Mano con Mano Health Reach

Vision Clinic Manual:

Developing an Optical Clinic Using

Lay Volunteers and Donated Eyeglasses

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Preface

It is the intent of this training manual to equip teams of short term mission volunteers to provide eye care in the form of visual screening and dispensing of corrective lenses to patients who have no other access to improved vision. It is also the hope that by learning to recognize serious vision and eye diseases, conditions and infections, that those who need it will be referred to eye care professionals for further care.

The skills outlined in this manual are taken from textbooks, learned from other professionals and gleaned along the way in clinical experience. There is no claim to "expertise" in the area of visual screening or eye care. Recommendations, comments, and criticism are welcomed to improve this manual. It is meant to serve as a tool for those who seek to serve the poor with the abilities that they have, and a desire to improve their skills.

I would like to gratefully acknowledge the invaluable help and support of Jack Locascio, OD, Brian Nelson, MD, physician and eye surgeon, Donna Davis, RN, Bonnie Pelloux, RN, OSF, Carolyn Watson, Carol Watson, Jim and Shauna Biermann and countless volunteers for their help in taking the "vision" a step farther from its initial tiny beginnings. I would like to thank God for my father, Glenn Bilyeu, who gave me a love for Latin America and whose own glasses were the first pair I gave away. I would like to thank my sister, Michelle, for giving me the courage to start Mano con Mano and my folks, Dick and Betty Hoffman for helping me dare to try new things. Thank you, William, for putting up with a house full of glasses and helping me "see" the way. Truly, "it only takes a spark."

For questions, input or suggestions please contact me at the address below. May God bless you in your desire to "give sight to the blind."

Hand in Hand,

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Introduction

Background Information

Two thirds of the world's population lives at or below poverty level. In many third world countries, health care is considered a luxury. In Mexico citizens who are formally employed receive health care via the government-run "Seguro Social." These medical services do not include eye or dental care. The poorest of the poor who are not employed, or who do day labor for unregistered employers do not receive any health benefits through the government. When faced with decisions regarding allocation of scarce resources for medical, dental and eye care, patients in general will leave eye care for last. A sign of a more affluent community can be the number of people who are wearing eyeglasses. The poor do not wear fewer glasses because of better vision, but because of inability to pay for an eye exam and buy corrective lenses.

In order to meet the massive need for basic eye exams, vision screening and corrective lenses, organizations such as the Lion's club have been sponsoring teams of ophthalmologists, optometrists and opticians to go to third world countries and provide eye care using donated glasses for many years. After seeing the overwhelming need for vision screening and referral as well as providing lenses for a population of villagers in Southwestern Mexico, I began to consider the possibility of learning how to do a basic eye exam and refraction myself. After consulting with optometrists regarding the safety and efficacy of fitting patients with glasses that were not made specifically for them, I decided to proceed with my plan. I took lessons in basic refraction from an optometrist, learned how to "neutralize" (measure) donated glasses to determine the correction, and collected used glasses by the hundreds. The first time I used these new skills, I examined over 500 patients in a week and fitted over 300 pair of lenses. Over time, I fine-tuned the process and improved my skills.

As an outgrowth of this work, I decided to try to train others in the skills that I have learned. A format is needed to train a variety of people, from wide geographic areas. In order to provide the best possible eye care using medical professionals other than optometrists and ophthalmologists, I decided to design a training manual. In addition to the manual, classroom instruction, and on-site precepting is an integral part of training eye care volunteers.

Eye Care Volunteers

The target group for this program is professionals from the areas of teaching, nursing and other fields who are interested in providing eye care and have a basic understanding of visual deficits and corrective lenses. Volunteers must have a basic understanding of mathematics in order to calculate refraction using a decimal point system. They must be willing to read the manual and attend 2-3 training sessions including on-site training with a mentor. Basic understanding of Spanish (or the language of the host country) is essential in order to interview patients.

Volunteers need to learn the different types of vision deficits, how to screen for them, what type of conditions can be treated by lenses, which require surgical correction and which are untreatable. Staff need to be able to recognize ocular emergencies in order to refer them to a hospital or clinic.

Individual learning needs assessments are done for each eye care volunteer. Each volunteer comes to the experience with their own specific knowledge base. Workers who wear corrective lenses themselves are easier to train because they are familiar with the basic steps of an eye exam, and understand the importance of making sure that the final prescription is as accurate as possible. Learners with a science or health background are familiar with basic eye anatomy and the physics principles behind light refraction. Volunteers who are bilingual or native speakers

need less tutoring in how to phrase questions. Because of the vast array of different learning needs, this training manual covers all areas of needed knowledge. Group training sessions will cover the highlights of all areas. Individual training sessions are designed for the specific needs of the learners.

The use of trained volunteers throughout the third world to improve vision and overall well being has the potential to improve quality of life for countless thousands of people. At present there are people who can no longer read because of normal aging of the eye (presbyopia). Many people cannot read street signs, see the faces of their children and grandchildren or enjoy the sights of the countryside. People around the world lose their sight needlessly due to over exposure to the sun, wind and dust, or secondary to untreated infections. By training U.S. volunteers and village health care workers in the basics of protecting ocular health and correcting common problems, people will regain a measure of power over their own lives.

Each year countless thousands of pairs of corrective lenses are discarded as "obsolete" or out of style in the U.S. By using these discarded lenses, and trained volunteers, for virtually no expense, thousands of poor people will benefit. Many U.S. residents are in need of an outlet for their energy and resources and would benefit immeasurably by giving away their time and talents.

Program Foundations

Why: Reasons for developing an Optical Clinic using lay volunteers and donated eye glasses.

a. **Need**: Many people have correctable visual deficits, but cannot afford an eye exam or glasses.

b. **Feasibility**: With a short course in eye care basics, and a minimal investment in equipment, it is possible to treat a large number of patients using donated eyeglasses for almost no cost.

c. **Philosophy**: The purpose of this training, and providing these clinics is not to replace existing eye care professionals, but to meet a currently unmet need for people who have no access to eye care due to transportation, lack or resources or both.

d. **Treatment Goals**: To provide the safest, most efficient, cost effective eye care possible for people who have no other alternative to optical health. Goals include:

- Education: regarding prevention of eye infections, injury and damage related to over exposure to sun, wind, dust, and chemicals.
- Screening: in an attempt to identify health care risks and existing eye conditions in order to refer patients to eye care professionals (i.e. Glaucoma, diabetes, cataracts, infections, corneal opacities, strabismus.)
- Visual Acuity: to identify patients existing visual acuity and determine need for corrective lenses.
- Refraction: to attempt to identify the type and amount of correction that a patient needs.
- Dispensing to provide the best possible refraction and fit for the patient using existing donated lenses. If no lenses are available, refer the patient to an optician.

What: Components of a Field Optical Clinic

Patients: anyone with limited resources requesting care.

Staff – Ideal: optometrists, ophthalmologists, and opticians

Alternate: RN, NP, PA, and other volunteers

Qualifications: interest, basic understanding of math, eye anatomy and physiology, willingness to learn, patience, basic Spanish or host country language skills.

Staff are divided into three categories: Visual acuity screeners, examiners/refractors, and fitters. Highest clinical skill is best utilized in the examiner/refractor category. Visual acuity screeners can be trained nationals, or U.S. volunteers with minimal language skills. Fitting is best done by national volunteers, because this requires patience and excellent language skills.

Exam Equipment: Snellen charts (literate and illiterate); handheld Rosenbaum charts, patient record forms, exam lenses, ophthalmoscopes (one per provider), penlights, clipboards, pens, pinhole discs.

Supplies: Plastic bins, 4”x6” ziplock bags, labels, large ziplock bags, felt pens

Large tables or benches, tables and chairs for patients.

Education for Vision Care Volunteers

Basic Eye Anatomy

a. Globe-eyeball.

b. Iris-colored diaphragm that regulates amount of light entering the eye.

c. Pupil-the central opening in the iris, a space, not a structure.

d. Sclera-rigid, white outer shell of they eye.

e. Cornea-clear front part of they eye.

f. Conjunctiva-mucous membrane covering sclera and inner lids.

g. Optic nerve-conducts visual images from retina to brain.

h. Lacrimal gland-secretes tears in outer aspect of the orbit.

i. Lacrimal duct-canal from inner portion of eyelid margins to nasal cavity for draining tears.

j. Retina-inner lining of the eye containing light sensitive rods and cones.

k. Lens-clear refracting media that focuses light.

Common Visual Deficits

Hyperopia – light focuses behind the retina. Patient sees far objects better until presbyopia develops. Then both far and near objects are blurred. May be congenital or acquired. People with this condition are often called "farsighted."

Presbyopia – arises and progresses from ages 40-60. Presbyopes have difficulty seeing near objects because this requires the lens to change shape and lenses become less resilient with age.

Myopia – originates in young as the eye grows. Because of an elongated eye, light rays focus in front of the retina. Typically children are unable to read the blackboard, or see distant objects

clearly. Reading vision is typically much better than far vision. People with this condition are often called "nearsighted." The condition persists through life.

Amblyopia – a visual disturbance with no apparent gross pathology. Microscopic defect in the wiring of the retina-to-brain connection that results from disuse of one eye at an early age. May be caused by strabismus, ptosis, cataracts extreme astigmatism or markedly dissimilar refractive errors in both eyes (anisometric amblyopia).

Astigmatism – many patients have a combination of astigmatism and another refractive error. Astigmatism is caused by a defect in the curvature of the eye, which causes blurring of vision. An analogy of astigmatism is that the eye is shaped more like an egg instead of spherical like a basketball.

Common Ophthalmologic Pathology

Strabismus – the abnormal turning in or out of an eye due to problems with the eye musculature. May be corrected with lenses, exercises or surgery. Usually congenital, but may be acquired.

Diabetic Retinopathy – due to poorly controlled blood sugars, small blood vessels in the retina leak and may cause visual loss and blindness if untreated. Usual treatment is laser surgery if caught early. Control of blood sugar is essential. Unexplained visual loss in patients over 40 should be followed up with a blood sugar test and referral.

Pterygium – a fleshy overgrowth of tissue on the sclera which can grow over the cornea and obscure vision. Caused by wind, dust and sun exposure. Use sunglasses to prevent. Eye lubricants such as artificial tears used 3-4 times a day may be helpful.

Cataracts – an opacity or clouding of the lens, which leads to decreased vision and eventual blindness which can be reversed with surgical removal. Cataracts also occur in children and are

called congenital cataracts. If not treated early, patients with congenital cataracts can develop severe vision loss. Cataracts are still the leading cause of blindness worldwide.

Glaucoma – an increased pressure within the eye, which can lead to blindness, usually develops without symptoms. One form, however, can present with complaints of unilateral eye pain, redness or vision loss and should be referred to an ophthalmologist immediately.

Conjunctivitis – inflammation or infection (bacterial or viral) of the conjunctiva. Bacterial infection may require antibiotics. Preventable with good handwashing. Easily spread from person to person. Can become serious and threaten vision.

Corneal opacities – caused by chemical burns, genetic conditions, infection or injuries. The normally clear covering of the eye becomes clouded over, and patients are unable to see past the cornea. If this happens early in life, it can lead to amblyopia and permanent visual loss if not corrected.

Elements of Good Vision

In order for a person to see well, they must have at least one healthy eye, an intact optic nerve, and a functioning optic cortex in the brain. Healthy eyes have clear corneas and lenses, intact retinas, and a shape that refracts light well. Conditions affecting the brain, optic nerve or retina cannot be corrected with lenses. Severe clouding of the cornea can only be treated with surgery (corneal transplant). Cataract patients will benefit from refractive lenses up to a certain point. When the lens becomes too clouded over, the patient will need surgery. Conditions best treated with lenses include presbyopia, myopia, hyperopia, astigmatism and certain forms of strabismus.

Performing an Eye Exam

1. Test visual acuity:

This may be done by visual screeners or clinic assistants who have been trained.

a. Distance vision using Snellen chart.

Snellen charts come in 10 ft. and 20 ft. versions. Make sure that the chart is posted in a well-lit area with the distance marked accurately.

A **pinhole disc** is used to determine if the patient has a visual deficit that may be corrected with lenses. Using the principle of light refraction, the patient looks through a disc with many small holes in it. The light is focused through one of the tiny holes more directly onto the retina. A "positive pinhole effect" is when a patient can see better through the pinhole disc than with their own eyes.

1. Right eye alone, with pin hole **OD**= right eye
2. Left eye alone, with pin hole **OS**= left eye
3. Both eyes together. **OU**= both eyes
4. Record results **OD, OS, OU**, Pinhole effect, or **PH.**
5. If patient uses glasses, record as **cc** (means with correction) or if patient tests without glasses, record as **sc** (means without correction).

b. Near vision using Rosenbaum handheld chart

Make sure that the examiner holds the handheld chart at a distance of 14" from the patient's eyes. The patient will have a natural tendency to adjust the distance to be able to see the letters, which defeats the purpose of this exam.

1. Right eye
2. Left eye
3. Both eyes
4. Record results OD, OS, OU

2. Examine the patient's eyes

This role is best performed by an optometrist, ophthalmologist, physician, nurse, or other trained practitioner.

a. Check: corneal light reflex, pupillary red reflex, pupillary response to light and accommodation, anterior chamber angle to screen for glaucoma.

b. Look for: infection of conjunctiva or lids, scarring of cornea, lens opacities (cataracts), unequal pupil, unequal gaze or parasites such as lice on the eyelid margin.

c. Check extraocular movements.

d. Perform cover/uncover test to check for strabismus.

3. Refraction: is the process of bending and focusing light rays that enter the eye. The cornea provides a course non-variable focus. The lens also focuses light, but only performs the fine variable adjustments. Contact lenses artificially alter the curvature of the front of the eye, thereby changing the focus. Glasses work by bending light rays to reach the retina. Positive sphere lenses magnify objects and shorten the light ray so that it reaches the retina rather than surpassing it as in the hyperopic eye. Negative sphere lenses make objects appear smaller and lengthen the light ray to reach the retina in the elongated myopic eye. (See appendix A).

In an eye clinic, refraction is the technique of determining the lenses necessary to correct the optical defects of the eye. In a traditional office this is done with sophisticated equipment. In the field clinic it is done with donated lenses, by making a set of exam glasses in gradations of positive and negative that are not distorted by cylinder (astigmatism correction) or prism.

Begin the refraction by reading the visual acuity on the patient's exam slip. Determine the type of lenses most likely needed by using the following guidelines:

Patient age 2-10, with poor distance and near vision, start with + lenses, most common visual deficit in this age group is hyperopia, farsightedness. Gradually increase the strength until the patient is able to see distance and read clearly. Ask the patient "which is better, number one, or number two" while showing two different strengths of lenses…continue to move up in correction until the vision begins to blur. When it has blurred, back down to where it was last clear. When you have obtained the best refraction, give the patient (or their parent) the bag of lenses that best matches their need. They will then chose their own lenses with the help of a "fitter." If the child has "crossed eyes," a form of strabismus, they will most likely benefit from positive sphere lenses, because the hyperopia causes the eyes to cross. It is important to refer the patient to an ophthalmologist immediately. Failure to treat crossed eyes at an early age can lead to "lazy eye" (amblyopia) with significant vision loss in the affected eye. With time the brain disregards the information from the nerve fibers leading from the affected eye, so later correction of the crossed eye will not improve the vision.

Patients age 7-up with poor distance vision, and perfect near vision, try negative sphere lenses, most likely problem is myopia (nearsightedness). If negative lenses do not help, try positive lenses. As the patient, "which is better?" and show them first negative, then positive to sort out which direction to proceed.

Patients age 30-up with good distance vision, and poor near vision are most likely presbyopic (normal aging of the lens which prevents focusing well on near objects). Start with positive lenses, and progress up until the patient can see clearly up close. Explain to the patient that the lenses are not for distance.

Patients age 30-up with poor distance and near vision are either hyperopic or myopic and will need bifocals. First determine whether they need + or – sphere lenses. Correct the distance

vision first. Then attempt to have them read with the distance lenses. Ask them if they can read better with the lenses, or "their own eyes."

If they read better with their own eyes, they are probably nearsighted (myopic) needing negative lenses for distance and will need bifocals to neutralize the correction for reading. Some myopic patients prefer single vision lenses, and then remove them for reading or close work. They may also be well served with 2 pair of lenses, one for distance, one for reading. The person who alternates activities throughout the day, may prefer one set of bifocals.

If the patient reads better with the lenses on, but still cannot reach 20/20 reading acuity with lenses that give good distance vision; they are probably using positive lenses, and need an additional positive correction to magnify the text enough for reading. They will need positive sphere bifocals. Again, they may prefer two pair of individual glasses, or bifocals. Try to convince them to use bifocals, because there are usually many pair of positive bifocals available, and with time most patients prefer not to switch glasses constantly.

Patients with cataracts (can be any age, but generally older) may need positive or negative sphere lenses. This will enable them to see faces, see more clearly at a distance, and read. They will eventually need surgery to correct their vision. Unfortunately, many of the patients seen in a field clinic will never have the resources to have cataract surgery. Nevertheless, it is important to explain to patients that they should see an ophthalmologist. Inform them that their vision may get worse over time, and that lenses will not be able to correct their vision perfectly.

Patients with poor distance vision, not corrected with either positive or negative lenses may have astigmatism. Unless specialized refracting equipment is available it is impossible to determine the amount of astigmatism in the field clinic. A trial of various pairs of astigmatism lenses may serve the patient. This is extremely time consuming, and should not stop the flow of

other patients through the clinic. Use a "fitter" to spend time with the patient looking for a pair of lenses that will work for them. If none are found, give the patient a pair of glasses with a frame that fits them well, and refer them to an optician for refraction. Lenses are less expensive than frames in most third world countries, since they are mostly a factor of labor rather than materials.

How to Read Optical Prescriptions:

Optical prescriptions have several elements. The first measurement is the **sphere**. A lens may be either convex (positive) or concave (negative). Sphere is measured in increments of .25, either positive or negative, increasing in power to over 20. Most patients require lenses in the low to mid range (1.00-4.00 either positive or negative).

Cylinder is used to treat astigmatism. It is measured in increments of .25 and may be either positive or negative. **Axis** relates to the meridian of the eye that requires a correction of curvature, measured 0-180 degrees. Lenses with greater than 1.0 cylinder cannot be used effectively in a volunteer eye clinic due to lack of equipment to measure the exact axis required. A patient with no astigmatism would use lenses with –0- cylinder. Lenses with mild astigmatism correction (cylinder .50-1.00) can be used by patients without astigmatism. Patients are able to adjust to a mild cylinder correction, but lenses with greater than 1.00 cylinder cause too much distortion, which leads to nausea, dizziness and headaches. Although this causes no permanent harm, the patients will eventually choose not to use their glasses because of the side effects.

Add refers to additional correction for near vision on a lower portion of the lens. The "add" is in addition to the base refraction of the lens. Therefore, a +1.00 lens with +1.00 add will have a correction of +2.00 on the bottom portion of the lens as a bifocal. Conversely a –1.00 lens with an add of +1.00 will have a neutral lens with the "add" serving to cancel out the correction at the

top. This assists patients to adapt to changes in near vision that occur with age by using only one pair of glasses.

Example:

O.D. Sphere –1.25

Cylinder --.50, Axis 96*

Add: +2.25

O.S. Sphere –1.50

Cylinder –1.00, Axis 85*

Add: +2.25

diagrams

Using Exam Glasses

In a professional optometrist or ophthalmologist office, refraction would be done using equipment that consists of various types of lenses within a frame. The doctor would place various lenses in front of the patient's vision and ask the patient to state whether a particular lens made their vision better or worse. Through the process of comparing one lens with another, the practitioner arrives at the best prescription for the patient. Another way of determining the patient's best refration is through using a piece of equipment called a retinoscope or using sophisticated machines called autorefractors.

In a field clinic, staffed by trained volunteers, donated lenses in different gradations of positive and negative sphere lenses are used to achieve the same purpose. Using glasses from the donations that you receive set aside a set of lenses in various strengths (discussed in a later section). Set the glasses up in order from weakest to strongest, keeping positive lenses on one side, and negative lenses on the other. Using the patient's visual acuity, and the guidelines set above, begin with either a positive or negative lens in the weakest prescription that you believe will work. Gradually move up until the patient complains that the lens is too strong. By moving up and down the gradations (i.e. from +1.00 to +1.25) you will find the best prescription for the patient.

Always determine distance refraction first. Once that is determined, check the patient's near vision using the hand held reader card. If they are able to read with the distance prescription, write this down, and send them to the "fitting" table with a bag of glasses in the strength that they need. (i.e. –1.00). If they cannot read well with the distance lenses, begin the refraction

process again with the exam glasses. When the refraction is reached, write it down as an "add" which indicates that the patient needs bifocals.

***Never give the patient the exam glasses, these are hard to come by, and are needed to examine all the other patients.

It is impossible to check for astigmatism in this type of setting, or to provide lenses with the exact correction that a patient needs. Because of this and other factors, it may be impossible to get a patient to 20/20. Keeping in mind that the goal is to improve the patient's vision as much as possible, it is a significant achievement to provide any correction. Most patients can be corrected to within 20/40 using donated lenses.

Preparing for a Vision Care Clinic

How: to get the glasses

Obtaining the glasses: Place ads in church bulletins, local papers, post flyers and posters in churches, schools, hospitals, internet bulletin boards. Send letters to optometrists' and ophthalmologists' offices, large chain optical companies, and pharmacies that sell reading glasses. Contact the Lion's club, or VOSH.

Estimating Needs: will need approximately 4 pair of glasses donated for each patient seen. Some will be broken; some will be of unusable refraction. You will need 2-3 pair of glasses for every patient seen. For a clinic that will see 500 patients, you will need approximately 300 pair of "readers" (positive sphere lenses for reading only) in different strengths.

Preparing the glasses:

1. Wash all glasses in a commercial washer, or home dishwasher with caution to air dry to prevent melting frames. Some glasses may break in the washing process, but these glasses were probably not sturdy enough to serve your patient for long.

2. Neutralize (measure) all glasses for refraction, place each pair in an individual ziplock bag with the prescription clearly marked with a label, or computerized printout. It is important to make sure the lenses are not separated from their measured refraction.

3. Sort glasses as follows:

- **+ sphere single vision**
- **-- sphere single vision**
- **+ sphere with add bifocals**
- **-- sphere with add bifocals**
- Set aside all lenses with cylinder >-1.00 and prism. Because of the difficulty of matching cylinder and axis to the patient with astigmatism, high cylinder lenses cannot be used in this setting. They may be of use in a setting where "fitters" have time to allow patients to try on multiple pairs of glasses to find their best match, or may given away for frames only, or donated to another organization.
- Further sort each type of glasses into subgroups as follows:

  Readers/Positive Sphere Lenses:

  +.50, +.75, +1.00, +1.25, +1.50, +1.75, +2.00 and up

  Negative Sphere Lenses:

  --.25, --.50, --.75, --1.00 to –1.25,--1.50 to –1.75, -2.00 to –2.25, and up by grouping two sizes together on up to about –8.00 and up.

  Positive Sphere with bifocal adds:

  Lenses for farsighted people who need additional magnification for reading. Sort as above for positive sphere lenses, but label the bags "Positive Sphere with Add." If a patient needs

+2.00 for distance, and +4.00 for reading, the prescription they will need is +2.00 with an additional +2.00 to give them a total of 4.00 on the bottom of their lenses.

Negative Sphere with bifocal adds:

Lenses for nearsighted (myopic) people who need less correction, or more magnification for reading. To calculate the prescription of the "add" make sure you add the two numbers together. For example: A –1.00 with a +1.00 bifocal actually has a neutral or clear glass lower part for reading.

Trifocals: Sort with bifocals according to + or – sphere.

**Some bifocals have the additional correction above the neutral line of sight to be used in close work that is above the patient's head. Sort them with the regular bifocals, or set them aside.

**Use gallon size ziplock bags, label them with the lens strength. Place like types of glasses in large plastic storage bins with glasses in upright ziplock "files" for easy access in the clinic.

4. Prepare a set of exam glasses as follows:

+ Sphere	**- Sphere**
+.50	-.25
+.75	-.50
+1.00	-.75
+1.50	-1.00
+1.75	-1.50
+2.00	-2.00
+2.25	-3.00
+2.50	-4.00
+2.75	-5.00
+3.00	-6.00
+3.25	-7.00
+3.50	stronger if available
+3.75	
+4.00	
+5.00	

How to get the equipment:

You can order Snellen and Rosenbaum charts through medical supply stores, medical university bookstores, catalogues, hospital supply departments, optical shops, and school supply catalogues. Ophthalmoscopes can be purchases through Welch Allen, or borrowed from physicians, optometrists, VOSH, or hospitals. A sample patient record form is included in the addendum to this manual.

Setting up the Field Vision Clinic

Areas Needed

In order to function efficiently, and see a large number of patients, it is best to divide the clinic up into distinct areas, and assign a **Vision Clinic Coordinator** to oversee the flow of patients from area to area.

Area 1: Reception: In this area, patients are greeted by national receptionists who take basic patient information such as name, age, and visual complaint. Basic health information such as diabetes, history of injury or surgery to the eye is helpful. Patients are given numbers based on time of arrival, prescheduled appointments or sorted by age and urgency depending on the preference on the sponsoring agency.

Area 2: Screening: In this area, patients are screened for distance and near vision by volunteers. These may be national or international volunteers. A mix of bilingual and monolingual staff works well in this area.

Area 3: Eye Exam: In this area an eye doctor, optometrist, nurse, or other trained person examines the patients eyes for signs of infection, injury or eye disease. Patients with problems that cannot be helped in the field clinic are referred via local staff to possible resources for care. Patients are given information regarding their condition and education to prevent further damage or injury if possible. This area should be staffed with a bilingual provider or a provider with a

translator. If available, the provider will use a focometer or autolensometer to help determine the refraction needed by the patient.

Area 4: Refraction: In this area, patients are tested with exam glasses of various strengths to determine the prescription needed. Patients will leave this area with a written prescription used to guide.

Area 5: Dispensing: In this area, volunteers who are trained in interpreting eyeglass prescriptions find the bag of glasses that most closely approximates the patient's need. A row of tables or closet with shelves is best suited for organizing glasses by strength and type. Glasses are handed in the bag to either the patient or a person trained in fitting.

Area 6: Fitting: An area set up with tables and chairs for patients and volunteers is needed for the final step of selecting the best pair of glasses for each patient. Fitters from the host culture are best suited to this task, since a good command of language and great deal of time may be required to help the patient make a good choice of glasses.

Adjusting Frames: Sometimes frames need to be adjusted to properly fit the patient's face. An electric skillet filled with rock ice, or an adjusting tub can be set up in the fitting area. By heating the plastic frame before bending it to fit the patient, it is less likely to break the frame. An electric hairdryer can also be used to heat the plastic to a moldable consistency.

Cross Training and Comfort Measures: It is very beneficial to train as many volunteers as possible in multiple roles to permit adjusting staff during the clinic day based on patient flow and back ups in different areas. Provide shaded areas and rest breaks for staff throughout the day. Volunteers often naturally gravitate to an area of interest of special aptitude. Allow staff to grow into their role, and encourage learning new skills as much as possible.

Providing Follow up Care

An important aspect of any medical mission trip is providing some form of follow-up care for patients with health care providers in the host country. By developing relationships with pastors, schools and local physicians you should be able to provide contact information for patients requiring care that you are not able to provide. Maintain a list of patients with special needs and turn it over to the host clinic leader before you leave.

Evaluating your Eye Care Clinic

It is important to evaluate your eye care clinic immediately following the experience before your volunteers have dispersed for home. Review records, evaluate who was seen, the lenses dispensed, percentage of needs met. Set future treatment goals, and determine if you had the "right" combination of glasses for the patient needs. Use the information from this critique to plan for upcoming clinics. Learning needs for volunteers can be identified and addressed during the time span between mission trips.

Follow up Questionnaire

As a follow up to the training that was done for participants in the vision clinic, please take the time to answer the following questions, and return your answers to me via email or regular mail. Thank you so much for your help with the clinic, and for your feedback, which will help improve future training, programs for Vision Clinic volunteers.

1. Define the following conditions and the type of refraction needed to correct them:
    a. hyperopia
    b. presbyopia
    c. myopia
    d. strabismus
    e. cataracts
    f. astigmatism

2. Name the following ophthalmologic conditions and type of treatment/prevention necessary:
    a. diabetic retinopathy
    b. pterygium
    c. cataracts
    d. glaucoma
    e. conjunctivitis

3. Did you find the draft version of the eye care manual helpful? What would make it more user friendly in the future?

4. What was most valuable about the pre-clinic training session? What could have been eliminated? What should be added?

5. For future clinics, would more pre-field training be beneficial for volunteers? What should be covered in these sessions?

6. What other suggestions/feedback do you have?

Appendices

Eye Care Brochure Sample

Eye Care Record

Spanish Eye Care Manual

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