

SENIOR PROJECT WRITTEN REPORT

BATTLE CREEK VAMC PATIENT BASE STATISTICAL ANALYSIS

STACEY L. TOWNSHEND, B.Sc.

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Advisor: Michael Vandever, O.D.

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While rotating through the Battle Creek Veterans Administration Medical Center (BCVAMC) in Battle Creek Michigan as an optometry intern, I began a statistical analysis and profile of the patients there in order to gain a more complete understanding of the amount and types of patients that are examined at this facility in the Optometry Clinic. This exercise developed into a more intensive project which compiled a variety of statistics pertaining to the patient base during the period of June 1, 1992 to December 18, 1992. The six and a half months of data collecting aided in fulfilling the purpose of this project which was to derive a profile of ocular conditions and disorders which were examined, diagnosed, treated, and referred at the BCVAMC. In addition to this, the prevalence of prescription medications used by Veterans Health Administration patients which commonly produce ocular side effects was also documented. It is my hope that this information will emphasize and support the need for continued optometric services within the VA system and demonstrate optometry's use of ophthalmic pharmaceuticals in a primary care setting.

THE DATA COLLECTED

After the examination of the patient, he or she was categorized by age, sex, and race and then placed into a documentation table under the appropriate conditions pertaining to that patient. The following conditions were documented:

1. Diabetic retinopathy and grade
2. Glaucoma suspect
3. Glaucoma and type
4. Systemic hypertension
5. Vascular occlusion disease - description
6. Age related macular degeneration - dry or exudative
7. Other macular changes resulting in decreased acuity
8. Cataracts - type and location
9. Red eye - cause and treatment
10. Referral - reason and for what treatment
11. New refractive prescription - eligible for Rx in the VA or noneligible
12. Trauma - describe
13. Prescription medications with potential ocular side effects
 - a. tricyclic antidepressants
 - b. nonsteroidal anti-inflammatory drugs (NSAIDS)
 - c. corticosteroids
 - d. antimalarials
 - e. antipsychotics
 - f. amiodarone
 - g. ethambutol

THE RESULTS

The total number of patients documented in this study over the six and one half months of data collecting is 573 with 553 as male patients and 20 as female patients. The average patient age in this sample is 58.52 years. Four hundred and forty-two (442) of the subjects were white and 131 were black.

When categorizing diabetic retinopathy (DR), should the patient suffer from diabetes in both eyes, only the higher of the two degrees was recorded. The total number of patients with background DR was 41, with pre-proliferative DR was nine, and with proliferative DR was eight.

In order to be classified as a glaucoma suspect, the patient needed to enter the examination without a previous diagnosis of glaucoma and exhibit two or more of the following conditions:

1. Asymmetrical cup to disc ratio greater than or equal to .2/.2 difference
2. Asymmetrical intraocular pressures greater than 5mm Hg difference
3. Familial history of glaucoma
4. Diabetic or hypertensive
5. Diurnal intraocular pressure variation greater than 5mm Hg
6. Cup to disc ratio over .4/.4 in white race, .6/.6 in black race
7. Kruckenberg's spindle
8. Intraocular pressures of 20 to 25mm Hg

Sixty three patients satisfied the requirements for the glaucoma suspect category and continued with further testing to determine if glaucoma existed. Eighty five patients were seen with primary open angle glaucoma confirmed by either field loss, persistent and extended high intraocular pressures, or a previous diagnosis of glaucoma presently being treated with medication.

Those patients taking medication to control systemic hypertension were noted and numbered 159.

Under the category of vascular occlusion disease, two patients suffered a central retinal vein occlusion, four had a previous branch retinal vein occlusion, twelve possessed signs of hypertensive retinopathy of grade two or worse under the general heading of arteriolar sclerosis, forty-four patients exhibited mild to moderate crossing defects indicating arteriosclerosis, and one individual had an unusual retinal angioma.

Age related macular degeneration (ARMD) was a common condition within this population. The dry form of ARMD was found in 101 patients with drusen and/or atrophy affecting macular function and reducing visual acuity. The exudative form was found in three patients all of whom had previously undergone laser treatment for neovascular nets and also suffered a loss of visual acuity.

A large variety of macular changes other than ARMD resulting in reduced acuity were observed in this population as well. They are as follows:

1. Toxoplasmosis scar	1
2. Solar burn	2
3. Idiopathic macular holes	3
4. Retinal pigment epithelium changes/mottling	5
5. Histoplasmosis	1
6. Retinal detachment	2
7. Cellophane maculopathy	2
8. Grid photocoagulation	2
TOTAL	18

Out of all the eyes examined, a total of 107 had some form of cataract. The most common form was the nuclear sclerotic type of which 54 eyes experienced reduced acuity secondary to lens effects. The next most common lens opacity was due to a cortical cataract numbered at 25. Eleven patients had posterior subcapsular cataracts, two with traumatic cataracts, and fifteen with anterior capsular cataracts secondary to phenothiazine drug usage.

A total of 52 red eyes were examined resulting in effective conventional treatment or referral. They are as follows:

1. nodular episcleritis	3
2. foreign body	3
3. subconjunctival hemorrhage	3
4. bacterial conjunctivitis	12
5. pterygium	4
6. allergic conjunctivitis	2
7. trichiasis	2
8. iritis	2
9. corneal abrasion	1
10. Reiter's syndrome - chlamydial infection	1
11. Scleromalacia perforans	1
12. Herpes zoster	1
13. dry eye secondary to:	
lid laxicity/lagophthalmos	2
dellen	2
Sjogren's syndrome	1
blepharitis	10

Referrals of a number of ocular conditions were made to the ophthalmology clinic of the Ann Arbor Veterans Administration Medical Center. Twenty one referrals were made and they include:

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|--|---|
| 1. Fourth nerve palsy | 1 |
| 2. vitreal evaluation for vitrectomy | 2 |
| 3. cataract evaluation for removal | 7 |
| 4. pterygium advancing onto visual axis | 2 |
| 5. glaucoma for filtering surgery | 3 |
| 6. ETOH injection for pain | 1 |
| 7. Diabetes for laser surgery | 2 |
| 8. Intraocular lens implant displacement | 1 |
| 9. prosthetic fitting | 1 |
| 10. herpes zoster for evaluation | 1 |

A total of 21 recent and longstanding trauma cases were seen in our clinic resulting in referral, treatment, or monitoring of the condition. They are:

- | | |
|--|---|
| 1. ptosis secondary to birth trauma | 1 |
| 2. adnexal shrapnel scars | 2 |
| 3. iridodialysis | 1 |
| 4. trauma secondary to aggression - ecchymosis | 7 |
| crepitus | |
| erythma | |
| swelling | |
| 5. foreign body | 3 |
| 6. facial stabbing | 2 |
| 7. chemical burn | 1 |
| 8. pellet gun injury from BB | 1 |
| 9. retinal detachment secondary to head trauma | 3 |

Overall, out of the 573 patients seen, 265 (46.2%) were given a new prescription to be filled. Of these 265, 98 (37%) patients were eligible for glasses to be issued through the VA and the remaining 167 were to have their prescription filled elsewhere.

It is a fortunate situation that the clinic optometrist and senior interns have access to the patient's medical file in order that we may provide a more complete and knowledgeable examination. The patient's most recent list of prescription medication can be found easily in the medical file or brought up on the computer for review and printout. It is because of this availability of data that the eye care provider can monitor possible side effects of medications that are known to produce ocular difficulties. The medications of particular notice, the ocular side effects, and the numbers of patients associated with them are as follows:

TRICYCLIC ANTIDEPRESSANTS

Examples: Amitriptyline, Desipramine, Doxepin, Imipramine, Nortriptyline, Protriptyline

Usage: sedation in normal and mentally depressed individuals

Side effects: blurred vision from mydriasis and cycloplegia angle closure in narrow angles

Patient number : 72

NONSTEROIDAL ANTI-INFLAMMATORY DRUGS

Examples: Anaprox, Ibuprophen, Indomethacin, Naproxen, Suldinac

Usage: analgesic, anti inflammatory, antipyretic

Side effects: high dosage - retinal hemorrhage
pigmentary changes at macula causing color disturbances
loss of vision, visual field defects

Patient number : 162

CORTICOSTEROIDS

Examples: Betamethasone, Cortisone, Dexamethasone, Hydrocortisone, Methylprednisone, Prednisone

Usage: inflammatory disorders, allergic disorders, adrenocortical insufficiency

Side effects: PSC cataracts, elevated IOP → varies with individual

Patient number : 18

ANTIMALARIALS

Examples: Chloroquine, Hydroxychloroquine

Usage: Malaria, Systemic Lupus Erythematosus, Rheumatoid Arthritis, Extraintestinal Amebiasis

Side effects: prolonged therapy with high dosages may result in bullseye maculopathy, keratopathy, blurred vision, focusing problems, visual halos

Patient number : 4

ANTI-PSYCHOTICS

Examples: Chlorpromazine, Fluphenazine, Mellaril, Perphenazine, Thiothixene, Trifluoperazine

Usage: reduction of hallucinations and motor and autonomic hyperactivity especially in patients with schizophrenic disorders

Side effects: prolonged therapy with high dosages results in the deposition of fine particulate matter on the anterior surface of the lens and the endothelium of the cornea, as well as epithelial keratopathy, lacrimation, and pigmentary retinopathy on occasion

Patient number : 106

AMIODARONE

Usage: treatment of both atrial and ventricular arrhythmias

Side effects: whorl-like keratopathy early in treatment, fine anterior subcapsular lens deposits

Patient number : 3

ETHAMBUTOL

Usage: treatment of tuberculosis

Side effects: reduced visual acuity, color vision changes, visual field loss, retrobulbar neuritis

Patient number : 6

DISCUSSION

Now that a profile of the optometric patient base has been made, one cannot help but realize the need for optometric services in the Veterans Health Administration is vast. The patients are numerous, unique, and in need of eye care based on the prevalence of eye disease and ocular conditions discovered during examination at the clinic. In order to enhance both clinical skills and knowledge base, the optometric student population should take advantage of the resource of patients in the VHA. The winter, 1993 issue of Optometric Education devoted an entire issue to assess academic affiliations with the Department of Veterans Affairs. In it are numerous articles that examine issues of research in the Veterans Health Administration to residency programs to strategic actions that optometry can make within the VHA. As Dr. James Holsinger, Jr. mentions in his speech to the optometry graduates from New York State College of Optometry in May, 1992,

"The practice of optometry is changing all around us. The population is changing around us. The political and social environment we work in is changing around us. We will not meet our moral obligation to our dreams or to our patients unless we embark on a voyage of discovery in the new world we face."

The Veterans Health administration gives us a true to life example of the primary eye care needs of a selected population and demonstrates the value of optometry in the care for these conditions both in and out of the VHA. Optometry's role in private practice should emulate it's role in the VHA through the use of diagnostic and pharmaceutical agents in order to effectively provide a primary entrance point for visual health. Optometry's qualification to provide this type of care for the general population is evident and proven with the continued excellent and competent care provided in the VHA. This patient base historically has possessed a higher incidence and prevalence of ocular conditions detrimental to visual health compared to the general population. A few age related examples from the Summary Table illustrate this.

Of the 573 patients examined, 10.1% of these individuals suffered from some form of diabetic retinopathy. Approximately 4.7% of the general population has been diagnosed as diabetic and according to the Framingham Eye Study, in a population aged 52 - 85 of both men and women, 2.7% (67/2477) in this particular local area were positive for diabetic retinopathy - much less than that exhibited in our VA population (10.1%). Similar to this, the Beaver Dam Eye Study discovered out of 4926 participants aged 43 - 75+ years, 435 were known diabetics (8.8%), and of these 435, 36.8% or 160 were positive for diabetic retinopathy, which translates to only 3.2% of this studied population.

In our patient base, 17.1% had decreased visual acuity secondary to cataracts and approximately 1/2 of these were first diagnoses. Of the general population, only 0.4% each year develop cataracts. Again, from the Framingham Eye Study in males and females aged 52 - 85, 12.5% was the prevalence of senile cataract in this population with a corrected visual acuity of 20/30 or worse.

Age related macular degeneration is considered the leading cause of legal blindness in patients 65 years and older. Decreased visual acuity secondary to ARMD was found in 18.2% of our VA patient base. Poor diet, stress, and extensive ultraviolet light exposure, all of which are common conditions in the veteran population, can accelerate the signs and symptoms of ARMD. Again, using the Beaver Dam Eye Study for individuals aged 43 - 75+, 801 out of 4695 (17.1%) suffered from decreased vision secondary to age-related maculopathy which is still less than the 18.2% found in our VA population. Similarly, the Framingham Eye Study indicates a smaller prevalence of this retinal condition of 6.3% (156 out of 2477) compared to the 18.2% in our patient base. One must realize also that the prevalence of this condition is more common in the female gender and thus makes our 18.2% a more significant figure since 97% of our patients were male.

Comparing our data to the Framingham Study data on open angle glaucoma, we find a significant difference in prevalence of the disease with our figure of 14.8% compared to the Framingham figure of 2.6%.

One can attribute the increase in prevalence and incidence of disease in veterans due to the increase in the average age of this population. The population of veterans in the United States is aging at a rate two times that of the general populace - a significant increase compared to the geriatric population. By 1995, it is possible that 1/3 of US males over the age of 65 will be veterans. As well, veterans at visual risk are projected to increase from four million to approximately 5.7 million by the turn of the century.

Today's optometrist must open his or her eyes to the expanding scope of optometry and to the advent of national health care reform. The VHA has been and is presently being scrutinized as an example of a national health care system in the United States in order that it's policies and model programs can be included with research being conducted concerning the development of a national health care plan for the entire nation.

In order to provide a health care system that provides for all citizens, competition has to be managed and a form of managed care needs to be budgeted for. A basic package of health care across the nation will require the removal of unnecessary, costly procedures and ultimately bring back primary care in the forefront of health maintenance. Technology should not be limited since there will always be patients who will require specialized procedures and care. However, the ratio between specialists and primary care physicians and care givers has to change. Countries like Germany and Canada spend less per capita on health care because approximately 65% of the health care professionals in these countries are primary care physicians - optometry included.

Like the Canadian health care system, the availability and choice of health care professionals will be reduced with national health care reform, but this encourages the public to utilize the entry point provider initially then be referred for specialty care if necessary. As well, the single payer approach in Canada will be very difficult to adopt in the United States due to the vast difference in population between the two countries. However, like Canada, "sin" taxes will need to be implemented. Products such as cigarettes and alcohol that adversely affect the health of

individuals will cost more in order to subsidize health care costs as well as discourage their purchase. In addition, health care benefits may also need to be taxed in some households as part of subsidization, and providers such as Medicare, Medicaid, Workers' Compensation, and VA benefits will all be affected in some way. No one will go untouched by this reformation for the ultimate goal of this enormous project is to provide basic health care benefits to everyone.

Optometrists in the Veterans Health Administration are effective primary care providers for the maintenance of good ocular health and vision. Optometry's role in the operation of a fully integrated health care system for 27 million people in the VHA illustrates that optometry belongs in the advent of health care reformation in the United States. Let us strengthen the unity of a profession and join forces with other caring health professionals as we face a new century together.

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Mike ...*

SUMMARY TABLE

<u>CONDITION</u>	<u>NUMBER OF PATIENTS</u>	<u>PERCENTAGE</u>
Diabetic Retinopathy	58	10.1
Glaucoma Suspect	63	11.0
Glaucoma (open angle)	85	14.8
Systemic Hypertension	159	27.7
Vascular Occlusion Disease	15	2.6
ARMD	104	18.2
Other Macular Changes	18	3.1
Cararacts	98	17.1
Red Eye	52	9.1
Referral	21	3.7
Trauma	21	3.7
Prescription Medications with Potential Side Effects	371	64.7
New Spectacles Prescribed	265	46.2
Eligible Patients	98	37.0
Noneligible Patients	167	63.0

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