II

APPLICATION FOR CONTRACT SUPPORT FOR

HEALTH MANPOWER EDUCATIONAL DEVELOPMENT

I. INTRODUCTION

The Association of Physician Assistant Programs brings together a group of forty-five physician assistant programs of varying types. They vary in length from one to four years and in sponsorship. Included among the various auspices are Medical Schools, Universities with Colleges of Allied Health, Junior Colleges and a School of Public Health. In addition, their training setting range from predominately academic to predominately clinical. It is the only such organization of programs and is a natural forum for exchange of ideas, group demonstrations and research.

One area that is of particular concern to program directors in the Association is the recruitment and selection of students, both in relationship to the specification of their contracts: e.g., recruitment of minorities and commitments to work in medically underserved areas, and in relationship to the success of students not only in the program but in eventual job satisfaction and performance as employees. Some of these issues which seemed relatively uncomplicated when physician assistant programs first began, now seem more complex. One of the major pools of recruits (ex-military corpsmen) has almost dried up and there has been a tremendous increase in the number of college graduates who have failed to gain admission to medical schools. There has also been a marked increase in applications from RN's and allied health professionals such as PT's, OT's, etc. In addition, the employment picture is not clear and the actual job expectations by physicians seems to vary depending on type of practice and perhaps geographic location.

Although decisions about selection must ultimately be related to job performance, there is not yet enough data, and probably will not be until some type of national health insurance has been implemented to determine adequately the eventual role of the physician assistant. Therefore, it is necessary for program personnel to make decisions regarding recruitment and selection on

on incomplete data.

A better exchange of information, some attempt to develop protocols and prediction scales could greatly enhance the entire selection process.

Contract support is sought to better understand and predict the success of selection criteria for physician assistants, specifically (a) to identify the characteristics of physician assistant trainees who exhibit successful performance in the didactic and clinical courses of the program and (b) for the selection of physician assistant trainees from among large numbers of applicants. Contract support is solicited in order to test; (a) in several physician assistant trainee programs, the validity of the selection equations developed from the records of trainees at The Bowman Gray School of Medicine and other programs, and (b) the validity of the criteria of success developed from training performance when these criteria are used as predictors of successful performance by graduate physician assistants.

Enclosed with this application as Appendix A, is "Prediction Equations for the Selection of Physicians Assistant Trainees." This article relates in detail the work that has been done at The Bowman Gray School of Medicine up to now. The work has been relatively successful. (The six multiple correlations between predictor variables and criterion variables are at, or above, C.80. See Table II, Appendix A.) The article will be referred to by title during the course of this proposal.

The project will be administered by the Executive Director of the Association of Physician Assistant Programs.

II. PROJECT OBJECTIVES, THEIR PERFORMANCE AND RELEVANCE TO THE PURPOSE OF THE HEALTH MANPOWER EDUCATION INITIATIVE AWARDS

A. Relation Program Objective

The objectives of the proposed contract have been specifically designed to conform to Objective 5 of the Program Objectives of the HMEIA program announcement dated January 31, 1974: "Maintain the

educational capacity of health professions schools by improving curricula and utilizing media and methods resources to make them more relevant to today's health manpower needs. ---C. Encourage the development and demonstration of educational technology prototypes." In addition it seems to be consistent with objective B - regarding the roles and functions of physician assistants - identification of employment factors to aid in student selection.

B. Project Objectives

1. The first objective is to test the validity (accuracy) of the prediction equations developed at The Bowman Gray School of Medicine and other programs when used to predict the performance of trainees selected and trained in a large number of physician assistant training programs.

2. The second objective of the project is to test the validity of the criteria of success developed from training records as criteria of the performance of graduate physician assistants.

3. The third objective of the project is to compare the effectiveness of prediction equations for the selection of physician assistants (including MEDEX) which include personality measures with similar equations which do not utilize personality measures.

C. Pertinence and Relevance of Project Objectives to Objectives 5-C of the Program Objectives of the HMEIA Program

1. It is important in developing multiple regressions prediction equations to identify a multiple number of relatively independent variables (predictor variables) which correlate significantly with the variable to be predicted. In the case of the Bowman Gray prediction equations, the predictor variables include measures of various personality traits, developed cognitive skills and a measure of general mental ability. In testing the equation with

trainees enrolled in other training programs, the accuracy of the prediction will either compare favorably with those made in the Bowman Gray program or they will not. If the relative accuracy of prediction is similar, it can be assumed that similar kinds of skills and trainee characteristics are required in programs. In comparing results, between programs using the same or similar prediction equations, it may be possible to identify the specific differences in the program philosophy or methods which explain the observed differences in predictive accuracy. If the accuracy level is greatly different, very many hypotheses can be formulated for testing, viz.:

a. The relative levels of academic difficulty are different in the two programs.

b. Clinical performance is judged in different ways which produce divergent grades for the trainees in the two programs, etc.

In either case, the efficacy of use of the same prediction equation for trainee selection by various programs will have been tested. The development of specific equations from the available records of trainees at each participating training program can readily be accomplished as a concomittant part of the work of meeting this first objective. The staff and faculty of the various programs will have exposure to "the development and demonstration of (an) educational technology prototype". The various comparisons between programs should be helpful in moving the program closer together in selection, curriculum and product.

2. Institutions which rely upon deductive rather than empirical evaluations of performance tend to become insular and passe. Because the programs and the physician assistant profession are

new, appropriate studies have not been done to assure that the criteria for success in training are also valid as criteria for success in practice. A sufficient number of physician assistants are now in practice to warrant the beginning of efforts to identify the criteria of successful performance by physician assistants. Program Objectives 5 of the HMEIA program states the need: "---by improving curricula and utilizing media and methods resources to make them (health professions schools) more relevant to today's health manpower needs." Comparisons of equations for predicting success in training and success in practice can be used to identify the areas in which the training is not adequately preparing its physician assistant trainees.

III. THE NEED FOR THIS PROJECT

While in most training situations it is generally accepted that persons from rural areas will return to them after training, this has not been the case in training medical students. There are now some indications that this may not be true for physician assistants either. The issues in recruitment of minority students are many-fold. Programs in the Association have reported a decrease in the number of applications from diverse minority groups, difficulty in either completing the academic program and even more problems in job placement. Another issue identified by program personnel is the high economic and status expectations of students particularly those from lower middle class backgrounds and suspected job dissatisfaction. What does the increase in applications from other health professions mean in terms of health professionals changing roles and perhaps leaving gaps in other areas of delivery?

If we consider that the objectives of the optimal selection of students for physician assistant programs are four:

(1) success in the program
(2) appropriate representation of minorities

(3) appropriate geographic location of the graduates, and
(4) appropriate job performance in various settings

then it is reasonable to suggest that the issues in selection are:

(1) academic ability and aptitude to work with patients
(2) recruitment of minorities and cultures either qualified by past education and experience or able to be supported through program endeavors
(3) geographic origin of students and eventual geographic relocation
(4) an awareness of job expectation and accord between job expectations and career aspirations.

IV. METHODS, ACTIVITIES AND TIME SEQUENCES

A. The Association of Physician Assistant Programs would like to collect data on present recruitment and selection criteria from its members in a uniform way, look at the educational backgrounds of its students past experience and geographic and socio-economic origin and develop a prediction scale on program success and job performance. Items such as type of application, testing methods, interview, etc., will be analyzed.

B. After having collected the data, the Association would hope to sponsor a 2½ day workshop for program directors or a delegate to discuss the four issues involved in recruitment and selection mentioned above. It is hoped that the results of the survey and subsequent workshop would not only result in an exchange of ideas but would allow the group to develop a prediction scale which could be tested out by the program members.

C. Work to be performed to meet Objective 1: "---to test the validity (accuracy) of the prediction equations developed at The Bowman Gray School of Medicine as well as other programs when used to predict the performance of trainees selected and trained in a large number of physician assistant training programs."

1. Trainees beginning training in selected physician assistant

and MEDEX (which hereafter will all be called physician assistants) will be administered either a group of instruments including: a) The Otis Self-Administering Test of Mental Ability; Higher Examination: Form B, b) The Thurstone Temperament Schedule, c) The Thurstone Temperament Schedule, c) The General Clerical Test and, d) (if a prior score is not available) The Scholastic Aptitude Test of the CEEB; or a more limited group of instruments which would not include any personality scales or a different battery of psychological and performance tests as determined by each program.

2. Working with the faculty of these programs, the researchers will develop or identify criteria of training success comparable to those used in developing the prediction equations at The Bowman Gray School of Medicine (where the didactic Q.P.R. and a mean clinical rating have been used).

3. At the completion of training (1976), in those programs which administered the group of instruments which included the Thurstone Temperament Schedule, the predictions made using The Bowman Gray equations will be compared to the trainees attained success in training. Comparisons between the relative accuracy of predictions at the different schools will be made in an effort to recognize similarities and to identify sources of variation. These will be expressed as multiple correlations of the various predictor variables (scores on Otis, GCT, Thurstone scales and SAT) or other batteries with the selected criteria representing success.

4. Using the attained success achieved by the trainees in the various programs and scores achieved on the instruments named in 1-b above, prediction equations will be developed for each training program. Those equations developed for the programs which chose to not administer the personality inventory will be compared

with those of the programs which did administer and use the personality inventory. The results of these comparisons will furnish data which will be useful in describing the importance of personality instruments in selecting physician assistant trainees.

5. Comparisons will be made between the prediction equations developed for the different programs in an effort to identify differences in the criteria for success in training between the various programs, and identify the trainee characteristics which lead to different levels of success in the various programs. These comparisons will be made by identifying, for teach program, the nature of the scores which prove to be the most effective predictors of training success.

D. Work to be performed to meet Objective 2: "---to test the validity of the criteria of success developed from training records as criteria of the performance of graduate physician assistants." (This will be a more difficult objective but more important to satisfy than Objective 1.)

1. A method of rating physician assistant performance will be developed which will include recognition of such factors as:

   a. satisfaction of the employing physician with his assistant,

   b. satisfaction of office staff and other health care personnel with the physician assistant,

   c. attitudes of a few randomly selected patients toward the physician assistant,

   d. clinical performance (under observation) of the physician assistant,

   e. job satisfaction of the physician assistant.

It is expected that some 100 or more practicing physician assistants

can be rated during the first year of is project. The rating of each graduate will probably require visitation of the practice by a small "rating team". The rating team should include M.D.s representing clinical faculty, and certified physician assistants. During the visitation, information on factors (a) and (b) might be obtained using a short written questionnaire and validated by questions asked in interviews. Factor (c) could be investigated during one or two minute patient interviews carried out in the waiting room of the practice. Factor (d) might be obtained as an average rating assigned by each member of the rating team following observations of a few Physician Assistant-patient interactions. Factor (e) can be measured by established job satisfaction scales such as a numerical compilation of the various factors following each visitation would yield a single number representing the rating assigned to the observed physician assistant. Translated to a 4.0 scale, the ratings would conform to the scale used with the prediction equation.

2. After ratings have been assigned to the participating group of graduates, representing their relative degree of successful performance as a physician assistant, comparisons will be made between these scores, the attained training scores, and the scores predicted for the individuals by the prediction equations. Comparisons will be made between predicted success, based on training criteria, and achieved success as measured by the rating scales. These comparisons will be based upon the multiple correlations of the predictor variables (used to predict training success) and the two sets of criteria representing success in training and success in performance.

3. Using the ratings, prediction equations will be computed using either the same predictor variables that are used in the present equation, or with the addition of other variables showing higher correlations with the newly derived ratings of success in practice. These equations and their predictor variables will be compared to the existing prediction equations in an attempt to identify factors which are different in achieving success in training and in achieving success in practice.

4. Time Sequences:

a. Fall, 1974: Administer tests and personality scales to incoming classes in the various participating training programs.

b. Fall and Winter, 1974: Devise and validate rating scales for physician assistants in practice for whom, prediction equations already exist. The development of these scales and procedures will serve as a model or protocol for work with the participating programs after prediction equations have been formulated for them.

c. Spring, 1975: Assemble rating team and carry out visitations and interviews to accumulate data for ratings. Compute ratings for selected physician assistants in practice.

d. Summer, 1975: Accumulate grades for physician assistants in didactic phase of training in participating programs. Compute multiple regression equations to predict scores in didactic training for each cooperating program. This, of course, will not include participating MEDEX programs, for which prediction equations for clinicl performance will be formulated. Begin comparisons of results between programs using (a) results of predictions made with Bowman Gray

equations, in that group of programs which administered personality scales, (b) results of predictions in that group of programs which did not administer personality scales, (c) results achieved using different equations as developed for each program and which may or may not include personality scales. Write the results of the comparison analysis pointing out similarities and differences. Begin comparisons of results of prediction of success in practice with ratings assigned by rating team. Determine the extent to which criteria for success in training are also criteria for success in practice.

e. Fall, 1975: Encourage participating program to again administer tests and personality instruments to incoming classes to add to available data base.

f. Winter, Summer, Spring 1975-76: Continue analysis and comparisons.

g. Summer, 1976: Using attained clinical scores and didactic Q.P.R.'s of trainees in the participating programs, compute prediction equations for training success in clinical phase of training and for over-all success in didactic and clinical phases.

h. Fall, 1976: Begin comparisons of results of predictions of training success and attained scores in the group of programs which administered personality scales with the group of programs which did not administer personality scales, equations developed for participating programs.

i. Winter, Spring, 1976: Send rating teams to visit practicing graduates of programs in order to obtain ratings representing success in practice. Begin comparison studies between training success and successful performance using various types of formulated prediction equations.