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HOW TO CONDUCT OUT-OF-OFFICE EXAMINATIONS

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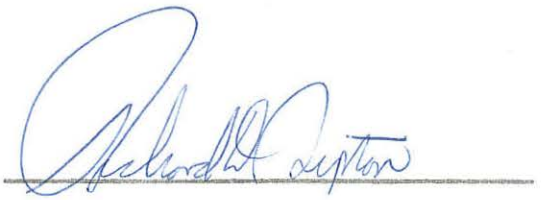

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INTRODUCTION

The need for visual care in the nursing or rest home is a subject that is mentioned in the literature[10,13] and should be of concern to us all. A recent article by Murphy [11,12] offered advice to those wishing to begin making house calls to institutions.

A well done study by Young[18] illustrated the sad state of visual care in Washington County nursing homes. Of the sixteen homes that were polled, nine participated in her survey. There were four homes that had a part-time or an on-call optometrist and/or ophthalmologist. Only one rest home had an optometrist that made regular visits. A screening done by Brist, et al,[1] documents the conditions of some nursing homes pertaining to the visual requirements of the residents. Dennis, et al,[2] reported the average time since the last visual examination was 28 months with a range of .25 to 204 months. The age of the most recent prescription change was 46.76 months. Conditions are no different on the East Coast as presented by Verma.[16]

The need for this visual care is not the subject of this paper. Rather, a methodology and instrumentation for doing out-of-office examinations will be presented.

METHODOLOGY

A search of the literature showed some articles on what to bring on a house call.[7,10,11] There were a few that gave more details on what they used on an out-of-office examination.[2,12,16] This paper will bring together the methods used by the authors of the papers mentioned above and that experienced by the author. The purpose of doing the refraction is to provide the patient with the best possible vision in an environment that does not have all the comforts of the office. A step-by-step

procedure will be presented with comments on instrumentation used. No specific test-versus-test analysis will be given. The author has done twelve out-of-office examinations without the use of a phoropter. By having this information, it is hoped that the reader will be less hesitant about doing institutional, nursing home, rest home, house call and other out-of-office examinations.

PRESENTATION OF DATA

The following is offered as a step-by-step procedure for conducting an out-of-office examination.

CASE HISTORY. A comment on the importance of a good case history is hardly necessary. Depending upon the type of facility that is visited, a questionnaire, personal interview, or the patient's medical chart may be used. A problem oriented history would be most useful.[3] The patient should be asked to describe his main, visual problem. His current activities and needs must be assessed. This information will be drawn upon later, at the conclusion of the examination. How much can the patient's behavior or needs be improved by a change in his habitual prescription? A simple adjustment of the frames will sometimes solve his problem.

VISUAL ACUITY. Dennis, et al, [2] found the typical patient will have 20/30 to 20/40 acuity in the distance and 20/20 to 20/30 at the habitual reading distance with a 39.36% chance of improvement of vision with new lenses. Distance acuity can be taken by the use of a printed wall chart at 20 feet or the Designs for Vision Number Chart at 10 feet. The need for a 20 foot measuring tape is apparent. The vision screening program at Pacific University uses a cloth strip 20 feet long marked off in one foot increments. At near, there is a multitude of cards that can be used. I have had success with the Bernell Vocational Test Card Book. It covers a range of functional visual needs ranging from 4 to 48 point type, a

portion of telephone book directory, playing cards printed on a flat surface, and also has charts of the anatomy of the eye.

OPHTHALMOSCOPY. By determining the health of the eye, many questions of depressed acuity can be answered and the prognosis for improved acuity made. One with senile macular degeneration or a posterior subcapsular cataract would not necessarily be expected to reach 20/20 acuity by means of normal lens applications, for example. A monocular indirect ophthalmoscope is highly recommended. Beyond the fact that a greater area of fundus can be viewed at the same time than the direct ophthalmoscope, it is sometimes possible to view the fundus even when there are cataracts. Cataracts can interfere with a direct ophthalmoscope, especially when considering the small pupils of the population being helped. The direct ophthalmoscope does have it's place, however. It can be used to do an external examination and to view areas of suspect under higher magnification than that allowed by the monocular indirect ophthalmoscope. An alternative to using the direct ophthalmoscope for an external examination is loupes. These can give excellent magnification of the adnexa in the absence of a biomicroscope.

A word about mydriatics. I have not experienced the use of mydriatics on out-fo-office examinations. I have no personal recommendations for their use. However, a study done by Kandel, et al,[9] showed no side effects resulting from the use of Benoxinate, Proparacaine, Phenylephrine or Tropicamide that required emergency medical treatment. Specifically regarding the 61 and up age group, there were 2/25 cases of increased intraocular pressure using 2.5% Phenylephrine, 1/44 using 10% Phenylephrine, 0/26 using 0.5% Tropicamide and 5/156 using 1% Tropicamide. This would suggest that the risk of using a mydriatic is sufficiently low. The need for follow-up (taking the IOP at intervals, observation) in an

out-of-office setting, may prevent the practioner from utilizing the pharmaceuticals.

PHORIA. The cover test can be used along with hand-held prisms for both the far and near phoria measurements. I have used the Modified Thorington Card, calibrated for 40 centimeters with numbers that quantify the near phoria. It is used in conjunction with the Maddox Rod. I poked a hole in the middle of the card with a pin; on the back of the card, I made an annular ring of a sticky, clay-like material called Fun-Tak. A penlight was then attached to the card to give a resulting point light source. The patient is asked to look at the light and the print with the Maddox Rod in front of one eye. He can then tell which number the red line is going through or point to it.

REFRACTION. A screening method can be used to determine if further help can be offered. [2,4,12] Using a $\pm$ .50 or $\pm$ 1.00 flipper over the habitual, one can find the patient's JND and the direction to go to find the final lens. If there is an improvement of acuity, subjective testing should be continued.

Retinoscopy can be performed with loose lenses or lens bars. Radical Retinoscopy[3,4] may need to be used with patients who have small pupils or a dim reflex. The examiner must move in close to the patient to more accurately quantify the reflex. The working distance becomes more crucial and must be carefully measured.

The refraction can be done in one of two ways. Probably the easiest and fastest method is an over-refraction. Halberg or Jannelli clips may be used over the habitual prescription. Both clips slip over the glasses. The Halberg clips are simply two wells for lenses to be placed. The Jannelli clips have several advantages over the Halberg clips. They are:

1. There is a leveling vial to maintain proper head tilt

2. There is a third well to accommodate prism or Maddox Rod
3. The second well has a fastening clip to hold a cylinder lens in place
4. The axis numbers are made larger to make them easier to see in the dim illumination

I have found that sphere lenses from -2.00 to +9.00 of a non-corrected curve, 38 millimeter trial lens kit fit into the back well of the Jannelli clip. Up to -2.25 cylinder will fit easily into the cylinder well. If indeed one is doing over-refractions, the parameters of the above lenses will not be reached. Dr. Jannelli[14] has recommended the use of +12.00 hyperaspheric glasses as a starting point for aphakic patients. The over-refraction is done over these glasses with the Jannelli clips.

Hand held cross cylinders are accurate and easy to use. ±.50, ±1.00 and ±1.50 are recommended.

Once the best visual acuity combination has been found, one of two methods can be used to obtain the resultant. The entire combination (clips and habitual glasses) can be placed into the lensometer. The neutralized powers are the new prescriptions; it is then a simple matter to trial frame the new resultant. Another method, developed by Dr. William Humphrey,[6] does not require a lensometer. Polar coordinate graph paper is used to find the final prescription by plotting the habitual prescription, the over-refraction and their vector resultant. The first method is easier and is the method of choice, in my opinion.

A second method to carry out a refraction is to use a trial frame. The starting lens may either be the habitual prescription or the net retinoscopy lens. Again, hand-held cross cylinders can be used to determine axis and power. The near point prescription is derived by adding plus until the desired acuity is reached. The near phoria can be found with

methods already discussed. It would be good to do a vertical phoria with anisometropic patients. By using the Modified Thorington Card, the Maddox Rod and card, held by the patient, can be turned while in the reading position. The number and letter lines are now vertical and the vertical phoria can be read directly from the scale. Any resulting vertical imbalance can be dealt with as deemed necessary by the examiner.

Fusional abilities can be tested by introducing a loose prism in front of the patient's eye. The Randot Stereo Test is an excellent way to find the level of third degree fusion.

TONOMETRY. The ocular pressure can be found by several methods. The Nursing Home Program at Pacific University has been using the Digilab Pneuma-Tonometer, Model 30R. It has been found to travel well, findings can be taken with the patient in the upright position and results compare favorably with Goldmann. It is easy to use and provides a permanent record of the pressure.[8,16] It does require the use of a topical anasthetic, however.

COLOR. Unilateral color testing utilizing the D-15 is recommended. According to the Manual for the D-15[5] the test is not as dependent upon the quality of the test light. The most reliable test results are those illuminated by 6500° Kelvin. In descending order of desirability is north daylight, "daylight blue" fluorescent, and ordinary incandescent. Therefore, use the best lighting available to you, but attempt to be uniform by using the same illumination as often as possible.

VISUAL FIELDS. The Amsler Grid Test is a sensitive test for measuring incidences of metamorphopsia and central scotomas.[15] It tests, at 30 centimeters, a radius of 10° from the fovea. This does not reach the blind spot. The confrontation test, with a transilluminator, can screen the peripheral fields. If the practitioner desires to do more complete testing,

cloth tangent screens are portable and can be used at the testing location.

DISPENSING. It has been my experience that most patients requiring help with their frames is merely a matter of adjusting the temples and nose pads. Care must be taken with older frames due to their fragility. Most nursing homes have extra glasses that can be salvaged for screws and temples. The typical frame warmer that utilizes salt usually takes quite a while to heat to the needed temperature. The American Optical Therm-O-Jet Mark II is a hot air blower that offers quick heat.

CONCLUSION

I have found that it isn't that difficult to conduct out-of-phoropter examinations. My experience at nursing homes are limited but the steps outlined above are used as a matter of course in some of my refractions. I utilize trial frame refractions when doing a binocular refraction with vectographic targets. Vectographic filters were inserted into 38 millimeter trial lens rings. These are placed in the trial frame. Vectographic targets at far and near are used to refine the refraction. It is more comfortable for the patient than the bulky phoropter. Near point refinements are expecially suited to using trial frames as it facilitates natural position of the head when reading or doing other near work.

When examinations are done at the nursing home, an on-the-spot inspection ofthe patient's needs can be made with recommendations to follow. There is no question of the need for vision examinations in institutions. It can be seen from the above that out-of-office examinations are merely a matter of experiencing them.

REFERENCES

1. Brist, C., Jr., Peterson, L., Rinehart, J., and Ryan, C., Jr., "A Screening of Vision Care for the Elderly", Pacific University Optometry Thesis, 1974.

2. Dennis, D.L., Hamel, C.D., Johnston, G.A., and Knight, B.Z., "What is the Visual Status of Elderly Residents of Homes for the Aged?", University of California at Berkeley Optometry Thesis, 1977.

3. Ehlers, K.E., "Nursing Home Examination Guide", Hand-out for those participating in Pacific University's Nursing Home Program, 1980.

4. Espinosa, R., "Low Vision: Examination Procedures", Optometric Weekly, 10 Sep 70, pp. 29-33.

5. Farnsworth, D., "Manual for the Farnsworth Dichotomous Test for Color Blindness", The Psychological Corporation: New York, 1947.

6. Harwood, L.H., "Overrefraction Made Easy", Review of Optometry, May 78, pp. 77-80.

7. Heyman, J., "A Portable Clinic", Optometric Weekly, 26 Sep 74, pp. 36-38.

8. Jain, M.K. and Marmion, V.J., " A Clinical Evaluation of the Applanation Pneumatonograph", British Journal of Ophthalmology, 60(1976), pp. 107-110.

9. Kandel, J.S., Yolton, D.P., and Yolton, R.L., "Diagnostic Pharmaceutical Agents: Side Effects Encountered in a Study of 15,000 Applications", Journal of the American Optometric Association, 51(2), 1980, pp. 113-118.

10. Lesage, R.G., "The Need for Optometric Care in a Nursing Home", Journal of the American Optometric Association, 65(2), p. 218.

11. Murphy, D.P., "Can an Out-of-Office Practice Work?" , Review of Optometry, Oct 79, p. 3.

12. Murphy, D.P., "How to Make a Thorough House Call", Review of Optometry, Nov 79, pp. 4-6.

13. "Profile - Dr. Dennis Murphy: Nursing a Nursing Home Practice", Review of Optometry, Sep 78, pp. 91-94.

14. Renier, G.L., "The Jannelli Clip: A New Aphakic Refraction Aid", Optometric Monthly, May 78, pp. 141-143.

15. Schoessler, J.P., "A Suggested Perimetric Procedure for Optometrists", Journal of the American Optometric Association, 48(11), 1977, pp.1437-1448.

16. Verma, S.B., "Optometric Services for the Non-Ambulatory", Presented to the American Public Health Association, Fall 1980.

17. Wittenberg, S., "Evaluation of the Pneuma-Tonometer", American Journal of Optometry and Physiological Optics, 55(5), 1978, pp. 337-347.

18. Young, K.D., "An Assessment of Vision Care Needs in Selected Homes for the Aged", Pacific University Optometry Thesis, 1979.