgery costs including surgeon fees and the standard lens implant. Special feature implants, additional procedures, specialized diagnostics, and certain lasers are uninsured services that patients can choose at the surgical facility or hospital for an additional cost.

Optional special feature lens implants may:

- **treat astigmatism**
- **reduce your need for glasses**
- **attempt to improve the quality of your vision**

All uninsured cataract services in Ontario are optional. Your ophthalmologist should discuss with you any fees for un-insured services and answer any questions you may have.

The cost for uninsured services can vary between surgeons and hospitals/surgical facilities. The Canadian Ophthalmological Society (COS) outlines average costs for these cataract services in an online statement on **Values for Uninsured Services in Canada**.

Can I pay to get faster surgery?

No. Wait times can vary significantly for cataract surgery. Independent of where your surgery takes place, Ontario surgeons are legally prohibited from offering faster surgery for a fee, otherwise known as queue jumping. Any payment out of pocket should only be for uninsured testing, procedures, or lens implants — not to have surgery done sooner.

Where can I get more information?

The Eye Physicians and Surgeons of Ontario (EPSO) **Code of Ethics** (www.epso.ca) is a guideline for practicing ophthalmologists.

The College of Physicians and Surgeons of Ontario (CPSO) has an online policy on **Block Fees and Uninsured Services**.

To learn more about insured and uninsured cataract surgery, scan this code or visit www.epso.ca

**EPSO Femto Consent
May 2016 Final**



CATARACT SURGERY

Standard cataract surgery is performed using ultrasound technology through a small self-sealing incision. It is the standard technique used in North America today and is an excellent and safe surgery. Standard preoperative testing and cataract surgical procedures are covered by OHIP.

At certain centers patients also choose to access Femto Laser Assisted Refractive Cataract Surgery (FLARCS) as an optional component of their cataract procedure. As in any other uninsured cataract service, the standard cataract portion of the procedure is covered by OHIP and any optional uninsured refractive components of the cataract procedure are payable by the patient.

OPTION FOR LASER REFRACTIVE-CATARACT SURGERY

FLARCS is performed with the Femtosecond Laser (“Laser”). It allows your surgeon to plan and perform parts of your surgery using a bladeless, computer-controlled laser for steps that were previously completed by hand with standard surgical instruments. In addition to treating cataracts, FLARCS can be used to correct astigmatism by performing relaxing cuts on the cornea, or aligning incisions, to help reduce the need for glasses following surgery. The need for glasses after surgery may also depend on the style of replacement lens selected by the patient. Patients considering FLARCS may be required to undergo additional uninsured preoperative testing relating to refractive correction and management, which is not medically necessary and is not covered by OHIP. The patient is responsible for any uninsured costs associated with the corneal relaxing incision portion of the FLARCS surgery and the additional pre and intra-operative testing relating to corneal incision placement. Like standard cataract surgery, FLARCS is performed under light sedation and topical anesthesia. Once you are prepared for surgery, a small suction device will hold the position of your eye steady. To reduce the chance of misdirected laser energy within the eye, the Femtosecond Laser uses an active three dimensional tracking system to ensure accurate guidance of laser pulses inside the eye.

CONSENT: (patient to initial below)

- I have been given the option of standard OHIP-covered cataract surgery, of which the outcomes are excellent and is not associated with any additional costs.
- I have been made aware of the Eye Physicians and Surgeons of Ontario (EPSO) uninsured services information sheet entitled “Cataract Surgery in Ontario”
- I understand that FLARCS involves certain cuts to the eye (corneal relaxing incisions) that are optional choices in cataract surgery to reduce the need for glasses. FLARCS also requires certain uninsured tests to be performed prior to the laser procedure. Additional costs associated with the relaxing incisions placed for astigmatism neutralization and preoperative testing are not covered by OHIP and are the responsibility of the patient.
- I understand that if at any point during my surgery my doctor feels that it is not possible to proceed with FLARCS, the procedure will be stopped and my doctor will proceed with standard cataract surgery that may not allow for corneal astigmatism correction. In that event, the cost of cataract surgery will be covered by OHIP.
- I have been given an itemized invoice of all the uninsured services for which I have chosen to proceed with as part of my FLARCS surgery.
- I wish to have Femto Laser Assisted Refractive Cataract Surgery FLARCS used during my cataract operation.
- All information has been explained to me and I have had time to ask questions to my satisfaction.

By signing below, I confirm that with respect to my cataract surgery, the nature of the treatment(s), expected benefits, material side effects, material risks, special or unusual risks, alternative courses of action, as well as the consequences of not having the treatment, have been explained to me by my doctor, and I have had sufficient time to ask all of my questions.

Patient Name

Patient Signature

Date

Surgeon Name

Surgeon Signature