Optometry in rural Baja California: A synopsis of visual conditions and suggestions for future clinics

Charles Jaworski
Pacific University

Steven Serrins
Pacific University

Recommended Citation
Jaworski, Charles and Serrins, Steven, "Optometry in rural Baja California: A synopsis of visual conditions and suggestions for future clinics" (1989). College of Optometry. 885.
https://commons.pacificu.edu/opt/885

This Thesis is brought to you for free and open access by the Theses, Dissertations and Capstone Projects at CommonKnowledge. It has been accepted for inclusion in College of Optometry by an authorized administrator of CommonKnowledge. For more information, please contact CommonKnowledge@pacificu.edu.
Optometry in rural Baja California: A synopsis of visual conditions and suggestions for future clinics

Abstract
This paper will describe the optometric portion of the mobile clinic that journeyed to two small Mexican communities in rural Baja California. The data gathered along with information from other studies will be used to make suggestions for improvements of future clinics. This information should be of value to persons planning subsequent clinics. Information contained in this paper includes 1) Descriptions and history of the mobile clinics. 2) Descriptions of the number and types of visual disorders encountered. 3) Demonstration of the need for such clinics. and 4) Suggestions for the Improvement of such clinics in terms of efficiency and scope.

Degree Type
Thesis

Rights
Terms of use for work posted in CommonKnowledge.
Copyright and terms of use

If you have downloaded this document directly from the web or from CommonKnowledge, see the “Rights” section on the previous page for the terms of use.

If you have received this document through an interlibrary loan/document delivery service, the following terms of use apply:

Copyright in this work is held by the author(s). You may download or print any portion of this document for personal use only, or for any use that is allowed by fair use (Title 17, §107 U.S.C.). Except for personal or fair use, you or your borrowing library may not reproduce, remix, republish, post, transmit, or distribute this document, or any portion thereof, without the permission of the copyright owner. [Note: If this document is licensed under a Creative Commons license (see “Rights” on the previous page) which allows broader usage rights, your use is governed by the terms of that license.]

Inquiries regarding further use of these materials should be addressed to: CommonKnowledge Rights, Pacific University Library, 2043 College Way, Forest Grove, OR 97116, (503) 352-7209. Email inquiries may be directed to: copyright@pacificu.edu

This thesis is available at CommonKnowledge: https://commons.pacificu.edu/opt/885
Optometry in Rural Baja California

A Synopsis of Visual Conditions and Suggestions for Future Clinics

By

Charles Jaworski
Steven Serrins

A thesis submitted to the faculty of the College of Optometry
Pacific University
Forest Grove, Oregon
for the degree of Doctor of Optometry
May, 1989
Biographical Sketch of Authors

Charles Jaworski was born in Washington D.C. He attended high school at Crescent Valley High in Corvallis Oregon. He graduated from Western Oregon State College in 1985 with B.S. in Biology. He was active in Amigos, PTU, and was a research assistant while at Pacific. Charles plans to practice optometry in a private setting after a one year residency. He wishes to send his love to his wife Cheryl and 4 month old daughter Kayla.

Steven Serrins was born in Hollywood, California on 07-13-56. He graduated from Royal High School in Simi Valley, California in 1974. Here he was active in the science club and played two years of high school football. He graduated from College of the Sequoias in 1978 with an A.S. degree in Science. He also received his B.S. degree in Visual Science from Pacific University in 1988. Steve plans to practice optometry with emphasis on pediatrics in a co-practice with his father, who also is an optometrist. Steve sends his love to his wife and children for their dedication and support through these last four years.
Abstract

This paper will describe the optometric portion of the mobile clinic that journeyed to two small Mexican communities in rural Baja California. The data gathered along with information from other studies will be used to make suggestions for improvements of future clinics. This information should be of value to persons planning subsequent clinics. Information contained in this paper includes 1) Descriptions and history of the mobile clinics, 2) Descriptions of the number and types of visual disorders encountered, 3) Demonstration of the need for such clinics, and 4) Suggestions for the improvement of such clinics in terms of efficiency and scope.
Acknowledgements

The authors would like to express their appreciation to the following people and organizations:

Dr. Richard Septon whose suggestions and constructive criticisms were invaluable;

Dr. Donald Ratley who founded and directed the mobile and permanent clinics in Baja California;

Rotary International without their sponsorship none of the clinics would be possible;

Opti-Craft, Arndt Optical, Dr. P. Serrins, and Pacific University for their donations of equipment and supplies that allowed the lens fabrication lab to be possible;

All the volunteers, sponsors, and benefactors who put time, effort, and money into these projects.
**Optometry in Rural Baja California**

**INTRODUCTION**

The purpose of this paper is to describe and suggest, on the basis of our experiences, some improvements which will be of value when implementing future clinics. The main features of the mobile clinic will be described with special attention to the optometric division. Details of the optometric and general clinic layout as well as staff living conditions and characteristics of the patients will be discussed relative to data gathered on the October 1987 clinic at San Jose and San Miguel Comondo. From these observations suggestions will be made to improve the operation of the clinic both in terms of efficiency and scope. The need for such clinics will also be demonstrated. The suggestions that will be made fall into four categories. 1) Suggestions for the type and amount of equipment needed. 2) Suggestions for the amount and types of spectacle lenses and other therapeutic agents to include. 3) General suggestions for the operation of the clinic. 4) The building of a lens fabrication laboratory.

**HISTORY**

The mobile clinic was developed out of a rotary project that supplied a permanent clinic in Mulege Baja California Sur, Mexico. It was started in September of 1983. This non-mobile
Optometry in Rural Baja California

Clinic consisted of a medical, dental, and an optometric clinic. A dental lab was also included in this clinic. These clinics are staffed at various times during the year depending upon the availability of volunteers. The optometric part of this clinic is usually staffed by students and advisors from Pacific University College of Optometry in association with the Amigos club. These, along with the mobile clinics, are under an organization called "The Rural International Health Organization Inc." Donald Ratly, D.M.D. is the founder and director of these clinics and their American center of operations in Mount Shasta, California. Funding for both clinics come from the International Rotary, local Rotary clubs, volunteers, corporations and individuals. Equipment is also donated by various organizations and individuals. In October of 1986 a mobile division of this clinic was formed to service areas that are much more rural. The clinic that will be described here packed up from Mulege and drove over 200 miles into two remote communities collectively known as the Comondos (see figure 1). This was the second mobile clinic. The first one went to San Jose Magdalena Mexico. There has also been one mobile clinic that went to the Fiji Islands after October of 1987.
THE 1987 MOBILE CLINIC

The mobile clinic that we will discuss took place in October of 1987. The clinic was set up between two small towns in Baja California called San Jose Comondo and San Miguel Comondo. The two towns had a population of about 500 persons collectively and with outlying ranches serviced about 1000 more. The main occupation here was subsistence farming. Date trees planted by Spanish missionaries in the late 1700's provide the only cash crop of significance. These towns have no public sewer or water lines. Each individual house may or may not have running water or sanitary facilities. Most houses consisted of cinder block or straw walls and thatched roofing. Electricity was available to those that could afford it. There was no telephone service. The only communication consisted of satellite television and one telegraph office. To
Optometry in Rural Baja California

Basic disease control and prevention was the main thrust of the medical clinic. There were many cross consultations between the medical and optometric clinics.

Figure 2
Because one of the purposes of this paper is to describe the clinic so that people going in the future will have an idea of what to expect, a brief discussion of the living conditions of the staff is in order. The staff was housed in an enternado or boarding school. Food and cooking supplies were brought along or purchased from local stores. An American cook prepared the meals for the staff. At each meal one or two staff members were recruited to help in the kitchen. Because of the high caliber of the cook and assistance from the school our meals were very good. Hot water for bathing was available if one was willing to collect wood or other burnables and light a fire in the water heater. Tents were brought along in the event we were unable to stay at the school. The entire staff stayed in one room and shared a bathroom. Recreation and relaxation consisted of walks and excursions around the countryside, swimming in the local swimming hole, playing with the children from the school, and various other endeavors depending on the imagination and personal preferences of each individual. As with any group living in such close quarters various minor conflicts occurred but were quickly resolved. Important lessons we learned were to be flexible, a team player, and realize that each person is vital to the success of the clinic be he (or she) doctor or cook.
Optometry in Rural Baja California

THE OPTOMETRY SECTION

Two student optometrists and a Mexican physician who had intern training in ophthalmology staffed the optometry clinic. One of the nurses and the physician served as translators. Both optometry students learned enough Spanish during this experience that they were able to do the exams without a translator at the end of the nine days. Two rooms of the building were allotted to us. (See figure 2 for sketch.) One room was used for ocular health examination while the other was used for refraction and dispensing. The hall was used for distance acuity.

Ocular health examinations included ophthalmoscopy with a direct scope and indirect ophthalmoscopy using a +14 diopter lens in combination with a direct ophthalmoscope. Tonometry using a handheld Goldman tonometer was done on all patients over 30 years of age and on all patients who were dilated. Corneal, conjunctival and palpebral exams were preformed using fluorescein and cobalt blue filters, ophthalmoscopes, and head borne magnifying lenses. Direct inspection was also used. No biomicroscope was available. When indicated dilated fundus exams and cycloplegic refractions were done on some patients. The limbal glow method was used to estimate the corneal iris angle before dilation.

Jaworski and Serrins
Optometry in Rural Baja California

Refraction was performed using trial lenses, frames and lens flippers. Lens bars were used for retinoscopy. Monocular estimate method (M.E.M.) was used for a first approximation of the near prescription. Since no astigmatic corrections were available equivalent sphere only refraction was done. If there was over a diopter of astigmatism it was noted and the equivalent sphere was recorded. Snellen acuity charts were used to test the visual acuity for both far and near distances. Tumbling E charts were used for children. V.A.'s were recorded. Prisms and Maddox rods were used to test the phoric posture. Loose prisms in combination with red-green glasses and red-green charts were used to test vergence facility and monitor suppression when indicated. The cover test was performed at near and far on all patients as a screening for abnormal phoric postures and strabismus. Krimsky's method and monocular light fixation tests were done routinely. Acuities were measured through all the prescriptions given. Because of the difficulties of matching far power, near add, seg height, and frame style, it often became necessary to dispense two pairs of glasses, one for far and one for reading. A salt pan and various dispensing tools were used for fitting frames to the patients. Unfortunately the lensometer had no bulb and was shorted. Verification of the lenses was done (when needed) by hand neutralization. However, most prescriptions provided were

Jaworski and Serrins
Optometry in Rural Baja California

glasses which had been donated to the Amigos club of Pacific University; these glasses had been pre-verified in Oregon and labeled. As mentioned before one patient would often receive more than one pair of glasses consequently about 400 pair of glasses were prescribed.

Glasses were used to treat hyperopia, myopia, presbyopia, and accommodative esotropia. The second most common treatment was tear substitutes such as artificial tears, saline and lacralube for the control of dry eye and related disorders. Foreign material was removed from the eyes by irrigation with saline, the use of a Q-tip, or both. Various forms of conjunctivitis and keratitis were diagnosed and treated with antibiotics, compresses etc.. Glaucoma was treated with topical pilocarpine or timolol after consultation with the medical staff. Patients with ocular abnormalities from systemic conditions were referred to the medical clinic.

RESULTS

General Health Considerations

Before considering the optometric aspects of the patient data some general characteristics should be discussed. During the nine days of this clinic about 270 patients were seen. From this patient base a sample of 94 was taken. This can be assumed to be a random sample of the 270 in all respects except one. We
Optometry in Rural Baja California

examined all of the children in one day and the school requested that they keep our records. Our data sample, therefore does not include children from 0 to 18 years. All of the following statistics which follow are based on this sample as outlined in table 1.

<table>
<thead>
<tr>
<th>No.</th>
<th>Sex</th>
<th>Age</th>
<th>Systemic</th>
<th>Path.</th>
<th>Eye Path</th>
<th>Eye Care</th>
<th>Rx</th>
<th>Add</th>
<th>Astig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>25</td>
<td>No</td>
<td></td>
<td>Pt, DE</td>
<td>No</td>
<td>+2.25</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>25</td>
<td>No</td>
<td></td>
<td>FC</td>
<td>No</td>
<td>+1.00</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>20</td>
<td>No</td>
<td></td>
<td>Pt</td>
<td>Yes</td>
<td>+1.25</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>19</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.50</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>21</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.75</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>29</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.25</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>25</td>
<td>No</td>
<td>FC</td>
<td>No</td>
<td>No</td>
<td>+0.50</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>28</td>
<td>No</td>
<td>DE</td>
<td>No</td>
<td>No</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>36</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+0.75</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>M</td>
<td>38</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.50</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>M</td>
<td>30</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.00</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>M</td>
<td>30</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.62</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>F</td>
<td>37</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>F</td>
<td>33</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>-0.25</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>F</td>
<td>39</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.50</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>F</td>
<td>34</td>
<td>No</td>
<td></td>
<td>DE, OAS</td>
<td>No</td>
<td>+1.75</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>M</td>
<td>46</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.75</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>F</td>
<td>48</td>
<td>HYT</td>
<td>Pt</td>
<td>No</td>
<td>No</td>
<td>0.00</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>M</td>
<td>48</td>
<td>HT</td>
<td>Pt</td>
<td>No</td>
<td>No</td>
<td>+0.25</td>
<td>2.25</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>F</td>
<td>46</td>
<td>No</td>
<td></td>
<td>AH, OAS</td>
<td>No</td>
<td>+1.00</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>F</td>
<td>40</td>
<td>HT</td>
<td>OH</td>
<td>No</td>
<td>No</td>
<td>+0.25</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>M</td>
<td>49</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+2.50</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>F</td>
<td>48</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>0.00</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>F</td>
<td>47</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+3.00</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>F</td>
<td>49</td>
<td>No</td>
<td></td>
<td>Pt, DE</td>
<td>No</td>
<td>+1.50</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>F</td>
<td>43</td>
<td>No</td>
<td>DE</td>
<td>No</td>
<td>No</td>
<td>+0.50</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>F</td>
<td>49</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.00</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>F</td>
<td>45</td>
<td>Unknown</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>-0.25</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>M</td>
<td>41</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+0.50</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>M</td>
<td>48</td>
<td>No</td>
<td>AS</td>
<td>No</td>
<td>No</td>
<td>+1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>F</td>
<td>43</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+0.25</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>F</td>
<td>40</td>
<td>HT</td>
<td>VC</td>
<td>No</td>
<td>No</td>
<td>+0.50</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>F</td>
<td>47</td>
<td>No</td>
<td>Cat</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Jaworski and Serrins 10
### Optometry in Rural Baja California

<table>
<thead>
<tr>
<th>No.</th>
<th>Sex</th>
<th>Age</th>
<th>Systemic Path.</th>
<th>Eye Path</th>
<th>Eye Care</th>
<th>Rx</th>
<th>Add</th>
<th>Astig</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>M</td>
<td>40</td>
<td>No DE</td>
<td>No</td>
<td>+1.00</td>
<td>0.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>F</td>
<td>44</td>
<td>No Pt</td>
<td>Yes</td>
<td>+2.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>M</td>
<td>44</td>
<td>No No</td>
<td>Yes</td>
<td>+1.00</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>M</td>
<td>45</td>
<td>No Glau</td>
<td>No</td>
<td>+0.50</td>
<td>2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>F</td>
<td>45</td>
<td>HT No</td>
<td>Yes</td>
<td>+1.00</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>F</td>
<td>46</td>
<td>No No</td>
<td>No</td>
<td>+1.25</td>
<td>2.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>M</td>
<td>42</td>
<td>CR Cat, Pt</td>
<td>No</td>
<td>-2.00</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>F</td>
<td>48</td>
<td>No DE</td>
<td>No</td>
<td>+1.25</td>
<td>1.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>F</td>
<td>49</td>
<td>HT Cat</td>
<td>Yes</td>
<td>+0.50</td>
<td>2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>M</td>
<td>44</td>
<td>No DE</td>
<td>No</td>
<td>+1.00</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>F</td>
<td>56</td>
<td>No No</td>
<td>No</td>
<td>+2.00</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>M</td>
<td>55</td>
<td>No VC, DE</td>
<td>No</td>
<td>+0.50</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>M</td>
<td>50</td>
<td>No AS, Pt</td>
<td>No</td>
<td>0.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>F</td>
<td>55</td>
<td>No No</td>
<td>No</td>
<td>+0.75</td>
<td>1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>M</td>
<td>52</td>
<td>D VC, Ret</td>
<td>No</td>
<td>+1.50</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>M</td>
<td>54</td>
<td>HT OH</td>
<td>No</td>
<td>+2.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>F</td>
<td>53</td>
<td>HT No</td>
<td>No</td>
<td>+1.50</td>
<td>2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>M</td>
<td>57</td>
<td>HT No</td>
<td>No</td>
<td>+1.00</td>
<td>2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>F</td>
<td>51</td>
<td>No No</td>
<td>No</td>
<td>+0.75</td>
<td>2.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>F</td>
<td>58</td>
<td>No CD, VC</td>
<td>No</td>
<td>+2.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>F</td>
<td>59</td>
<td>HT Cat</td>
<td>No</td>
<td>+1.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>F</td>
<td>50</td>
<td>HT No</td>
<td>No</td>
<td>+0.50</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>M</td>
<td>51</td>
<td>D DAB</td>
<td>Yes</td>
<td>-0.25</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>M</td>
<td>67</td>
<td>Inf</td>
<td>No</td>
<td>+1.00</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>F</td>
<td>63</td>
<td>No No</td>
<td>Yes</td>
<td>+3.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>F</td>
<td>60</td>
<td>AST Cat</td>
<td>No</td>
<td>-1.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>M</td>
<td>67</td>
<td>HT OH</td>
<td>Yes</td>
<td>+1.00</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>F</td>
<td>63</td>
<td>HT Cat, Pt</td>
<td>No</td>
<td>+0.25</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>M</td>
<td>69</td>
<td>No Cat, Glau</td>
<td>No</td>
<td>-0.50</td>
<td>2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>F</td>
<td>68</td>
<td>No No</td>
<td>No</td>
<td>+2.00</td>
<td>2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>M</td>
<td>64</td>
<td>No Pt</td>
<td>No</td>
<td>+0.50</td>
<td>2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>M</td>
<td>66</td>
<td>No No</td>
<td>No</td>
<td>+1.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>F</td>
<td>68</td>
<td>HT, D Cat, As, OH</td>
<td>No</td>
<td>-2.25</td>
<td>1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>F</td>
<td>67</td>
<td>HT OH</td>
<td>No</td>
<td>+3.50</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>F</td>
<td>64</td>
<td>No OA, Cat</td>
<td>No</td>
<td>+0.50</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>F</td>
<td>74</td>
<td>No DE</td>
<td>No</td>
<td>+1.00</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>F</td>
<td>71</td>
<td>No No</td>
<td>No</td>
<td>+1.00</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>M</td>
<td>73</td>
<td>No No</td>
<td>No</td>
<td>+0.25</td>
<td>1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>F</td>
<td>70</td>
<td>No No</td>
<td>No</td>
<td>+1.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>F</td>
<td>72</td>
<td>No No</td>
<td>No</td>
<td>+0.50</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>F</td>
<td>76</td>
<td>No No</td>
<td>No</td>
<td>-1.50</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>F</td>
<td>72</td>
<td>No No</td>
<td>No</td>
<td>+0.75</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>F</td>
<td>70</td>
<td>HT Cat</td>
<td>No</td>
<td>+2.00</td>
<td>2.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>F</td>
<td>75</td>
<td>HT, D Cat, Pt, Eso</td>
<td>No</td>
<td>-0.50</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>F</td>
<td>77</td>
<td>HT Cat, Glau</td>
<td>No</td>
<td>0.00</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Jaworski and Serrins*
### Optometry in Rural Baja California

<table>
<thead>
<tr>
<th>No.</th>
<th>Sex</th>
<th>Age</th>
<th>Systemic Path.</th>
<th>Eye Path</th>
<th>Eye Care</th>
<th>Rx $^$</th>
<th>Add $^\dagger$</th>
<th>Astig</th>
</tr>
</thead>
<tbody>
<tr>
<td>79</td>
<td>F</td>
<td>76</td>
<td>HT</td>
<td>Cat</td>
<td>No</td>
<td>+0.50</td>
<td>2.75</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>M</td>
<td>70</td>
<td>No</td>
<td>ON, IA, Pt</td>
<td>No</td>
<td>+1.00</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>F</td>
<td>74</td>
<td>HT</td>
<td>No</td>
<td>No</td>
<td>+1.75</td>
<td>2.25</td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>F</td>
<td>76</td>
<td>RA</td>
<td>No</td>
<td>Yes</td>
<td>+3.25</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>F</td>
<td>72</td>
<td>HT, CARD</td>
<td>Cat, OH</td>
<td>Yes</td>
<td>+2.50</td>
<td>2.25</td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>F</td>
<td>78</td>
<td>No</td>
<td>Cat, Inf</td>
<td>No</td>
<td>+1.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>F</td>
<td>84</td>
<td>No</td>
<td>Cat, OAS, CD</td>
<td>No</td>
<td>+2.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>M</td>
<td>87</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>M</td>
<td>80</td>
<td>No</td>
<td>Cat, Pt, DE</td>
<td>No</td>
<td>-0.25</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>F</td>
<td>81</td>
<td>No</td>
<td>Cat, Mac</td>
<td>No</td>
<td>N/A</td>
<td>N/A Hi Cyl</td>
<td></td>
</tr>
<tr>
<td>89</td>
<td>F</td>
<td>87</td>
<td>No</td>
<td>Mac</td>
<td>No</td>
<td>+3.00</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>F</td>
<td>80</td>
<td>No</td>
<td>VC, DE</td>
<td>No</td>
<td>+0.75</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>F</td>
<td>90</td>
<td>No</td>
<td>VC, DE</td>
<td>No</td>
<td>+1.75</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>F</td>
<td>80</td>
<td>No</td>
<td>PCF, DE</td>
<td>No</td>
<td>+1.00</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>M</td>
<td>82</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.50</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>M</td>
<td>82</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>+1.00</td>
<td>2.75</td>
<td></td>
</tr>
</tbody>
</table>

$^\$Rx is computed to be the mean refraction of the two eyes.

$^\dagger$Add computed with M.E.M in combination with M.S.B.V.A. at near.

HT=Hypertension D=Diabetes RA=Rheumatoid Arthritis CARD=Cardiac Disease CR=Congenital Rubella AST=Asthma HYT=Hypertension Pt=Pterygium or large pinguecula DE=Dry Eye FC=Follicular Conjunctivitis OAS=Ocular Atherosclerosis AH=Asteroid Hyalitis AS=Arcus Senilis (Severe) VC=Vernal Conjunctivitis Cat=Cataract Glaucoma OH=Ocular Signs of HT Ret=Misc. Retinal Pathology CD=Corneal Degeneration OAs=Optic Atrophy Eso=Esotropia OIA=Optic Neuritis IA=Iris Atrophy Mac=Macular Degeneration PFC=Pharo=Conjunct. Fever Inf=Topical Ocular Infection N/A=Data Not Available

---

63% of the patients were female and 37% were male. The ages of our patient sample varied from 19 to 90 years old with a mean of 55 years and a standard deviation of 17.7 years. Figure 3 shows the age distribution.

27% of our patients in the sample had some form of major systemic disease. This was determined by patient records or after consultation with the medical staff.

Jaworski and Serrins
Hypertension related disorders such as atherosclerosis was present in 21% of the patients in the sample. 4% of the patients had diabetes. Other diseases such as Grave's syndrome (hyperthyroidism), congenital rubella, and rheumatoid arthritis were seen as shown in figure 4. It can be speculated that the reasons for the high rate of hypertension disorders might be due to diet, which consisted of mostly goat meat, goat fat, figs, and beans. Vegetables were rarely available unless grown by the people themselves; therefore, healthful food was often not available.

Optometric Considerations

During the nine days of clinical work about 30 patients a day were seen between the two optometry students. Thus about 270
patients received optometric care. As can be seen in table one under the column "eye care" (meaning, had the patient ever had eye care before?) that 89.2% of the patients never had any eye care in their lives. Many patients (over 100) were turned away due to the fact that we had to leave. This clearly shows that a critical need for optometric care exists in this area.

By far the most frequent conditions we treated were hyperopia and presbyopia, as shown in figure 5. 79.8% of the patients required plus lenses for distance. 21% of the total had a correction of under +1.00 diopter. 40% of the patients required prescriptions between +1.00 and +2.00 diopters. 15% needed over +2.00 diopters of far point power. The largest refractive error of this sample was 3.50 diopters of hyperopia.

Presbyopia was present in 82% of our sample of patients. Since we had difficulty in matching seg height, power, etc. as
Optometry in Rural Baja California

mentioned before, a separate pair of reading glasses was often given. This meant that a person who had a +2.50 correction at far and needed a 2.50 diopter add would be given a +5.00 pair of glasses for reading.

As shown in figure 5 myopia and astigmatism were not found as often as in the United States.\textsuperscript{4} Myopia was seen in 10.6\% of our patients and was often associated with nuclear sclerosis cataract. Astigmatism was not refined because we had no way of correcting for it because of the impossibility of matching cylinder power, axis, sphere power and the two eyes with donated glasses. If there was over a diopter of astigmatism it was noted and equivalent sphere was prescribed. Only 3.2\% of our patients had astigmatism of over 1.00 diopter however.

One of the most disturbing things we noted was that 57.4\% of our patients had some form of ocular pathology. We defined

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure5}
\caption{Optometric Problems Diagnosed}
\label{fig:figure5}
\end{figure}

\textsuperscript{15} Jaworski and Serrins
"Pathology" as any condition that compromises sight, or could compromise sight if left untreated, or an ocular manifestation of a disease that could cause death or morbidity.

As can be seen in figure 6, 25.5% of the patient sample had some form of exposure disorder. Most common were pterygium, pinguecula and dry eye. 19% of the patients had cataracts that interfered with vision. Some of the cataracts were so severe that no red reflex off the retina could be observed even with the halogen light of the ophthalmoscope. While only 3% were diagnosed with glaucoma, the criteria we used were rather crude. I.O.P.'s consistently over 30 mmHg, nerve head defects, confrontational field defects, and the patient's symptoms were all taken into consideration before the diagnosis was made.
Optometry in Rural Baja California

11% had some form of retinal vascular pathology. Most often seen was hypertensive retinopathy. 2.1% of this population had senile macular degeneration; 1.1% had optic atrophy. Interestingly we saw almost no diabetic retinopathy even though many of the patients had diabetes (see figure 4). We speculate that because no insulin was available, most people died of the disease before the retinopathy could develop. 10% had some form of non-exposure related conjunctivitis. The most common was vernal conjunctivitis, with viral and bacterial conjunctivitis also seen. Diseases such as iris atrophy, corneal degeneration, esotropia, retinal lesions and other were seen in less than 5% of the patients collectively.

COMPARISONS

In July of 1986 data was gathered in Mulege, Baja California Sur by Helgeson et. al. They found in their refractions a large amount of hyperopia compared to myopia. In persons 34 years old or younger a ratio of about 2 to 1 hyperopia versus myopia. This ratio dropped to 1.5 to 1 in persons over 34 years old. They also found a greater amount of emmetropia than our study. Our study showed about a 7 to 1 ratio of hyperopia to myopia. The difference in the two studies may be explained by noting that Helgeson et. al. lumped +0.25 to -0.25 diopters of correction.

Jaworski and Serrins
Optometry in Rural Baja California

into one category whereas we did not. Also our Rx numbers reflect a mean of the two eyes while Helgeson's data is based on individual eyes. The apparent differences may also be due to the fact that we are dealing with two different populations. Our study was done in a very isolated rural area. Factors such as diet, genetics (inbreeding, genetic drift†, etc.), stress, and health may account for the difference in the populations.

In addition Helgeson et al. found that 42.6% of their patients had pterygiums or pingueculas. 10.7% had cataracts compared to 19% in our study. 6.6% of their population had conjunctivitis. These above values are lower than our study and may again be due to the differences in the populations.

Wharton found in 1983 that peoples of Central and South America are "...more often low hyperopes and less often myopes than U.S. residents." She also found that people of these regions tend to have more ocular pathology than U.S. residents. She found that in the Latin American countries of Ecuador, Venezuela, and Honduras, 28.8% are hyperopic, 65.6% require no correction and 5.5% are myopic. She also found that 1.1% had astigmatism over 0.50 diopters. So the ratio of hyperopes to myopes in her study is about 5.24 to 1. She also found

---

†Genetic drift refers to the tendency of isolated populations to have different characteristics than the main population due to a difference in the gene pool.

Jaworski and Serrins
Optometry in Rural Baja California

pterygiums in about 32.2% of her population and cataract in about 12%. Table 2 summarizes the findings of these three studies.

### Table 2

<table>
<thead>
<tr>
<th></th>
<th>Helgeson et.al.</th>
<th>Wharton†</th>
<th>Jaworski &amp; Serrins</th>
</tr>
</thead>
<tbody>
<tr>
<td>N of Sample</td>
<td>237</td>
<td>2,222</td>
<td>94</td>
</tr>
<tr>
<td>Hyperopia</td>
<td>n/a</td>
<td>29.0%</td>
<td>79.8%</td>
</tr>
<tr>
<td>Pterygia++</td>
<td>16.0%</td>
<td>32.2%</td>
<td>12.7%</td>
</tr>
<tr>
<td>Cataract</td>
<td>11.0%</td>
<td>12.0%</td>
<td>19.0%</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>n/a</td>
<td>5.8%</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

**SUMMARY OF STUDIES**

From the above data some trends appear. The most obvious is the fact that untreated hyperopia and presbyopia are very frequently found conditions. Cataracts are the number one cause of non-refractive, functional blindness. Tragically, in rural Mexico there is almost no chance that any of these people can have them removed. Pterygia and pinguecula are also present in

---

†This data is from Ecuador, Venezuela and Honduras combined.

‡May also include large pinguecula.
large numbers. These may not cause as much blindness as cataract, but bilateral pterygia are a severe threat to sight not only because of the opacification of the cornea but because of the astigmatism they cause. Astigma other than caused by pterygia does not seem to be a major threat to sight.

It has also been shown that various ocular diseases such as glaucoma and conjunctivitis are present in large enough numbers that the doctors going on subsequent clinics should be prepared to treat or manage these disorders.

SUGGESTIONS FOR FUTURE CLINICS

It has been shown above that the optometrist must come prepared to treat large numbers of hyperopes and presbyopes. A large supply of plus lenses must therefore be taken along. Although myopia is not seen in a large number of people the doctors should be prepared to treat it. The donated glasses should be pre-sorted according to power, bifocal/single vision, children/adult, and male/female/unisex frame. The glasses should be labeled in such a way that the labels are not easily lost or fade in the sun. The printouts on the thermal paper from a computerized lensometer will turn black in the sun. An optical fabrication lab, that will be discussed later, would allow the doctors to treat astigmatism, anisometropia, and other refractive
Optometry in Rural Baja California

conditions that cannot be treated with donated lenses. See appendix A "Supplies and Equipment for Treatment" for the breakdown of the exact amount and type of lenses to bring.

The doctors should also be prepared to diagnose and treat conjunctivitis, glaucoma, keratitis, dry eye related disorders, foreign bodies, low vision, concretions, and many other conditions. The doctors should make sure that if follow up care is needed it is available and competent. Never start any care or leave any medications that you feel needs close follow up if you do not feel that the indigenous health care team is qualified to continue the treatment. In other words, do not do any harm.

It is also suggested that the doctors acquire a phoropter for refraction. Loose lenses and etc. are adequate, but a phoropter will increase the efficiency of refraction so more patients can be seen. It will be critical to have one if treating for astigmatism when the fabrication lab is built. A biomicroscope would be of great value in ocular health examinations. A complete list of refraction and ocular health examination equipment that should be brought along is shown in appendix B.

It is also suggested that the books Manual of Ocular Diagnosis and Therapy, Second Edition by Deborah Pavan-Langston (Little

Jaworski and Serrins 21
Optometry in Rural Baja California

Brown and Company, 1985) and Atlas of Clinical Ophthalmology by Spalto, Hitchings, and Hunter (J.B. Lippincott Company 1984) be taken along for reference. A copy of Manual of Ocular Diagnosis and Therapy, Second Edition written in Spanish may be obtained by writing to Gloria Tusell, Salvat Editores, Muntaner 262,6, Barcelona, Spain 08021. It is further suggested that copies of the CIBA Pharmaceutical Company’s Clinical Symposia be left with the local health care team as a reference for follow up care. These reprints contain pictures and diagrams and will be of great value if someone in the local health care team can read English. The exact reprints to acquire are Clinical Symposia: “Diseases of the Eye” Volume 14 Number 4, “Glaucomas” Volume 28 Number 2, and “Cataracts: Development, Diagnosis, Management” Volume 26 Number 3 (1962 CIBA Pharmaceutical Company, Summit New Jersey). The optometrists may also wish to write their own small manual for follow up care and have it translated into Spanish before leaving on the trip.

Some other suggestions include the use of the exam form found in appendix C. It will also be useful to bring back a list of all existing equipment along with the model numbers and condition of each piece so that bulbs and replacement parts can be brought from the United States. A Spanish English dictionary can also help with translations. One may also wish to get a copy

Jaworski and Serrins
Optometry in Rural Baja California

of the Spanish Optometric Phrase Book located at the optometry clinic in Pacific University.

Optical Fabrication Lab

One major suggestion is the development and implementation of an optical fabrication lab. This is currently being done in Mulege, Baja California and the glasses made here can be shipped to any rural area. With donated equipment, frames, and lens blanks we hope to have the lab running by February of 1989. For a list of the equipment, lenses, supplies, and suggested order pad see appendix D. When the lab is in operation we can treat astigmatism, anisometropia, and other conditions that are impossible to correct with donated glasses.

CONCLUSIONS AND SUMMARY

The authors would like to suggest this experience to anyone interested. The clinic provided a great opportunity to improve one's clinical skills and to interact with other health care professionals. It can be clearly seen that a great need for optometric care exists. Our data showed that almost 90% of the population had never seen an eye doctor before in their entire lives! We had to turn away over 100 people because of time constraints. The need could
Optometry in Rural Baja California

not be more critical. One elderly woman patient of ours had not been able to read her bible for 20 years. A +2.50 pair of reading glasses was given to her and her life was changed so much that she came back to us with tears of happiness in her eyes. The descriptions and suggestions found here should allow future clinics to be planned so that they can continue to supply this vital care as well as expand the number of conditions that can be treated. These suggestions should also allow people to be treated more efficiently, thus more patients can be served in the limited time available. The authors realize that these clinics provide a very small island of relief in a whole ocean of poverty, but we also believe that "it is better to light a single candle than curse the darkness."
Optometry in Rural Baja California

References

1 Ratley Donald, Telephone Conversation, September 5, 1988, Mount Shasta, California.

2 Helgeson, Mark; Nicholoson, Laurie; Wells, Tracy; Chronology of Volunteer Vision Care in Baja California Sur. Optometric Thesis, Pacific University, May 1988.


Supplies and Equipment for Treatment

1. Large Supply of Glasses in Single Vision Form
   a. Range from -10.00 to +15.00
   b. 25% should be from +0.50 to +1.00
   c. 45% should be from +1.25 to +2.50
   d. 20% should be +2.75 and above
   e. 7% should be -0.50 to -3.00
   f. 3% should be -3.25 and greater

2. Bifocals should be given if one can match all the variables. The power of both distance and near portions should be pre-labeled when Rx is verified.

3. To figure the number of glasses needed multiply the number of doctors by the number of patients that each will see in a day (about 15 per clinic day in maximum). Multiply this number by 4 and then by the number of clinic days planned to get the approximate number of glasses needed. With 2 doctors working 9 days about 1080 glasses should be brought along in the powers specified above.

4. Low vision aids such as high plus lenses and stand magnifiers should be included if they can be acquired.

5. A supply of plano safety glasses is recommended.

6. A large supply of sunglasses should be included. (Ideally one per patient.)

7. Several bottles of saline for irrigation.

8. Artificial tears and lacralube should be taken along in large amounts.

9. Pharmaceuticals
   a. Tobrex ointment and 0.3% soln.
   b. Garamycin 0.3% soln.
   c. Neosporin ointment
   d. Pilocarpine 1%
   e. Blephamide
   f. Cromolyn Sodium 2% soln.
   g. Topical Decongestants and antihistamines (OTC)
   h. Others

10. Dispensing tools and equipment
    a. Salt pan and extra salt
    b. Dispensing tools (pliers, screwdrivers, etc.)
    c. Extra frame repair parts
    d. Lensometer

Appendix A
Equipment for Refraction and Ocular Health Examination

Equipment for Refraction

1. Retinoscope with extra battery handle
2. Trial Lens Set (1 per Doctor)
3. Lens Bar Set (1 per Doctor)
4. Phoropter
5. Occluders/Eye Patches
6. Set of Beads
7. Trial Frame (1 per Doctor)
8. Anaglyphic Material with Glasses
9. Acuity Charts at Far and Near (Spanish Reading Card)
10. Set of Loose Prisms
11. 100 sq.ft. of Plastic Cloth to Ensure a Dark Room
12. Cleaning Supplies for Optical Instruments
13. Lens Flippers
   a. 2 +/- 1.50 Diopter
   b. 2 +1.50/+2.50 Diopter for retinoscopy
   c. 2 6 Prism Diopter BI/BO
14. Tape Measure (at least 20 feet)
15. P.D. rules
16. Supply of Pens, Paper, Clipboards, etc.
17. Misc. Items

Equipment for Ocular Health Examination

1. Direct Ophthalmoscope with Extra Battery Handle
2. Portable or Other Slit Lamp
3. Monocular Indirect Ophthalmoscope
4. Perkins Hand-held Tonometer
5. Loupes
6. Penlights/ Transilluminators
7. Cobalt Blue Filters for Above
8. 4 Bottles of Opthane 1%
9. 6 Bottles of Fluorescein
10. 200 Rose Bengal and Fluorescein Strips
11. 3 Bottles of Tropicamide 1%
12. 3 Bottles Phenylephrine 2.5%
13. 3 Bottles Cyclopentolate 1%
14. Pack of 200 Q-Tips
15. Extra Bulbs for Everything
16. Goldman 3-Mirror Lens if Slit Lamp Available

Appendix B
Name: 
Age: 
Sex: M F 
Date: - -

Previous Ocular Disease Y N. Major Systemic Disease Y N. 
Medications Y N. Previous Eye Care Y N. Glasses or C.L. Y N. 

Explain any Yes:

Chief Complaint:

Other Complaints:

Cover Test Far __ A xo so ph stb Near __ A xo so ph stb.
NPC ___ cm. Confront. Fields N A. Motilities N A. NPA ___ cm.
Notes And other tests:

#4 O.D. ___ ___ x O.S. ___ ___ x MEM O.D. ___ O.S. ___
#7a O.D. ___ ___ x O.S. ___ ___ x Other Tests:
Near MSBV A O.D. _________ O.S. _________
#20 O.U. _________ #21 O.U. _________
Suggested Rx: O.D. _________ O.S. _________ Add _________
Notes:

Ocular Health:
External:

Anterior Segment:

Tonometry: O.D. ___ O.S. ___ Time: _____ Pupils N A.
Cataract O.D. Y N Grade ___ Type ___ O.S. Y N Grade ___ Type ___
Posterior Segment: O.D.: N A. O.S. N A.
Notes:

Other Tests/Notes/Results:

Diagnosis: 1.
2.
3.
4.
Therapy: Rx 1. ________________________ Rx 2. ________________________
V.A. Through Rx 1. O.D. ___ O.S. ___ Rx 2. O.D. ___ O.S. ___
Therapy Cont.

Appendix C
Medications: (Note type, dosage, amount given, follow up, expected results, when to discontinue etc.)

Other Therapy:

Referral? Y N to whom? For:

Was Chief Complaint Resolved? Y N Partial Explain:

Prognosis of Each Problem:
1)
2)
3)
4)

Follow up. (Consult with local health care team.)

Statement to the Patient: Translator Y N Name of:__________

Other Notes:

Doctor:____________________

Note: Y=Yes N=No A=Abnormal N=Normal ph=Phoria stb=Strabismus xo=Exo so=Eso C.L.=Contact Lenses

Appendix C
Specifications for Optical Fabrication Lab

Power Ranges of Lens Blanks Donated

Spherical Lenses
100 pair range +0.25 to +6.50 D
100 pair range -0.25 to -6.00 D

Compound Lenses
75 pair range +0.25 to +4.00 sphere with +0.25 to +2.00 cylinder.
75 pair range -0.25 to -4.00 sphere with +0.25 to +2.00 cylinder.

Sunglasses
200 pair of assorted powers of grey #3 glass lenses

Equipment List and Sponsors

2 Coburn Edgers: Opti-Craft
Bausch and Lomb Hand Edger: Opti-Craft
AIT Blocker: Opti-Craft
500 Patterns: Dr. P. Serrins
1350 Lens Blanks: Dr. P. Serrins
Frame Tools: Dr. P. Serrins
Salt Pan: Pacific University
B & L Lensometer: Pacific University
Dispensing Table: Pacific University
300 Eyeglass Frames: Arndt Optical
Submersible Pump: Arndt Optical

The authors wish to thank all of the above sponsors for their generous contributions to this effort.

Appendix D
Specifications for Optical Fabrication Lab

Prescription Pad

Patient Name: ____________________ Age: _________ Sex: M F

Patient’s Address: ___________________________________________________________

Send to this Address if Different than Above:

__________________________________________________________

Rx: O.D. ________________ O.S. ____________________________

2nd Rx: O.D. ________________ O.S. ____________________________

Doctor: ________________ Date of Request: ________________

Frame Name for Rx 1: ____________________ Color: ________________

Eye Size: ________________ Plastic/Metal/Combo

Frame Name for Rx 2: ____________________ Color: ________________

Eye Size: ________________ Plastic/Metal/Combo

Other Instructions:

Filled by: ____________________ Date Sent: ________________

Appendix D