Protocol for
Neuropsychological and Quality of Life Measures
Division of Lung Diseases
National Heart, Lung, and Blood Institute
INTERMITTENT POSITIVE PRESSURE BREATHING TRIAL (IPPB)

I. BACKGROUND

Patients with chronic obstructive pulmonary disease (COPD) are often unable to be employed or to engage in previously enjoyed social and recreational activities. Emotional and personality disturbances have also been associated with COPD (Agle, Baum, Chester and Wendt, 1973). These changes in basic adaptive abilities, emotional status and "quality of life" are major consequences of the disease. Some of the symptoms (e.g., decreased exercise tolerance) may be fairly direct results of impaired lung function, but many are probably due to the effects of chronic hypoxia on the brain. It is well known that decreased oxygen supply can cause impaired brain function and structural damage to this organ system. Also, there is a very extensive literature showing the complex behavioral changes caused by diffuse and focal brain lesions, and numerous neuropsychological tests have been developed and validated for measuring such behavioral changes. Previous research has correlated degree of neuropsychological deficits with degree of hypoxemia in patients with COPD (Krop, Block and Cohen, 1973). The Krop et al. (1973) study also showed improvement in neuropsychological functioning and emotional status as a result of continuous (24 hour a day) oxygen therapy in COPD patients.

NEUROPSYCHOLOGICAL EVALUATIONS. There will be two neuropsychological test batteries used in the IPPB study: a slightly expanded Halstead-Reitan Battery (HRB) and a Lafayette Repeatable Battery.

There is an extensive body of published research which documents the sensitivity of the HRB to cerebral dysfunction involving various etiologies. Reviews of the validation research, as well as descriptions of the tests, can be found in Reitan (1966) and Reitan and Davison (1974). Acceptable reliability figures have also been reported by Klonoff, Fibiger and Hutton (1970) and Matarazzo, Wiens, Matarazzo and Goldstein (1974). The only additions made to the standard HRB for this study are the Wechsler Adult Intelligence Scale (Wechsler, 1955; Matarazzo, 1972) and Russell's (1975) modification of the Wechsler Memory Scale; both of these tests are frequently used in conjunction with the standard HRB for clinical and research purposes. The expanded HRB provides comprehensive coverage of adaptive abilities that could be affected by treatment-induced changes in neurologic status; i.e., intellignece, concept formation, general alertness and flexibility of thinking, problem solving ability, learning, memory, expressive and receptive language functions, and a variety of sensory and motor abilities. In addition to separate scores on

each of these abilities, the HRB yields two summary scores of overall neuropsychological impairment: the Halstead Impairment Index and the Average Impairment Rating (the latter measure and its validation research are described in Russell, Neuringer and Goldstein, 1970). In the research described in the above references, these summary scores have been found more sensitive to neurologic disorders than have any of the individual test scores in HRB. Furthermore, Reitan (1966) has shown that the diagnostic accuracy of the HRB test and summary scores can be improved upon by clinicians using several complementary inferential processes. Thus, two experienced neuropsychologists on the project will make blind independent clinical ratings of the test protocols. These ratings will help determine whether clinically significant changes in neurologic status have occurred.

Besides being the most comprehensive and best validated neuropsychological test battery for diagnostic purposes, the expanded HRB is finding increasing use in predicting the problems that neurologically impaired patients have in their everyday functioning (Denerll, Rodin, Gonzalez, Schwartz and Lin, 1966; Schwartz, Denerll and Lin, 1968; Heaton, Chelune, and Lehman, 1977; Newnan, Heaton and Lehman. 1977). Therefore, the use of this test battery will enhance the possibility of correlating changes in neuropsychological functioning with changes in quality of life in COPD patients.

In a pilot study conducted in the Neuropsychology Laboratory at the University of Colorado Medical Center, it was determined that the expanded HRB took four to six hours to administer to COPD patients. All patients tolerated the testing well, and were able to complete it in a single testing session (given periodic breaks and time out for lunch, of course).

The Repeatable Battery has been added to the study protocol in order to determine more precisely when treatment-induced neurologic changes occur. There are two main advantages to this Battery: first, it takes less than an hour to administer; and they can be re-administered at short intervals without having practice effects influence the results. Also, the sensitivity of the Repeatable Battery to drug-induced changes in CNS functioning has been demonstrated in previous research (e.g., Rennick, Keiser, Rodin, Rim and Lennox, 1974; Lewis, Rennick, Clifford, Rodin and Rim, 1976). The disadvantages of the Repeatable Battery are that it covers a restricted range of abilities (general alertness, attention,

flexibility of thinking, and motor speed and coordination) and that it is relatively new and has not yet been shown sensitive to cerebral pathology involving many etiologies. Nevertheless, used in conjunction with the expanded HRB, this battery may help determine not only the types and degrees of treatment-induced behavioral changes, but also the time it takes for such changes to occur. The following are tests included in the abbreviated Repeatable Battery (brief descriptions are provided only for tests not described in Reitan and Davison, 1974 or Wechsler, 1955):

Digit Symbol. This is abstracted from the Wechsler Adult Intelligence Scale, and has six alternate forms.

Color Naming. This uses a test booklet containing a series of 48 sets of four colored squares which must be correctly named by the subject in sequence. Total time and errors are recorded. (See Goldstein, 1973).

Grip Strength. Grip strength with both hands is measured with the Smedley Hand Dynamometer (Lafayette Instrument Company).

Grooved Pegboard. See Reitan and Davison, 1974.

Finger Oscillation Test. See Reitan and Davison, 1974.

Trail Making Test (Part B). See Reitan and Davison, 1974. Five alternate forms of this test are available.

Sentence Writing Time. This is a test of motor speed and coordination in a familiar but complex activity. The subject is asked to write the sentence "The large dog runs fast" with the dominant hand. The sentence is presented verbally as well as visually on a 3x5 card. There are three trials, and the times from the last two trials are averaged to compute the subject's score.

Visual Search. This is a measure of elementary visual pattern matching under conditions of high visual noise. Subjects are asked to match a small checkerboard-like pattern to another one like it found in a highly redundant array of similar patterns. Eight presentations

are made from the test booklet and total time and errors are recorded. There are two alternate forms.

Discrimination Reaction Time Test-Substitute. This replaces the original computer assisted test and provides a measure of sustained attention and discrimination speed. The subject is asked to cross out a specific number, six or nine, which appears randomly within 61 rows of 35 single digits. Each number is equally and randomly presented enabling repeated administrations with different numbers. Total time and errors are recorded.

The Repeatable Battery will be administered to each patient four times before oxygen therapy is instituted. The first three administrations constitute the training trials, and the fourth provides the baseline measures. Each patient will then be readministered the Repeatable Battery after one, two, three and six months of oxygen therapy.

Neuropsychiatric History Questionnaire. The NOTT is a study concerned with the neuropsychological concomitants of COPD and potential cognitive benefits of two forms of oxygen treatment--continuous and nocturnal.

It is important to account for known sources of variability in neuropsychological results in order to partial out the unique effect(s) of COPD and oxygen therapy. Past medical history is known to affect neuropsychological test findings. It is evident that persons with histories of neurological disorder (head injury, learning disability, stroke, diabetes with arteriosclerotic vascular disease, encephalitis, etc.) are at greater risk to show neuropsychological deficit than are persons without such histories. For this reason, a detailed medical-neurological history is essential. Our prediction is that a proportion of the variability in neuropsychological findings will be accounted for by medical history.

It is also known that alcohol abuse relates to neuropsychological deficit (see attached review by Grant and Mohns (1974) of chronic cerebral effects of alcohol and drug abuse). Recent evidence (Grant et al., 1976; Grant and Judd, 1976; Grant et al. 1977) has also implicated heavy use of other drugs, particularly CNS depressants, in neuropsychological impairment. This relationship was found in heavy drug users who were, however, very youthful, suggesting that the effect might be a potent one. For these reasons we must be sure that observed impairment in pulmonary patients is not a product of alcohol/drug use, acute or chronic. Our prediction is that, in persons with substantial alcohol/CNS depressant drug use, a proportion of the

variability in impairment will be accounted for by substance use history.

The neuropsychiatric history proposed here is a modification of one used in a recent national collaborative polydrug study. Neither version is copyrighted. Extensive validity-reliability studies were not possible in the collaborative polydrug study. Nevertheless, the following information exists:

1. The interim drug use questionnaire correlated significantly with toxicological examinations of blood and urine ($p < .01$). This is one measure of concurrent validity.

2. Both medical and drug use information contributed significantly to NP findings, suggesting its validity (usefulness).

Quality Control in NOTT Psychological Testing. Neuropsychological, personality and quality of life testing will be administered by psychological technicians. They received preliminary training by psychologists or psychiatrists at their own centers, and then participated in two training workshops organized and supervised by Drs. Grant, Heaton and McSweeny. All testing is done individually in testing rooms (quiet, well-lit, equipped) set up for the NOTT study. The immediate supervisors of the technicians at their centers are psychologists (or, in one case, a psychiatrist with extensive experience in psychological testing) connected with the NOTT study. A second level of supervision and quality control is provided by the two neuropsychological "reading centers" at San Diego and Denver. All test protocols are reviewed completely at these centers for possible errors in test administration or scoring, and needed corrections are made before the data are put on data forms and sent to the NOTT central data center at Ann Arbor. The reading centers are staffed by experienced neuropsychological examiners, who also provide ongoing supervision (via phone and mail, and periodic visits to observe testing) to the technicians at the individual NOTT centers.

EMOTIONAL STATUS AND QUALITY OF LIFE EVALUATIONS. Numerous studies of chronic hypoxia have indicated that hypoxic individuals often experience changes in mood and behavior including increased anxiety, depression, irritability, and paranoia (van Liere and Stickney, 1963). These findings, along with clinical reports, have convinced a few researchers to investigate the relationships between socioemotional behaviors and hypoxemia due to COPD. These studes reveal that COPD patients do experience negative changes in mood and social behaviors similar to those found in studies of chronic hypoxia which are somewhat amenable to treatment with oxygen therapy (Block, Castle and Cohen, 1974; Fishman and Petty, 1971; Krop, Block and Cohen, 1974).

Some of the emotional effects of hypoxemia may represent the direct result of an inadequate supply of oxygen to those portions of the brain (i.e., the limbic system) which mediate emotional behavior. However, it is also clear that socioemotional changes may be the secondary results of the restrictions that are placed on the lifestyles of COPD patients by their disease. Often COPD patients must curtail their usual activities to such an extent that they must forgo usual modes of recreation and employment. Certainly changes in lifestyle can and do have a negative impact on the COPD patient's mood and social behavior. Declining powers of concentration and memory, which are also associated with oxygen deficit (Krop et al., 1973; van Liere and Stickney, 1963) provide additional impetus to frustration, depression, and irritability.

Because it is clear that chronic hypoxemia has definite social and emotional consequences, appropriate psychological and behavioral measures should be employed in any study of treatment of COPD patients. In the current study, we plan to employ four inventories (described below) to measure several aspects of emotional behavior, social adjustment, and behavioral dysfunction which have been grouped together under the heading of "quality of life."

The Minnesota Multiphasic Personality Inventory (MMPI) (Hathaway and McKinley, 1951) will be used to measure possible treatment effects on emotional status of COPD patients. The MMPI provides objective measures of major dimensions of psychopathology, and an extensive body of previous research supports its validity for this purpose (Dahlstrom, Welsh and Dahlstrom, 1972, 1975). The MMPI has also been used in several previous studies of emotional correlates of COPD (De Cencio, Lishman and Lishman, 1968; Cummings, Godfrey and Burrows, 1969; Agle, Baum, Chester and Wendt, 1973).

Three inventories have been chosen as the primary measures of quality of life in the present study. They are:

1. The Katz Adjustment Scale - Form R (KAS-R) (Katz and Lyerly, 1963).

2. The Sickness Impact Profile (SIP) (Bergner et al., 1976).

3. The Profile of Mood Status (POMS) (McNair et al., 1971).

Although only the POMS is copyrighted, all three tests are standard inventories with established reliability and validity. Descriptions of the measures and associated research are available in published literature (see above references). Thus, only a brief description of each measure will be given below.

KAS-R. The KAS-R contains five major sections which focus on several dimensions of community and social adjustment as well as general psychological disturbances. Section R1 contains 127 questions concerned with psychiatric symtoms and social behavior. Sections R2 and R3 are concerned with the patient's performance of socially expected activities and the expectations that others have for his performance of these activities. Similarly, section RS4 deals with the level of free-time activities and section R5 covers the respondent's level of satisfaction with those.

The KAS-R takes about 30 minutes to administer to the patient's spouse or another person with whom the patient has a close relationship.

Because the KAS-R is completed by the patient's relative, it permits an independent measurement of the patient's functioning as well as a measure of how he is perceived by others. In the present study, the KAS-R will be administered to the patient's relative by the psychometrist at baseline and at twelve months following treatment.

In one study reported by Hogarty (1975), the median internal reliability for the five scales was found to be .725. Other studies (e.g., Katz and Lyerly, 1963) show similar high test-retest and internal consistency reliabilities.

The KAS-R has also been shown to be highly predictive of ratings of subject adjustment made by experienced psychologists and social workers (Hogarty, Ulrich and Katz, 1973), while other studies have demonstrated the effectiveness of the KAS in predicting the course of adjustment over time (Michaux et al., 1969) and in differentiating various patient populations (Hogarty et al., 1968). Although the scale has been used most frequently to assess the effectiveness of psychiatric treatment, the scales also have proven to be useful with psychiatrically normal populations (Hogarty and Katz, 1971).

SIP. The SIP is a measure of health status developed for use as an outcome measure in the evaluation of medical care. Specifically, it is a questionnaire instrument designed to measure sickness-related behavioral dysfunction. It provides an overall dysfunction score, as well as separate dysfunction scores for fourteen categories or types of activity. The categories involve behaviors related to social interaction, ambulation, sleep and rest, taking nutrition, usual daily work, household management, mobility and confinement, movement of the body, communication activity, leisure pastimes and recreation, intellectual functioning, interaction with family members, emotions, feelings and sensations, and personal hygiene. It consists of 189 items and may be completed by the respondent in 20-30 minutes. Test-retest reliability coefficients for the overall score are on the order of .90 (Pollard et al., 1976). Construct validity has been examined using self-assessment and clinician assessment of health status and related function assessment procedures. The correlations obtained are on the order of 140 to .60 (Bergner et al., 1976). The SIP will be administered to the patient at baseline and twelve months after baseline.

POMS. The POMS consists of a list of 65 adjectives that the patient rates on a five-point scale to indicate current mood. Subscales on the POMS include Tension-Anxiety, Depression-Dejection, Anger-Hostility, Vigor-Activity, Fatigue-Inertia and Confusion-Bewilderment.

The POMS is very brief; it takes about five to ten minutes to complete. Thus, it will be used as a repeated measure of mood.

The psychometric characteristics and utility of the POMS have also been examined in many studies (cf. McNair et al., 1971). In six studies the internal consistencies of the six factor-scales of the POMS have ranged from .84 to .95. Stability coefficients ranged from .65 to .74 for a 20 day test-retest interval and from .43 to .52 for a six-week interval.

The POMS has proven to be highly sensitive to emotion inducing conditions such as anxiety inducing films (Pillard et al., 1967) and psychotropic drugs (Lorr et al., 1964) and short-term psychotherapy programs (Lorr and McNair, 1964).

II. PATIENT STUDY

A. Recruitment

Fifty patients at Winnipeg and fifty patients at Oklahoma will receive neuropsychological testing. All patients will receive quality of life testing.

B. Testing

1. Baseline
   a. Neuropsychological Testing
      i. Modified Halstead-Reitan
      ii. MMPI
      iii. Lafayette "Repeatable Battery" *
   b. Quality of Life measurements
      i. SIP
      ii. KAS-R
      iii. POMS
      iv. Recent Life Changes Questionnaire (RLCQ)
2. Six Month Anniversary
   a. Neuropsychological Testing - none
   b. Quality of Life
      i. SIP
      ii. KAS-R
      iii. POMS
3. Follow-up
   a. Neuropsychological Testing (twelve months)
      i. Modified Halstead-Reitan
      ii. MMPI
      iii. Lafayette "Repeatable Battery"
   b. Quality of Life (12, 24, and 36 months)
      i. SIP
      ii. KAS-R
      iii. POMS
      iv. RLCQ

C. Data Processing

All completed Quality of Life forms go directly to the Data Center (D. Krueger). Neuropsychological forms are reviewed in Oklahoma (K. Dean) and then go to the Data Center (D. Krueger).

*Lafayette and Rennick "Repeatable Batteries" are essentially the same.

III. CONTROL STUDY

A. Sample Size

Thirty subjects will be recruited (15 at Oklahoma and 15 at Winnipeg).

B. Subject Selection

It will be important that the normal comparison group provide a match to the IPPB patients in terms of certain demographic characteristics. To ensure this, Mr. Dean Krueger at the George Washington Data Center will provide each study center with a description of the kind of normal controls that should be recruited. The Data Center will specify criteria ranges for age, education and sex. Your case finder should call Bethesda to obtain a list of case numbers drawn from your COPD subject pool.

C. Subject Recruitment

There are many ways in which a comparison group might be selected. The Advisory Board to IPPB studies has determined that a "neighborhood control" approach would be appropriate. In brief, this approach involves: 1) identifying the neighborhood from which a typical patient comes and 2) employing a predetermined procedure in searching the neighborhood for a normal comparison subject to match that patient.

The details of the searching procedure have been worked out. Your case finder has been trained in their application and a complete summary of the method has been attached.

D. Screening Subjects

Once a subject with the proper demographic characteristics has been identified and willingness to participate is ascertained, a "normal comparison group screening questionnaire" will be completed. This screening procedure will assure that the comparison subjects are in good general health, do not have COPD, and do not have other illnesses (e.g., alcoholism, psychosis) which might interfere with neuropsychological testing. Records will be maintained on the number of attempts to contact a prospective subject, number of refusals, number of rejections because of violation of screening and dropouts. (See case finder tally sheet.)

PROCEDURES

A. Neuropsychological Assessments

The Halstead-Reitan Battery including the Modified Wechsler Memory Scale Wechsler Adult Intelligence Scale and the Minnesota Multiphasic Personality Inventory (MMPI) will be administered to these subjects. Additionally, those tests of the Lafayette Repeatable Battery which are not in common with the Halstead-Reitan will be administered once. In effect this will mean that there will be a complete Halstead-Reitan and one complete Lafayette Repeatable on each comparison subject at each testing occasion (see below).

B. Quality of Life Measures

The Sickness Impact Profile (SIP) and the Profile of Mood States (POMS) will also be administered.

C. Neuropsychiatric Interviews

The initial neuropsychiatric history with both its medical and substance use (including tobacco) components will be administered to each subject.

D. Timing of Psychological Assessments

Each comparison subject will be examined on two occasions. The second examination will be twelve months after the initial examination. Procedures A, B, and C above will be repeated at the second examination with the exception that the neuropsychiatric interview form will be modified to cover the preceeding six months only.

E. Data Processing

All data will be forwarded to the Neuropsychology Screening Centers in the same manner as the neuropsychology data collected by the study protocol.

F. Subject Fees

For their time, each participant may be paid $25.00 at each occasion.

G. Informed Consent

Informed consent will be obtained. A sample consent document approved by UCSD's Committee on Investigation/Activities Involving Human Subjects is attached for your information.

IPPB Patient	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Neuro-psych																																					
Halstead-Reitan	X												X																								
MMPI	X												X																								
Lafayette	X												X																								
Quality of Life																																					
SIP	X						X						X												X											X	
KAS-R	X						X						X												X											X	
POMS	X						X						X												X											X	
RLCQ	X												X												X											X	

Control	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Neuro-psych																																					
Halstead-Reitan	X												I																								
MMPI	X												I																								
Lafayette	X												I																								
History	X												I																								
Quality of Life																																					
SIP	X												I																								
POMS	X												I																								

SUMMARY

CONTROL STUDY
CASE FINDING CONFERENCE
FEBRUARY 5-6, 1979

I. INTRODUCTION

To facilitate the agreed-upon acquisition of a healthy "normal" control sample against which to compare the neuropsychological functioning of IPPB patients, a training seminar was held in San Diego on February 5th and 6th, 1979.

The purpose of the seminar was to instruct newly hired case finders from each IPPB center in the case finding method which had been developed and tested in San Diego during the month of January. Specifically, this required discussion of the conceptual background and need for a "controlled" study, the theoretical model for acquiring controls, the meaning of a "match", the practial experience acquired during the pilot in applying the theoretical model, the exploration of tolerable deviations from the model due to local conditions and the algorithm for moving data from local center to Bethesda.

II. THE THEORETICAL MODEL

It was agreed upon by the IPPB Steering Committee on the advice of Millicent Higgins, Ph.D., that the best possible method of matching individual COPD patients with healthy older controls would exist in administering medical-neuropsychological criteria to such potential controls through a neighborhood search and selection process. In other words, the control for any given IPPB patient would have to be selected, as nearly as possible, from the neighborhood inhabited by the patient himself.

In addition it was decided that in accordance with accepted epidemiological methods, the neighborhood search itself would have to be systematized and applied uniformly from center to center. San Diego, as the pilot center for control case finding, developed the following search and selection model and as mentioned earlier, tested its efficacy in its own area.

Two basic rules were established to guide the case finder's peregrinations through a given neighborhood:

1. The Clockwise Rule

   Where possible, move from dwelling to dwelling (house to house, apartment to apartment, trailer to trailer, room to room, block to block, tract to tract), imagining the IPPB patient's house or apartment to occupy the position of 12 o'clock.

2. The Zig Zag Rule

Where the clockwise rule cannot be applied as in single-road rural neighborhoods, or where homes or dwellings line the borders of undeveloped parcels of land, the case finder should move from dwelling to dwelling by crossing back and forth across the road or street in a zig zag fashion.

A subrule would account for the possibility that dwellings might exist only on one side of a thoroughfare. In this case the case finder would interview potential controls living to the 1 o'clock side of the patient's house first (for a distance of five miles or until a natural or obvious boundary presents itself before the five miles has been covered) and then proceed to canvas in the 11 o'clock direction using the same rules.

One basic rule was established pertaining to the search of multi-story apartments (high-rises) or condominiums:

> The first floor searched is the patient's own floor-applying either clockwise or zig zag rules to this procedure. If no match is found on the patient's floor then the case finder searches the 1st and 2nd floors above the patient's floor and finally, the 1st and 2nd floors below the patient's floor.
>
> This rule is designed to account for the observation that, in general, rent and possibly socio-economic status, is related to the floor one lives on in high rise buildings.

Another search guideline pertains to a specific contingency which we became aware of during the pilot investigation.

> If the patient for whom a match must be found currently lives in a nursing home, the case finder will search the patient's former neighborhood. "Nursing home" in this case refers only to the sort of residence where actual medical care is provided or where a specific medical condition has caused the patient's placement. Retirement homes or complexes are not ruled out from search procedures per se, unless some unforseen contingency arises which would make search in such an area impossible.

This theoretical model may be more easily conceived than applied. Human neighborhoods don't always conform to epidemiological fantasies or ideals. However, the need to rule out unpredictable bias in clinical research demands that strenuous effort be made to make biases systematic and uniform to the extent possible and in this way to make comparisons between studied samples clear in their meaning.

III. THE MEANING OF "A MATCH"

The IPPB patients selected by George Washington needed to be matched according to the following criteria:

A. AGE - divided into four "bins" or categories:

1. 35 to 59

2. 60 to 69

3. 70 and above

This means that if an IPPB patient is 47 years old when 1st evaluated, then the casefinder may select a person 59 years of age or less as the match for this patient. If the IPPB patient is 61 years old at baseline, then the match can be from 60 to 69 years of age.

B. EDUCATION - Similarly, educational level was "binned" in the following manner:

1. 9th grade or less

2. 10, 11

3. high school grad or some college

4. college graduate (16 years formal education or more)

- In other words, an IPPB patient with 10 years of formal education could be matched by a control who had 10 or 11 years of formal education, etc.

C. SEX - Males matched with males, females matched with females.

D. ETHNICITY AND RACE - Neither of these characteristics will be used as matching criteria; therefore, any race or ethnic background in a given patient may be matched by any race or ethnic background in a potential control.

IV. APPLICATION OF THE MODEL

San Diego's experience in the pilot can be summed up in several statistics which relate man hours to the achievement of the objective: screening and enlisting the cooperation of a desirable control in the study.

Frances Ferguson, the San Diego case finder:

1. worked a total of 118 hours to enroll 4 qualified controls during the first month of the study.

This represents 48 hours more than she was hired to work per month (50% time position). However, at least 24 of the total 118 hours were spent during the first three days on the job attending to employment paperwork and formalities and to the task of acquiring licenses and sundry other identification necessary to doing canvassing work in San Diego County.

2. Knocked on a total of 204 doors in the canvassing effort.

3. Got no response at 119 (58%) of those doors. (Inhabitants out to work or otherwise not answering.)

4. Got a response at 85 (42%) of 204 doors.

5. Encountered 8 individuals out of those 85 who answered their doors who were unwilling to talk at all.

6. Found that of the 77 (90% of those home) who were willing to talk 72 were unmatchable on demographic grounds alone.

7. That of the 5 who qualified demographically, 4 also qualified in terms of level of health and were in fact, good candidates for the control study. One of the five had to be screened out for Parkinsonism.

These statistics, if applicable to other months in San Diego and to other geographic locations indicate that the initial job of finding qualified controls for COPD patients will be time-consuming and possibly frustrating. One final datum adds another element worth considering:

8. The San Diego case finder logged over 1,000 miles in 118 hours work during her first month on the job. Per month estimates of mileage for the remaining 5 months of the case finding period range between 400 and 750 miles per month. Arrangements should be made for re-imbursement of fuel expenses for case finders at other centers as they have been in San Diego.

The San Diego case finder lists below a series of strategies and tactics use full if other case finders encounter similar situations.

1. After obtaining the list of patients for which a matched control must be found, locate the patient's dwelling on a fairly detailed street map. Then, map out the course of the search in as much detail as the map will allow.

2. Carry a canvassing log or notebook which can be used to note information pertinant to having to possibly re-visit a portion of a neighborhood if original attempts to contact inhabitants are unsuccessful. It can also serve as a mileage log.

3. Carry the Case Finder Tally Sheet on a clip board for ease of use.

4. Before going to any neighborhood for the first time, check to find out whether a solicitor's license is required. If so, be sure to get one, and be sure the licensing bureau understands that you work for a not-for-profit organization. This will mean that IPPB will not have to pay fees for licensing.

5. Consider the possibility of using a University or Medical Center vehicle instead of your own. It may be more - or less - cost effective but its worth looking into.

6. Try to obtain a "Professional Identification Card" from the University. If you cannot obtain one in this way, have some printed identifying you with the institution and department you work for. Present this card first when you meet new folks in the neighborhoods. Showing the official License is tacky and should be used only as a last resort in convincing someone that you are who you say you are.

7. Before canvassing in any multi-family dwelling see the manager of the building first. Often, retirement complexes have rules of this nature. If you avoid making this initial contact with the complex manager, he or she may order you off the property in an embarrassing scene. License or no license.

8. If you have found a qualified and willing control, call your neuropsychological and pulmonary technicians before leaving the control's home. Establish a probable date for the control's evaluation with the techs and then tell the control. This will "seal the deal" so to speak and minimize the ambiguities for them.

9. Be aware of the laws regarding confidentiality. You cannot divulge directly or indirectly, the name of a COPD patient participating in the IPPB study even if the control knows him or her and asks only for confirmation of the fact.

10. If a selected COPD patient's neighborhood has thoroughly been canvassed without finding a qualified control, pursue the search in adjacent neighborhoods. If you're convinced that it is similar in a sociodemographic sense. If adjacent neighborhoods are not comparable call Bethesda and ask for another COPD index subject.

11. Some COPD patients may get upset if knowledge gets back to them through the neighborhood grapevine that "someone working for a Lung Disease Study" has been in the neighborhood asking questions. Consider the possibility of having your IPPB nurse call each of the COPD patients on your list to inform them of your presence and purpose before you go out into their neighborhoods.

12. Using the model provided in this package, write a letter on University or Medical Center stationary describing in detail the procedures we are asking the controls to participate in. List study contact phone numbers on it. Give the letter to persons who have qualified demographically and medically and who are willing to participate. This will provide the control with an opportunity to review what he has gotten himself into after you've gone. If he or she has questions they can use the phone to obtain answers.

V. DATA FLOW

The casefinder will be responsible for two study forms: the case finder's tally sheet; and the control screening questionnaire, examples of which are attached in their final form.

The case finders tally sheet is a form which allows the case finder to record the frequency of certain categories of response, i.e. the total number of doors knocked on, the frequency of "no answers", the frequency of "home, but unwilling to talk", the number of nondemographically matched contacts, etc.

The control screen is the instrument used for determining whether a potential control is medically qualified (healthy) to participate.

All tally sheets are sent to the appropriate neuropsychological reading center after a match has been made for a given COPD patient.

The data from both of these forms will be forwarded to Ann Arbor from the reading centers after being checked.

A note on control screens:

If in the course of administering the control screen to a prospective control, the person answers a STOP question in the positive thus disqualifying himself from participation, the case finder continues to fill out the questionnaire. This questionnaire along with those for persons who qualify is sent to the neuropsychological reading center in order that some picture be developed of the meaning of disqualification.

VI. OTHER ITEMS

A. Trainees from each of the centers were given a demonstration of the spirometry procedures that each control would go through.

B. Demonstrations of the neuropsychological procedures were presented to the group by the San Diego NOTT psychometrist.

C. Role playing sessions on the conduct of control screen interviews were held. Each trainee had the opportunity to "play" the prospective control and had several opportunities to administer the control screening questionnaire to naieve "subjects".

VII. SUMMARY

The case finder's training seminar covered a great deal of information. The feeling was that it (information) could not have been communicated in a more effective manner, and that, had it not been organized in such a way, the degree of uniformity and consistency required could not have been achieved.

References

Agle, D.P., Baum, G.L., Chester, E.H., and Wendt, M. Multidiscipline treatment of chronic pulmonary insufficiency 1. Psychologic aspects of rehabilitation. Psychosomatic Medicine, 1973, 35, 41-49.

Bergner, M., Bobbit, R.A. and Pollard, W.E. The Sickness Impact Profile: Validation of a health status measure. Medical Care, 1976, 14, 57.

Block, A.J., Castle, J.R. and Keith, A.S. Chronic oxygen therapy: Treatment of Chronic Obstructive Pulmonary Disease at sea level. Chest, 1974, 65, 279-288.

Cummings, S.T., Godfrey, A.E. and Burrows, B. Personality and social class factors associated with chronic obstructive lung disease: An exploratory study. American Review of Respiratory Disease, 1969. 99, 872-878.

Dahlstrom, W.G., Welsh, G.S. and Dahlstrom, L.E. An MMPI Handbook; Volume 1: Clinical Interpretation. Minneapolis: University of Minnesota Press, 1972.

Dahlstrom, W.G., Welsh, G.S. and Dahlstrom, L.E. An MMPI Handbook; Volume 2: Research Application. Minneapolis: University of Minnesota Press, 1975.

DeCencio, D.V., Leshner, M. and Leshner, B. Personality characteristics of patients with chronic obstructive pulmonary emphysema. Archives of Physical Medicine and Rehabilitation, 1968, 471-475.

Denerll, R.D., Rodin, E.A., Gonzalez, S., Schwartz, M.L. and Lin, Y. Neurological and psychological factors related to the employability of persons with epilepsy. Epilepsia, 1966, 7, 318-329.

Fishman, D.B. and Petty, T.L. Physical, symptomatic, and psychological improvement in patients receiving comprehensive care for chronic airway obstruction. Journal of Chronic Disease, 1971, 24, 775-785.

Fitzhugh, L.C., Fitzhugh, K.B. and Reitan, R.M. Adaptive abilities and intellectual functioning in hospitalized alcoholics. Quarterly Journal of Studies on Alcohol, 1960, 21, 414-423.

Fitzhugh, L.C., Fitzhugh, K.B. and Reitan, R.M. Adaptive abilities and intellectual functioning in hospitalized alcoholics: Further considerations. Quarterly Journal of Studies on Alcohol; 1965, 26, 402-411.

Goldstein, G. and Shelly, C.H. Field dependence and cognitive, perceptual and motor skills in alcoholics: A factor analytic study. Quarterly Journal of Studies on Alcohol, 1971, 32, 29-40.

Goldstein, G. The validity of a visual searching task as an indicator of brain damage. J. Consulting and Clinical Psychology, 1973, 41, 434-437.

Grant, I., Adams, K,M., Carlin, A.S. and Rennick, P.M. Neuropsychological deficit in polydrug users. Drug and Alcohol Dependence, 1977, 2, 91-108.

Grant, I. and Judd, L.L. Neuropsychological and EEG disturbances in polydrug users. American Journal of Psychiatry, 1976, 133, 1039-1042.

Grant, I., Mohns, L., Miller, M. and Reitan, R.M. A neuropsychological study of polydrug users. Archives of General Psychiatry, 1976, 33, 973-978.

Grant, I., Mohns, L. Chronic cerebral effects of alcohol and drug abuse. The International Journal of the Addictions, 1975, 10(5), 883-920.

Hathaway, S.R. and McKinley, J.C. Minnesota Multiphasic Personality Inventory Manual, Rev. Ed. New York: The Psychological Corporation, 1951.

Heaton, R.K., Chelune, G.J. and Lehman, R.A.W. Neuropsychological and personality perdictors of patient employment status. Manuscript submitted for publication, 1977.

Hogarty, G.E., Dennis, A., Guy, W. and Gross, G.M. "Who goes there?" A critical examination of admissions to a psychiatric day hospital. American Journal of Psychiatry, 1968, 124, 934-944.

Hogarty, G.E. and Katz, M.M. Norms of adjustment and social behavior. Archives of General Psychiatry, 1971, 25, 470-480.

Hogarty, G., Ulrich, R. and Katz, M. An objective index of psychiatric disorder in the general population. Unpublished report, 1973.

Hogarty, G.E. Informant ratings of community adjustment. In I.E. Waskow and M.B. Parloff (Eds.) Psychotherapy chance measures. Washington, D.C.: U.S. Government Printing Office, 1975.

Jones, B. and Parsons, O.A. Impaired abstracting ability in chronic alcoholics. Archives of General Psychiatry, 1971, 24, 71-75.

Jones, B. and Parsons, O.A. Specific vs. generalized deficits of abstracting ability in chronic alcoholics. Archives of General Psychiatry, 1972, 26, 380-384.

Katz, M.M. and Lyerly, S.B. Methods of measuring adjustment and behavior in the community: I. Rationale, description, discriminative validity and scale development. Psychological Reports, 1963, 13, 503-535..

Klonoff, H., Fibiger, C.H. and Hutton, G.H. Neuropsychological patterns in chronic schizophrenia. Journal of Nervous and Mental Disease, 1970, 150, 291-300.

Krop, H.D., Block, A.J. and Cohen, E. Neuropsychologic effects of continuous oxygen therapy in Chronic Obstructive Pulmonary Disease. Chest, 1973, 64, 317-322.

Lewis, R., Rennick, P.M., Clifford, C., Rodin, E. and Rim, C.S. Comparison of behavioral side effects of a new anticonvulsant carbamaxepine, versus primidone in epilepsy during a long-term study. Presented at the Annual Meeting of the Midwestern Psychological Association, Chicago, May, 1976.

Lorr, M. and McNair, D.M. Correlates of the length of psychotherapy, Journal of Clinical Psychology, 1964, 20, 497-504.

Lorr, M., McNair, D.M. and Weinstein, G.J. Early effects of chlordiazepoxide (Librium) used with psychotherapy. Journal of Psychiatric Research, 1964, 1, 257-270.

Mattarazzo, J.D. Wechsler's Measurement and Appraisal of Adult Intelligence. Baltimore: Williams and Wilkins, 1972.

Matarazzo, J.D. Weins, A.M., Matarazzo, R.G. and Goldstein, S.G. Psychometric and clinical test-retest reliability of the Halstead Impairment Index in a sample of healthy, young normal men. Journal of Nervous and Mental Disease, 1974, 158, 37-49.

McNair, D.M., Lorr, M. and Droppleman, L.F. EDITS Manual for the Profile of Mood States. San Diego: Educational and Industrial Testing Service, 1971.

Michaux, W.W., Katz, M.M., Kurland, A.A. and Gansereit, K.H. The first year out: Mental patients after hospitalization.

Newnan, O.S., Heaton, R.K. and Lehman, R.A.W. Using neuropsychological tests and the MMPI to predict patients' occupational characteristics. Manuscript submitted for publication, 1977.

Pillard, R.C., Atkinson, K.W. and Fisher, S. The effect of different preparations on film-induced anxiety. Psychological Record, 1967, 17, 35-41.

Pollard, W.E. Bobbit, R.A., Bergner, M., Martin, D.P. and Gilson, B.S. The Sickness Impact Profile: Reliability of a health status measure. Medical Care, 1976, 14, 146-155.

Reitan, R.M. A research program on the psychological effects of brain lesions in human beings. In N.R. Ellis (Ed.), International Review of Research in Mental Retardation. Vol. 1. New York: Academic Press, 1966.

Reitan, R.M. and Davison, L.A. Clinical Neuropsychology: Current Status and Applications. Washington, D.C.: V.H. Winston and Sons, 1974.

Rennick, P.M., Keiser, T., Rodin, E., Rim, C. and Lennox, K. Carbamazepine (Tegretol): Behavioral side effects in temporal lobe epilepsy during short-term comparison with placebo. Presented at the Annual Meeting of the American Epilepsy Society, New York, December, 1974.

Russell, E.W. A multiple scoring method for the assessment of complex memory functions. Journal of Consulting and Clinical Psychology, 1975, 43, 800-809.

Russell, E.W., Neuringer, C. and Goldstein, G. Assessment of Brain Damage: A Neuropsychological Key Approach. New York: John Wiley and Sons, 1970.

Minutes of NOTT Subcommittee Meeting

Date: November 22, 1978

Place: Bethesda, Maryland

Attendance: Lynn Blake, Igor Grant, Bob Heaton, John McSweeney, David DeMetts, George Williams

The purpose of this meeting was to determine those neuropsychological and quality of life variables which would be utilized in making decisions regarding the length of the NOTT follow-up period. A complete analysis of those selected variables would be presented to a subcommittee of the Advisory Board in February and, subsquently, to the full Advisory Board in March. Such an analysis would include an assessment of treatment differences, statistical power calculations, as well as projected conclusions that would be made at the scheduled end of the NOTT study. It was decided that no more than twenty variables should be considered for this purpose.

After considerable discussion the following variables were selected:

Rennick Repeatable Battery:

(1) Percent Tests Impaired - This variable is calculated as the percent of nine tests on which a given individual is impaired. For the purposes of power calculations, a five percent difference in mean values for the 12 hour and 24 hour treatment groups would be considered clinically important.

(2) Average Impairment Rating - For the purposes of power calculations, a .10 difference in mean values for the 12 hour and 24 hour treatment groups would be considered clinically important.

NOTE: The baseline values for the above two variables will be determined from the last administration of the Rennick Repeatable Battery before randomization. If less than three administrations are available, the baseline results will be considered to be missing. Since the Rennick Repentable Battery is administered at baseline, 1, 2, 3, and 6 months, a multivariate analysis will be utilized comparing the two treatment groups with respect to their average response at these five time points. However, attention will be focused at a comparison of the linear trend over time for the two groups. If it is necessary to reduce the number of variables for consideration, the average impairment rating may be omitted.

Halstead-Reitan Battery:

(1) Russel-Neuringer-Average Impairment Rating - For the purposes of power calculations, a .10 difference in mean values for the 12 hour and 24 hour treatment groups would be considered clinically important.

(2) Impairment Index - This index is based on eight scores. For the purposes of power calculations, a .05 difference in mean values for the 12 hour and 24 hour treatment groups would be considered clinically important.

(3) Brain Age Quotient - For the purposes of power calculations, a difference of 3 in mean values for the 12 hours and 24 hours treatment groups would be considered clinically important.

NOTE: The average change in each of the above variables between baseline and the six month anniversary will be compared for the two treatment groups.

Clinical Rating:

(1) Clinical Global Rating - For the purposes of power calculations, a .25 difference in mean values for the 12 hour and 24 hour treatment groups would be considered clinically important.

(2) Change in Global Rating - For the purposes of power calculations, a .25 difference in mean values for the 12 hour and 24 hour treatment groups would be considered clinically important.

NOTE: The average change in the clinical global rating between baseline and the six month anniversary will be compared for the two treatment groups. It will be important to indicate clearly the distinction between the above two variables.

MMPI:

(1) Number of MMPI Scores Above 70 - The MMPI scores to be considered in this count include F, HS, D, HY, PD, PA, PT, SC, SI, and MA. For the purpose of power calculations, a .50 difference in mean values for the two treatment groups would be considered clinically important.

(2) Mean Score of Ten Scales - The ten scales to be considered in the construction of this varialbe are listed above. For power calculations, a difference of 1 would be considered clinically important.

(3) ES (Ego Strength) Scale - For power calculations, a difference of 2.5 would be considered clinically important.

NOTE: The average change in each of the above variables between baseline and the six month anniversary will be compared for the two treatment groups. If it is necessary to reduce the number of variables for consideration, the variables labeled number of MMPI scores above 70 may be omitted.

Sickness Impact Profile:

(1) Total Score - For power calculations, a difference of 0.2 standard deviation units in mean value would be considered important.

(2) Physical Dimension - This variable will be calculated as the sum of the ambulation, mobility, and body care and movement subscales of the SIP. For power calculations, a difference of 0.2 standard deviation units in mean value would be considered important.

(3) Psychosocial Dimension - This variable will be calculated as the sum of the social interaction, communication, alterness behavior, and emotional behavior subscales of the SIP. For power calculations, a difference of 0.2 standard deviation units in mean value would be considered important.

NOTE: The average change in each of the above variables between baseline and the six month anniversary will be compared for the two treatment groups. If it is necessary to reduce the number of variables for consideration, the physical dimension and psychosocial dimension variables may be omitted.

Katz Adjustment Scale:

(1) R1 (Social Obstreperous)
(2) R1 (Acute Psychotism)
(3) R1 (Withdrawal Depression)
(4) R2
(5) R4
(6) Discrepancy Score

NOTE: For each of the above variables, a difference of 0.2 standard deviation units in mean value would be considered important for power calculations. The average change in each of the above variables between baseline and the six month anniversary will be compared for the two treatment groups. If it is necessary to reduce the number of variables for consideration, the discrepancy score may be omitted.

Profile of Mood States:

(1) Total Mood Disturbance - For power calculations a difference of 0.2 standard deviation units in mean value would be considered important.

NOTE: The baseline value for this variable will be the average of the two administrations before randomization. If only one administration before randomization is available, that value will be considered the baseline value. Since the POMS is administered at baseline, 1, 2, 3, and 6 months, a multivariate analysis will be utilized comparing the two treatment groups with respect to their average response at these five time points. However, attention will be focused at a comparison of the linear trend over time for the two groups.

Home Visit Behavior Checklist:

(1) Average of All Cluster Scores - For the purposes of power calculations, a difference of 0.2 standard deviation units in mean values for the two treatment groups would be considered important.

(2) Average of Depression, Hostility, Anxiety, and Lethargy Scores - For the purposes of power calculations, a difference of 0.2 standard deviation units in mean values of the two treatment groups would be considered important.

NOTE: Since the home visit behavior check list is administered at months 1, 2, 3, 4, 5, and 6, a multivariate analysis will be utilized comparing the two treatment groups with repeat to this average response at these six time points. However, attention will be focused at a comparison of the linear trend over time for the two groups.

Pedometer:

The pedometer measurement was suggested as a possible variable to be considered in the comparison of the two treatment groups. However, if it is necessary to reduce the number of variables for consideration, this variable could be omitted. In fact, it was noted that this measurement, although conceptually important, is so unreliably obtained that it perhaps should be omitted anyway.

In preparing the analysis of the above variables, it was suggested that the following approaches be utilized: (1) de novo sample size calculations utilizing the standard deviations obtained from the accumulated data, (2) conditional power calculations based on data accumulated to date, (3) extrapolation of the present trend, and (4) confidence interval calculations. Moreover, in preparing the analysis, the comparability of the two treatment groups in terms of selected demographic variables should be examined.