REPORT OF THE NATIONAL COMMISSION ON ORPHAN DISEASES

APPENDICES - VOLUME I

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Office of the Assistant Secretary for Health
February 1989

DEPARTMENT OF HEALTH & HUMAN SERVICES
NATIONAL COMMISSION ON ORPHAN DISEASES

Public Health Service

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FOREWORD

The task of preparing the Report to Congress from the National Commission on Orphan Diseases involved many different data gathering efforts. Several of the major tasks included collecting information from those individuals and organizations directly involved with activities related to rare diseases. These individuals and organizations were surveyed to determine their experiences with rare diseases and their needs based on these experiences. To complete this task, telephone interviews were conducted with physicians, investigators studying both rare and common diseases, and patients with a rare disease, members of their families or caregivers. These studies are presented in Volume I of the Appendices to the Report of the National Commission on Orphan Diseases.

The Commission also obtained essential information from separate surveys of pharmaceutical manufacturers, private and public foundations, voluntary rare disease organizations, and Federal agencies involved in rare disease research and development activities. The results from these surveys are presented in Volume II of the Appendices.

The results of these surveys are presented in summary format in the Commission's report to Congress. The studies are presented in their entirety to reflect the commitment and degree of involvement in the rare disease area as well as the needs of these individuals and organizations.

The Commission extends their gratitude to those individuals and organizations who responded to both the telephone and written surveys. The results generated from these surveys formed the basis for the recommendations adopted by the Commission and included in their report.

Stephen C. Groft, Pharm. D.
Executive Director

SURVEY OF

RARE AND COMMON DISEASE

RESEARCHERS

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I. INTRODUCTION

If gains are to be made in rare disease research, investigators need sufficient and stable funding to conduct basic and clinical research. In basic research, differentiating between rare and common diseases is often difficult. In recent years, there has been a shortage of research dollars coupled with a shrinking number of investigators who are willing to devote their professional lives to either rare or common disease research. The Commission is concerned about these problems as they hamper needed advances in rare disease research.

The purpose of this study was two-fold: The study compared investigators of rare diseases and investigators of common diseases with respect to barriers that may exist for funding of their research. Also, the study gathered information about experiences that investigators had before entering their specific research area. Specific areas of inquiry included:

- factors that were instrumental in stimulating interest in rare disease research,
- the availability and accessibility of funds for disease-specific research,
- investigators' persistence in learning about and sources of information concerning funding,
- investigators' experience with coordination between public and private funding,
- investigators' experience with private and public grant review,
- barriers (both intramural and extramural) to conducting disease-specific research, especially in the area of rare diseases, and
- barriers to obtaining funds for disease-specific research.

The sample was comprised of rare disease investigators (n=303) and common disease investigators (n=301) with a total of n=604. Investigators self-selected into one or the other category until the approximate quota for the cell was filled. The response rate was 91.7 percent.

It should be noted that percentages in tables may not add up to 100 percent due to rounding. Similarly, subtotals may not totally agree with the sum of their components.

This report describes a pilot study of investigators of rare disease and common disease investigators who applied to select Federal agencies for grant support in FY 1987. The telephone survey was conducted by Chilton Research Services, Inc. in 1988. The questionnaires are shown in the Appendix. Analysis was conducted jointly by Hamilton, Frederick, and Schneiders and Chilton Research Services.

II. METHODOLOGY/SAMPLE CHARACTERISTICS

The sample of investigators was evenly divided between those in rare and common disease research. The mean age of the investigators was 46 years of age (Table 1).

Over two-thirds of respondents (67 percent) have received their Ph.D., 34 percent have an M.D., and 1 percent have D.O.'s. Six percent report receiving other types of degrees. More rare disease investigators have M.D.'s than common investigators (41 percent versus 26 percent). It follows that common disease investigators are more likely to have a Ph.D. than rare disease investigators (73 percent to 61 percent).

Three-fourths of these respondents (77 percent) are conducting their research at a university or academic institution, 8 percent are working in a private, non-academic institution, 10 percent in a medical center, and 1 percent in a commercial research center.

More than half of the investigators (64 percent) have been in their current research field for ten years or more, 20 percent for five to nine years, and a small percentage (10 percent) are new to their field (four years or less) (Table 2).

In describing their most recent research project, a majority of investigators (69 percent) says that the project involved basic research only. One-in-ten (10 percent) say their work concerned clinical work only, while 21 percent report their project involved both basic and clinical research. As expected, a majority of investigators with Ph.D.s (78 percent) are conducting basic research, compared to 51 percent of M.D s who are working on basic research studies.

Over a third of investigators (35 percent) say they spend more than 80 percent of their professional time in research,

including related administrative tasks. Twenty-two percent say they spend between 1 to 50 percent of their time in research, twenty percent spend 51 to 70 percent of their time, and twenty-two percent are spending 71 to 80 percent of their time on research.

TABLE 1. AGE OF RESPONDENTS
(in percent)

Age of Investigator	Type of Investigator	
	Rare	Common
25 to 34 Years	3.0	4.7
35 to 44 Years	46.5	42.5
45 to 54 Years	34.0	31.2
55 to 64 Years	13.9	17.6
65 to 74 Years	2.6	3.7
Don't Know/Ref	0.0	0.3
	100.0%	100.0%
Mean Age	46.1	46.5

TABLE 2. YEARS IN CURRENT RESEARCH FIELD
(in percent)

Years in Current Research Field	Type of Investigator	
	Rare	Common
0 to 4 Years	5.3	5.6
5 to 9 Years	21.1	17.3
10 to 14 Years	27.1	26.6
15 to 19 Years	15.8	17.9
20 to 24 Years	16.2	12.6
25 to 29 Years	5.9	9.3
30 to 34 Years	5.3	6.6
35 to 39 Years	2.0	1.3
40 to 44 Years	1.3	1.7
45 to 49 Years	0.0	0.0
50 to 54 Years	0.0	0.3
Don't Know; N/A	0.0	0.7
	100.0%	100.0%

The universe from which the combination sample of N = 2,515 was selected consisted of 12,632 investigators who, in 1987, had applied for grant support for investigator-initiated projects to six select institutes at the National Institutes of Health (NIH), one institute at the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA), and one relevant office at the Food and Drug Administration (FDA). The sample included investigators whose application had or had not been funded. The specific institutes and offices were selected because of the expected high probability of reaching investigators working with orphan (rare) diseases.

The combination sample consisted of the following proportionate subsamples: From the NIH: the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), the National Cancer Institute (NCI), the National Institute of Child Health and Human Development (NICHD), the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), the National Heart, Lung, and Blood Institute (NHLBI), and the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS); from the ADAMHA: the National Institute of Mental Health (NIMH); and from the FDA: the Office of Orphan Products Development.

To ensure a focus on investigator-initiated research, the following grant mechanisms were selected:

1. Traditional Research Project (R01). Research projects of this type support a discrete, specified, and circumscribed project that is performed by principal investigator in an area that represents the investigator's specific interest and competency.

2. First Independent Research Support and Transition (FIRST) Award (R29). This award provides a sufficient initial period (five years) of research support for newly independent bio-medical investigators to develop their research capabilities and demonstrate the merit of their research ideas.

3. Small Business Innovation Research (SBIR) Grant - Phase II (R44). This grant mechanism supports in-depth development of R&D ideas the feasibility of which has been established in Phase I and that are likely to result in commercial products or services. The limit of this award in FY 1987 was $500,000.00 and two years. This award is not renewable.

To reach the investigator by telephone, telephone numbers of the principal investigator were taken from the original grant

application. A composite list of all telephone numbers was provided to Chilton Research Services, Inc. Telephone interviews were conducted after drawing random samples from each subsample. When the required number of completed interviews in each cell was completed, interviewing ceased.

Interviewers asked whether investigators focused on rare disease or common disease research until cell quotas were met. To avoid bias, interviewers did not know whether investigators' applications had been funded or not.

The response rate for this survey was 91.7 percent.

Findings in this preliminary analysis can only be used to generalize to the 12,632 principal investigators who applied to NIH, ADAMHA, and the FDA for the grant mechanisms described above and in the purview of the particular agencies that were pre-selected. However, it is believed that the investigators surveyed are not significantly different from the additional 17,000 or so investigators who applied for other grant mechanisms focusing on research that is applicable to other bureaus, institutes, divisions, and offices at the NIH, ADAMHA, and FDA.

III. KEY FINDINGS

The following section summarizes the key findings of the survey. More complete information can be found in the body of the report under "General Findings and Discussion".

The survey found that

- The single biggest barrier to the discovery of rare disease treatments is the lack of research money (38 percent).
- Rare disease investigators are more likely to think that rare disease treatments are discovered through specific research on that disease (50 percent) than through information from research on other diseases (35 percent) or drug research (8 percent). Common disease investigators are more likely to think rare diseases treatments are the results of research in other areas (46 percent) than specific research on a rare disease (36 percent) or drug research (9 percent).
- Almost 20 percent of the rare disease investigators had at one point switched from rare disease research to common disease research to obtain funding, while only five percent of the common disease investigators had done so.

- Over 65 percent of all investigators agreed that rare disease research receives less funding than common disease research.

- Over 60 percent of all investigators agreed that rare disease research receives less general research support in terms of facilities, graduate research personnel, and student fellowships and training grants. There is similar agreement concerning administrative and secretarial help, support for access to patients, and help in writing grants, but to a lesser degree.

- Twenty-four percent of rare disease investigators felt that not having access to a sufficient number of patients posed a big problem to their research in comparison to only 6 percent of common disease investigators. Legal liability was least frequently considered a problem by rare and common disease researchers alike.

- About one third of all investigators agreed that preparing a grant proposal for a rare disease project is more difficult than for a common disease project.

- More common disease investigators (80.1 percent) than rare disease investigators (68 percent) know which private institutions will fund their type of research.

- Considerably more common disease investigators (85 percent) will apply first to the Federal government for funding of a basic research project than rare disease investigators (64.7 percent). Almost 15 percent of rare disease investigators would apply to a rare disease voluntary support organization first. Also, over 26 percent of rare disease investigators would apply to a rare disease voluntary support group or a foundation compared with only 6 percent of common disease investigators.

- If turned down by their first choice of funding a basic research project, many more of the common disease investigators (61.7 percent) than the rare disease investigators (45 percent) would reapply to the Federal government. However, 20 percent of the rare disease investigators would apply to a rare disease voluntary organization as opposed to 9 percent of common disease investigators.

- More common disease investigators (61.1 percent) than rare disease investigators (42.6 percent) would go to the Federal government first to obtain funding for a clinical study. Again, one fifth of the rare disease investigators would apply to a voluntary support group first in contrast to 5 percent of the common disease investigators.

- If turned down, rare (32.2 percent) and common disease (38.3 percent) investigators would go to the Federal government next, with a surprising 25.4 percent of common disease investigator going to the voluntary rare disease organization. An similar number of rare and common disease investigators would go to a foundation (21.3 and 14.4 percent respectively).

- If a proposal was not funded, more common (89.7 percent) than rare (77.6 percent) disease investigators would resubmit their proposal to the original sponsor with revisions. 14.9 percent of the rare disease investigators would instead submit their proposal to a different potential sponsor.

IV. GENERAL FINDINGS AND DISCUSSION

A. THE FUNDING PROCESS

Three-fourths of both rare and common disease investigators (74 percent) say that they know which private institutions fund their type of research. More common disease investigators (80.1 percent) than rare disease investigators (68 percent) know which private institutions will fund their type of research (Table 3).

However, rare disease investigators are slightly less aware of which private institutions fund their research. Eighty percent of common disease investigators say they are aware of which private institutions fund their research and 68 percent of rare disease investigators say they are aware.

A smaller percentage of investigators are aware of how private institutions fund research than the percentage who are aware which institutions fund their research (61 percent say they are knowledgeable of the funding process, 39 percent say they are not). On this issue there is virtually no difference between rare and common disease investigators.

On a one-to-five scale, investigators rate the level of scientific merit they believe determines which projects are funded at somewhat above the midpoint (3.38).

In a probe regarding the funding process, bio-medical investigators are asked which factors, other than scientific merit, did they believe private institutions consider when reviewing grant proposals. The primary factors cited are the relationship of the topic of the proposal (29 percent) and the investigators qualifications for conducting the research (21 percent). These were followed by reputation of the institution (8 percent) and, lastly, potential for a cure (5 percent). Rare and common disease investigators have a similar outlook on the factors private institutions consider in reviewing grant proposals.

The Federal Government as Funder

Bio-medical investigators are nearly unanimous (98 percent) in their belief that they know which federal agencies fund their type of research. Both rare and common disease investigators say that they know which federal agencies fund their research. Similarly, nearly all investigators (96 percent) say they are knowledgeable about how research is funded by the Federal government. This level of knowledge remains fairly consistent with rare and common disease investigators alike.

TABLE 3. KNOWLEDGE ABOUT PRIVATE FUNDING
(in percent)

Investigator's Response	Type of Investigator	
	Rare	Common
Do you know which private institution will fund your type of research?		
Yes	68.8	80.1
No	31.0	19.3
Don't Know; N/A	1.0	0.7
	100.0%	100.0%

Considerably more common disease investigators (85 percent) will apply first to the Federal government for funding of a basic research project than rare disease investigators (64.7 percent) (Table 4).

If turned down by their first choice of funding a basic research project, many more of the common disease investigators (61.7 percent) than the rare disease investigators (45 percent) would reapply to the Federal government (Table 5). However, 20 percent of the rare disease investigators would apply to a rare disease voluntary organization as opposed to 9 percent of common disease investigators.

More common disease investigators (61.1 percent) than rare disease investigators (42.6 percent) would go to the Federal government first to obtain funding for a clinical study (Table 6). If turned down, rare (32.2 percent) and common disease (38.3 percent) investigators would go to the Federal government next (Table 7). If a proposal was not funded, more common (89.7 percent) than rare (77.6 percent) disease investigators would resubmit their proposal to the original sponsor with revisions (Table 8).

In rating how much scientific merit determines which projects are funded, on a one-to-five scale the mean for all investigators is 4.19 (considerably higher than the rating by private institutions). Rare disease investigators rate the scientific merit in determining federal projects slightly higher than do common disease investigators.

In evaluating the factors which investigators believe drive the Federal government review of grant proposals, the most frequently mentioned factor is the investigator's qualifications

TABLE 4. WHERE TO APPLY FOR BASIC RESEARCH
(in percent)

Investigator's Response	Type of Investigator: Rare	Common
If you were trying to get funding for a basic study, to which of the following funding sources would you apply first?		
Federal Government	64.7	85.0
Voluntary Rare Disease Organization	14.9	2.0
Private Foundation	10.9	4.0
University/Academic Institution	7.3	5.6
Pharmaceutical Industry	0.7	1.3
State/Local Government	0.0	0.7
Other	0.7	0.3
Don't Know; N/A	1.0	1.0
	100.0%	100.0%

(30 percent), followed by the relationship of the topic (14 percent), reputation of the institution (9 percent) and potential for cure (4 percent). The perception of investigator qualifications as the primary factor for grant award is higher for the public sector than the private sector.

Funding Sources for Various Types of Research

All investigators believe that it is much easier to obtain funding for common disease research than rare disease research. Over 65 percent of all investigators agreed that rare disease research receives less funding than common disease research (Table 9). Opinions vary whether clinical common disease research or basic common disease research is easier to fund.

However, almost 20 percent of the rare disease investigators had at one point switched from rare disease research to common disease research to obtain funding, while only five percent of the common disease investigators had done so (Table 10).

When given a choice between four different types of research, basic or clinical research on rare or common diseases, 39 percent say that clinical research on common diseases is the easiest for which to obtain funding, followed by basic research on common diseases (37 percent) (Table 11).

Rare disease investigators are slightly more likely to think basic research on common diseases is easier to fund (42 percent), whereas common disease investigators are slightly more likely to think that clinical research on common diseases is easier to fund (41 percent).

In citing reasons why it is most difficult to obtain funding for various types of research, the public impact of the disease is mentioned most often. Four-in-ten investigators (42 percent) who say basic research on rare diseases is the most difficult to get funding for say so because it affects fewer people, or has limited public interest or awareness.

As might be expected, in assessing why it is difficult to get funding for certain research, both rare and common disease investigators say that funding for research on rare diseases is more difficult to get than funding for research on common disease. 37 percent of all investigators thought that it was most difficult to get funding for basic research on rare diseases and 36 percent thought it is more difficult to get funding for clinical research on rare diseases.

Differences may also be based on experience in the field. Those with the least amount of experience in the field are most likely to think that it is more difficult to obtain funding for

TABLE 5. WHERE TO APPLY NEXT FOR BASIC RESEARCH
(in percent)

Investigator's Response	Type of Investigator: Rare	Common
And if they turned you down to whom would you go next?		
Federal Government	45.0	61.7
Voluntary Rare Disease Organization	20.0	8.7
Private Foundation	17.3	4.7
University/Academic Institution	4.0	7.7
Pharmaceutical Industry	6.3	5.4
State/Local Government	2.7	5.0
Would Apply Again/Go Back to Same Source	1.0	2.3
Other	2.3	2.3
Don't Know; N/A	1.3	2.0
	100.0%	100.0%

TABLE 6. WHERE TO APPLY FOR CLINICAL RESEARCH
(in percent)

Investigator's Response	Type of Investigator: Rare	Common
If you were trying to get funding for a clinical study, to which of the following funding sources would you apply first?		
Federal Government	42.6	61.1
Voluntary Rare Disease Organization	22.1	5.0
Private Foundation	7.3	11.3
University/Academic Institution	9.6	5.6
Pharmaceutical Industry	3.6	2.0
State/Local Government	1.0	0.7
Other	2.0	2.0
Don't Know; N/A	11.9	12.3
	100.0%	100.0%

TABLE 7. WHERE TO APPLY NEXT FOR CLINICAL RESEARCH
(in percent)

Investigator's Response	Type of Investigator	
	Rare	Common
And if they turned you down to whom would you go next?		
Federal Government	32.3	38.3
Voluntary Rare Disease Organization	17.2	25.4
Private Foundation	21.3	14.4
University/Academic Institution	13.9	4.9
Pharmaceutical Industry	6.0	6.8
State/Local Government	3.4	4.2
Would Apply Again/Go Back to Same Source	1.9	2.3
No Other Source	1.5	0.4
Other	1.5	1.9
Don't Know; N/A	1.1	1.5
	100.0%	100.0%

TABLE 8. WHAT TO DO IF PROPOSAL IS NOT FUNDED
(in percent)

Investigator's Response	Type of Investigator	
	Rare	Common
If your research proposal was not funded, which of these steps would you be most likely to take first?		
Resubmit the Proposal to the Original Sponsor With Revisions	77.6	89.7
Submit the Proposal to Other Potential Sponsors	14.9	7.0
Move to a Different Area of Research	3.6	0.7
Contemplate a Change in Career Direction	0.3	0.3
Something Else; Don't Know; N/A	3.7	2.3
	100.0%	100.0%

TABLE 9. RESEARCH FUNDING FOR RARE AND COMMON DISEASES
(in percent)

Investigator's Response	Type of Investigator: Rare	Common
Do you think that rare disease research receives more, less, or about the same amount of funding as research focusing on ~~rare~~ diseases?		
More	3.6	8.6
Less	66.7	66.4
About the Same	10.9	10.6
Don't Know	18.8	14.3
	100.0%	100.0%

TABLE 10. SWITCHING RESEARCH FIELDS FOR FUNDING
(in percent)

Investigator's Response	Type of Investigator: Rare	Common
Have you ever switched from rare disease research to common disease research to obtain funding?		
Yes	19.8	5.0
No	76.9	92.4
Started Doing Both	1.7	1.0
Don't Know	1.7	1.7
	100.0%	100.0%

TABLE 11. FUNDING SOURCES FOR VARIOUS TYPES OF RESEARCH
(in percent)

Investigator's Response	Type of Investigator		
	Total Sample*	Rare*	Common*
Which type of research is easiest to get funding for?			
Basic Research on Rare Diseases	5	5	6
Basic Research on Common Diseases	37	42	32
Clinical Research on Rare Diseases	6	5	8
Clinical Research of Common Diseases	39	36	41
Don't Know	13	12	13
	100%	100%	100%
Which type of research is most difficult to get funding for?			
Basic Research on Rare Diseases	37	38	36
Basic Research on Common Diseases	6	4	9
Clinical Research on Rare Diseases	36	41	32
Clinical Research on Common Diseases	6	5	8
Don't Know	14	12	15
	99%+	100%	100%

The total sample for this study was $n = 604$, with $n_1 = 303$ for rare disease investigators, and $n_2 = 301$ for common disease investigators.

\+ Does not add to 100% due to rounding.

basic research than for clinical research. By the type of research that investigators conduct, those who conduct basic research tend to think that it's more difficult to fund basic research on rare disease than clinical research, whereas those who conduct clinical research think it's more difficult to fund clinical research on rare disease than basic research.

Those who cited clinical research on rare diseases as being easiest to obtain funding for, were more likely to cite public awareness or public interest in that disease as a reason. Among the sizeable majority that cited common research as easier to obtain funding for than rare disease research, equal proportions saw availability of funding as a major determinate. Whereas, those who saw clinical research as easier to obtain funding for than basic research were more likely to think that public interest or public awareness played a factor in making it easier to obtain grant money.

Grantsmanship and Investigator Knowledge of the Funding Process

About one third of all investigators agreed that preparing a grant proposal for a rare disease project is more difficult than for a common disease project (Table 12).

Just 14 percent of the investigators claim that they are better than other investigators at knowing sources of health-related research funding. A roughly equal number (12 percent) say that they are worse than fellow investigators at this process. Approximately two-thirds say that they think they have about the same ranking as their fellow investigators.

Roughly half of investigators rate themselves about the same as fellow investigators in the area of grantsmanship (52 percent). Seventeen percent claim that they are better than fellow investigators in this area. The difference between rare disease investigators and common disease investigators on this issue is a greater willingness of rare disease investigators to compare themselves to their fellow investigators in this area. A fairly high percentage of common disease investigators (33 percent) will not compare themselves to their fellow investigators (Table 13).

TABLE 12. DIFFICULTY IN PREPARING GRANT APPLICATIONS
(in percent)

Investigator's Response	Type of Investigator	
	Rare	Common
Do you think it is more difficult or less difficult to prepare a grant application for research on rare diseases that for research on common diseases?*		
More Difficult	36.6	29.9
Less Difficult	10.6	20.3
About the Same	47.5	38.5
Don't Know; N/A	5.6	11.3
	100.0%	100.0%

TABLE 13. KNOWLEDGE OF FUNDING SOURCES AND GRANTSMANSHIP
(in percent)

Investigator's Response	Total Sample	Type of Investigator: Rare	Common
Compared to other investigators (in your area of research), do you think your personal level of knowledge of sources of health-related research funding is better, about the same, or worse?			
Better	14	14	14
About the Same	64	69	59
Worse	12	13	12
Don't Know	10	4	16
	100%	100%	101%+
Have you ever prepared a grant application?			
Yes	94	88	100
No	5	11	0
Don't Know	0	1	0
	101%+	100%	100%
How would you rate yourself compared to other investigators (in your area) on grantsmanship?			
Better	17	18	15
About the Same	52	58	47
Worse	6	6	5
Don't Know	19	6	33
No Answer	6	12	0
	100%	100%	100%

+Does not add to 100% due to rounding.

B. OTHER CONSIDERATIONS

Potential Problems for Investigators

Investigators were asked to evaluate problems that they might encounter in their research. Table 14 presents the results of this questioning. The kinds of problems are ranked according to the frequency of the ratings by the investigators.

Clearly, obtaining funding for research is the most serious problem that investigators in bio-medical research face. This problem is seen similarly by rare and common disease investigators. Not only do funding concerns outrank all others in each subgroup, but they are also of the same magnitude; 76 percent of all investigators cite obtaining funding as a problem, (74 percent of rare disease investigators and 78 percent of common disease investigators).

There are several areas where rare and common disease investigators express divergent concerns. As one would expect, the types of problems that rare disease investigators are concerned about are part and parcel of the very fact that the diseases they study are rare. Over 60 percent of all investigators agreed that rare disease research receives less general research support in terms of facilities, graduate research personnel, and student fellowships and training grants. There is similar agreement concerning administrative and secretarial help, support for access to patients, and help in writing grants, but to a lesser degree (Table 15).

Most noticeably, 47 percent of rare disease investigators cite access to patients as a problem compared to only 29 percent of the common disease investigators. Similarly, although less strikingly, 49 percent of rare disease investigators report "knowing where to go" for funding as a problem as opposed to 41 percent of common disease investigators. Also, 31 percent of rare disease investigators cite paying for patient treatment as a problem while only 19 percent of the common disease investigators feel the same way. Finally, 21 percent of the common disease investigators see coping with legal liability as a concern versus 15 percent in the other group (Table 16).

Over half of the common disease investigators are concerned with staying aware of the relevant literature (51 percent); only 26 percent of the rare disease investigators see this as a problem. Another problem that common disease investigators find worrisome is having skills in preparing grant applications, 31 percent versus 24 percent of rare disease investigators.

TABLE 14. POTENTIAL PROBLEMS FOR COMMON AND RARE DISEASE INVESTIGATORS (in Percent)

Problem	Type of Investigator: Total Sample		Rare		Common	
	Problem	Not Prob/ N/A	Problem	Not Prob/ N/A	Problem	Not Prob/ N/A
Obtaining funding to conduct your research	76	24	74	26	78	22
Knowing where to go for research funding	45	55	49	51	41	59
Having colleagues to work with	42	58	45	55	41	59
Staying aware of relevant literature	39	61	26	74	51	49
Having access to patients	38	62	47	53	29	71
Not having relevant prior research experience	30	70	29	71	30	70
Knowing how to apply for research funding	30	70	31	69	29	71
Not having skills in preparing grant applications	28	72	24	76	31	69
Paying for patient treatment	25	75	31	69	19	81
Coping with legal liability	18	82	21	79	15	85

* Percentages reported for "Problem" are sum of "Big Problem and Small Problem"

TABLE 15. RESEARCH SUPPORT FOR RARE AND COMMON DISEASES
(in percent)

Investigator's Response	Type of Investigator: Rare	Common
Do you think rare disease research receives about the same amount of support for facilities as common diseases research?		
More	3.6	5.3
Less	61.1	65.4
About the Same	18.8	13.0
Don't Know	16.5	16.3
	100.0%	100.0%
Do you think rare disease research receives about the same amount of support for access to patients as common diseases research?		
More	6.3	5.6
Less	43.9	48.2
About the Same	22.1	16.3
Don't Know	27.7	29.9
	100.0%	100.0%
Do you think rare disease research receives about the same amount of support for help in writing grant applications as common diseases research?		
More	3.0	4.7
Less	26.1	31.9
About the Same	42.9	34.2
Don't Know	28.1	29.2
	100.0%	100.0%
Do you think rare disease research receives about the same amount of support for student fellowships and training grants as common diseases research?		
More	3.6	4.0
Less	57.1	62.8
About the Same	19.1	11.3
Don't Know	20.1	21.9
	100.0%	100.0%

TABLE 15 (Cont.) RESEARCH SUPPORT FOR RARE AND COMMON DISEASES
(in percent)

Investigator's Response	Type of Investigator: Rare	Common
Do you think rare disease research receives about the same amount of support for research or postdoctoral graduate personnel as common diseases research?		
More	3.6	6.6
Less	62.4	61.8
About the Same	18.2	14.6
Don't Know	15.8	16.9
	100.0%	100.0%
Do you think rare disease research receives about the same amount of support for administrative/ secretarial aid as common diseases research?		
More	2.0	5.3
Less	53.5	49.2
About the Same	22.8	19.3
Don't Know	21.8	26.2
	100.0%	100.0%

Professional Training

When asked about professional training, 95 percent of all investigators report that their formal training is relevant to their most recent research project. Similarly, 90 percent report that their training is adequate.

Table 17 presents the findings on relevancy and adequacy of formal training by the type of research the respondents conduct and then by the type of degree that they have attained (i.e., M.D./D.O. versus a Ph.D.). Most investigators feel that their training has been relevant to and adequate for their most recent research project.

Even though more investigators in every subgroup report their training as relevant and adequate than not, there are some interesting patterns to be noted. Clinical investigators feel less certain about their formal training than do basic investigators. Ninety-seven percent of basic investigators rate their training as relevant as opposed to 85 percent of the clinical investigators. Similarly, 93 percent of basic investigators state that their training has been adequate for their most recent research project, while only 77 percent of the clinical investigators feel the same way.

Regarding type of degree, investigators feel that their formal training has been relevant regardless of the kind of degree they have received (95 percent for medical degrees and 96 percent for Ph.D.'s). However, this consistency is not present with respect to adequacy; 84 percent with medical degrees report their training was adequate compared to 94 percent of the investigators with Ph.D.'s. Also, as one might expect, investigators with other degrees rate their training less positively, with 89 percent saying it has been relevant and 84 percent saying it has been adequate.

TABLE 16. PROBLEMS IN RESEARCH
(in percent)

Investigator's Response	Type of Investigator: Rare	Common
Has having colleagues to work with been a big problem, a small problem, or no problem at all?		
Big Problem	16.5	12.0
Small Problem	28.4	28.6
Not a Problem at All	54.1	59.1
Don't Know - N/A	1.0	.3
	100.0%	100.0%
Has coping with legal liability been a big problem, a small problem, or no problem at all?		
Big Problem	10.2	4.3
Small Problem	10.6	11.3
Not a Problem at All	64.0	76.7
Don't Know - N/A	15.2	7.6
	100.0%	100.0%
Has having access to patients been a big problem, a small problem, or no problem at all?		
Big Problem	24.4	6.0
Small Problem	22.8	22.6
Not a Problem at All	30.7	38.2
Don't Know - N/A	22.1	33.2
	100.0%	100.0%
Has paying for patient treatment been a big problem, a small problem, or no problem at all?		
Big Problem	20.1	10.3
Small Problem	11.2	9.0
Not a Problem at All	25.7	34.6
Don't Know - N/A	42.9	52.2
	100.0%	100.0%

TABLE 17. INVESTIGATORS'OPINIONS ON THEIR FORMAL TRAINING
(in Percent)

Investiagtor's Response	Total Sample	Type of Investigator: Basic	Clinical	Both	Degree: M.D./D.O.	Ph.D.	Other
Relevancy of Formal Training To Most Recent Research Project							
Relevant	95	97	85	93	95	96	89
Irrelevant	4	3	11	6	3	4	11
Don't Know	0	0	3	1	1	0	0
	99%+	100%	99%+	100%	99%+	100%	100%
Adequacy of Formal Training To Most Recent Research Project							
Adequate	90	93	77	86	84	94	84
Inadequate	8	5	19	10	12	5	12
Don't Know	2	2	3	4	4	1	3
	100%	100%	99%+	100%	100%	100%	99%

+ Does not add to 100% due to rounding.

TABLE 18. LOCATION OF RARE DISEASE RESEARCH
(in Percent)

Investigator's Response	Tota Sample	Type of Investigator: Rare	Common
To the best of your knowledge, where would you say most rare disease research is being conducted today?			
Universities/ Academic Institutions	75	83	68
Private Clinics	1	0	2
Private Foundations	4	3	5
Pharmaceutical Industry	0	0	1
Federal Laboratories (such as NIH)	12	8	16
State and Local Government Facilities	0	0	0
Other	1	1	1
Don't Know	6	6	7

* Total does not add up to 100% due to rounding.

C. RARE DISEASE RESEARCH

Where Rare Disease Research is Being Conducted

A large majority of investigators (75 percent) believes that most research on rare disease is conducted at universities or academic institutions. Rare disease investigators (83 percent) are somewhat more likely than common disease investigators (68 percent) to feel that the university setting is where most rare disease research takes place (Table 18).

After academic institutions, the next most likely location for rare disease research is in Federal laboratories (such as NIH); 12 percent overall, with 8 percent among rare disease investigators, and 16 percent among common disease investigators.

Following Federal laboratories, only 4 percent say private foundations conduct most rare disease research, and 1 percent say private clinics conduct most rare disease research.

Barriers to the Discovery of Treatments

When asked about major barrier to the discovery of rare disease treatments, investigators cite funding restrictions as the primary culprit. As shown in Table 19, 35 percent of the investigators cite lack of research funds as the primary barrier to the discovery of rare disease treatments. Thirteen percent cite investigator problems, 8 percent problems with research support.

Reasons for Discovery of Treatments

Investigators were asked a close-ended question regarding which of three reasons they felt were most important to the discovery of treatment of rare diseases. Of the three options given, slightly more investigators felt that specific research on rare diseases (43 percent) was more likely than knowledge gained from research on other diseases (40 percent) to be responsible for discoveries of treatments for rare diseases.

Opinions on the reasons behind discoveries differ by type of investigator. Rare disease investigators are most likely to believe that specific research rather than research on other diseases leads to discoveries about treatments of rare diseases (50 percent specific, 35 percent other).

In comparison, common disease investigators believe that discovery of treatments on rare diseases are more likely to occur as a result of research on other diseases rather than research on that specific disease under study (46 percent other, 36 percent specific).

TABLE 19. BARRIERS TO THE DISCOVERY OF RARE DISEASE TREATMENTS
(in Percent)

Investigator's Response	Total Sample	Type of Investigator: Rare	Common
Biggest Problem Preventing Discovery of Rare Disease Treatments.			
Investigator	13	13	13
Too Few Investigators	7	6	7
Lack of Interest	3	4	3
Lack of Awareness	2	2	2
Prefer Other Type of Research	1	1	1
Funding/Grant Review	37	40	36
Not Enough Research Money	35	38	33
Lack of Interest by Funders	2	2	2
Reviewers Don't Understand	0	1	0
Not Enough Places to Apply	0	0	1
Public	2	1	6
Doesn't Affect Large Population	1	0	3
Not Enough Interest	1	1	2
Not Enough Media Attention	0	0	1
Support	8	10	7
Hard to Get Patients	4	5	3
Hard to Get Other Support	2	3	2
Technology Not Available	1	1	1
Animal Models Not Available	1	1	1
Other	36	36	39
Not Enough Knowledge in Field	8	10	7
Not Profitable	3	3	3
Common Disease Research More Interesting	0	1	0
Other	21	18	24
Don't Know	4	4	5

For both groups -- rare and common disease investigators -- less than 10 percent feel that research on drugs leads to discovery of treatments for rare diseases.

Opinions on Statements Relating to Rare Disease Research

Investigators were asked a series of agree/disagree statements about the nature of rare disease research with the results shown in Table 20. Investigators believe that

- the Federal government is fair in its grant review of rare disease research,
- rare disease research is generally rigorous in nature,
- rare disease research is not more difficult to get published than common disease research, and
- the private sector does not place a significant emphasis on rare disease research.

However, opinions are more mixed about whether the Federal government places sufficient emphasis on rare disease research. Two-thirds of the investigators (67 percent) agree that rare disease research gets a fair review in the federal grant review process. Those who do basic research are slightly more likely than those who do clinical research to agree that rare disease research gets a fair review in the federal process (69 percent of those who do basic research agree, 56 percent of those who do clinical research agree). Years of experience in the field also seems to have some influence, as those with 11 or more years of experience are the most likely to agree that the process is fair;

In another question about the Federal government, opinion is mixed as to whether sufficient emphasis is placed on rare disease research by the Federal government: 47 percent of investigators agree, 38 percent disagree. Differences in opinion between rare disease investigators and common disease investigators occurs at two levels. Rare disease investigators are more likely to disagree than common disease investigators that the Federal government places sufficient emphasis on rare disease research -- common disease investigators are much less likely to offer an opinion (21 percent "don't know").

When asked about the private sector's emphasis placed on rare disease research, far more investigators feel it is not sufficient. Just 26 percent of all investigators say that the private sector places sufficient emphasis on rare disease research, 59 percent think that it does not. Once again, the level of agreement between all rare disease investigators and all common disease investigators is the same on the issue.

Investigators tend to disagree that it is "more difficult to get rare disease research published than research on common diseases;" 68 percent disagree, 21 percent agree. The difference between rare disease investigator and common disease investigators on this issue is slight. However, experience in the field seems to have some association with opinions, for example, 34 percent of those who have been in the field less than ten years agree that it is more difficult to get rare disease research results published than results of common disease research, but just 18 percent of those who have been in the field more than 11 years say that it is more difficult to get rare disease research published.

TABLE 20. OPINIONS ON VARIOUS STATEMENTS RELATING TO RARE DISEASE RESEARCH (in Percent)

Investigator's Response	Type of Investigator: Total Sample	Rare	Common
Rare disease research gets a fair review in the federal grant review process.			
Agree	67	72	60
Disagree	20	21	18
Don't Know	14	6	22
Strongly Agree	31	29	32
Strongly Disagree	6	8	3
The federal government places sufficient emphasis on rare disease research.			
Agree	47	49	46
Disagree	38	44	33
Don't Know	14	17	21
Strongly Agree	12	11	13
Strongly Disagree	11	15	7
Private sector places sufficient emphasis on rare disease research.			
Agree	26	26	26
Disagree	59	64	55
Don't Know	15	11	20
Strongly Agree	5	5	5
Strongly Disagree	28	32	25
It is more difficult to get rare disease research published than research on common diseases.			
Agree	21	24	20
Disagree	68	71	66
Don't Know	10	6	15
Strongly Agree	6	7	6
Strongly Disagree	37	38	37
Rare disease proposals are often lacking in scientific rigor.			
Agree	20	19	21
Disagree	52	63	42
Don't Know	27	17	38
Strongly Agree	3	2	4
Strongly Disagree	29	39	20

* Total does not add up to 100% due to rounding.

When asked about suitable forums for reporting their findings, the investigators in this sample overwhelmingly reported that such outlets do indeed exist; 96 percent of all investigators state that there is a suitable forum to report their findings. This is true for rare and common disease investigators alike (95 percent and 96 percent, respectively).

By more than two-to-one, investigators disagree that rare disease research proposals are often lacking in scientific rigor (52 percent versus 20 percent). Opinions differ by type of investigator: rare disease investigators disagree at the 63 percent level, while common disease investigators disagree at a only a 42 percent level. The difference is attributable not to agreement with this statement, but rather a lack of opinion (38 percent of the common disease investigators "don't know" compared to 17 percent of the rare disease investigators). Once again, level of experience for rare disease investigators has some influence on opinions -- those who have been in the field less than five years agree at a higher level (35 percent) that rare disease proposals often lack scientific rigor -- while only 10 percent of those who have been investigators for six to ten years agree and 20 percent of those who have been in the field 11 or more years agree.

APPENDIX A: Questionnaire

#4021Q
Chilton Research Services
Radnor, Pennsylvania

8/12/88
Study #7642
July, 1988

- SRP COLUMNED -

RARE AND COMMON DISEASE RESEARCHERS

Screener

Time Dialed _____AM _____PM

Time Began _____AM _____PM

Time Ended _____AM _____PM

Interview #_____ (1-5)

[Funded 316(1)]
[Non-Funded 316(2)]
[Rare 278(1)]
[Common 278(2)]

INTRODUCTION: Hello, my name is _____. I am calling on behalf of the National Commission on Orphan Diseases. May I speak with (NAME ON LIST). We are conducting a survey on biomedical research. We sent you a letter recently explaining this survey and why your participation in this interview is so important. Did you receive the letter?

106-

SKIP TO Q. 1	Yes	1
CONTINUE	No	2

All the information you will give will be kept confidential. The information collected will be published as statistical summaries in which no individual can be identified. Although there is no penalty for failing to answer any question, each unanswered question lessens the accuracy of the findings.

[USE THE FOLLOWING ONLY IF RESEARCHER INDICATES THAT IT MAY NOT BE A GOOD TIME.]

Is there another time we could set up the interview? (ASK FOR DATE AND TIME AT WHICH TO CALL BACK)

1. I'd like to begin by asking if you are currently a principal or co-investigator on a biomedical research grant? (IF YES) Is that a principal or co-investigator?

107-

SKIP TO Q. 4	Yes, principal	1
	Yes, co-investigator	2
CONTINUE	No	3

(IF ASKED: This includes government, academia, foundation, and pharmaceutical industry-sponsored research.)

2. Did you serve as a principal investigator or co-investigator on a biomedical research grant within the last five years? (IF YES) And were you principal or co-investigator?

108-

SKIP TO Q. 4	Yes, principal	1
	Yes, co-investigator	2
CONTINUE	No	3

3. Did you ever apply as a principal investigator or co-investigator for a biomedical research grant from a government, academic, charitable, or private organization?

109-

	Yes	1
THANK AND TERMINATE A	No	2
	Don't Know	8

4. Did any of the projects for which you applied as principal or co-investigator focus on a rare disease, that is, a disease with a prevalence of 200,000 or fewer cases in the United States or a disease with a prevalence of over 200,000 cases, but where development of a treatment could not be expected to be paid for out of sales in the United States?

110-

GO TO RARE DISEASE QUESTIONNAIRE	Yes	1
GO TO COMMON DISEASE QUESTIONNAIRE	No	2
CONTINUE	Don't Know	8

5. Have any of the projects on which you now work or have worked on in the past involved the study of a rare disease?

111-

GO TO RARE DISEASE QUESTIONNAIRE	Yes	1
GO TO COMMON DISEASE QUESTIONNAIRE	No	2
TERMINATE B	Don't Know	8

#4021Q
Chilton Research Services
Radnor, Pennsylvania

Study #7642
June, 1988

COMMON/RARE DISEASE RESEARCHER'S QUESTIONNAIRE

Time Dialed _____AM _____PM

Interview # _____ (1-5)

Time Began _____AM _____PM

Time Ended _____AM _____PM

SRP NOTE — CHECK Q. 4/5 TO SEE WHICH WORDING TO REPRESENT THROUGHOUT QUESTIONNAIRE:

- IF RESPONSE IS 1, REPRESENT SECOND PART OF THE BRACKET (RARE DISEASE)
- IF RESPONSE IS 2, REPRESENT FIRST PART OF THE BRACKET (COMMON DISEASE)

Thinking about the (most recent biomedical research project/most recent rare disease research project) on which you worked:

6. Would you describe this project as basic research or a clinical study?

112-

	Basic	1
	Clinical	2
DO NOT READ	Both	3

7. Did it involve human subjects?

113-

	Yes	1
	No	2
DO NOT READ	No: Human Tissue, Blood	3
	Indirectly: Patient-focused study	4

8. What was the major source of funding for this project? (DO NOT READ CHOICES. RECORD BELOW)

9. Were there other sources of funding? (REPORT UP TO TWO ADDITIONAL MENTIONS, RECORD UNDER "OTHER" COLUMNS BELOW IN Q. 9)

		Q. 8 114-15		Q. 9 116-25
		Major	Other	Other
	Federal government (NIH, ADAMHA, FDA) (IF UNCERTAIN, ASK: Is that the Federal government?)	01	01	01
	State/Local government	02	02	02
	Pharmaceutical industry	03	03	03
	University/Academic institution	04	04	04
	Foundation	05	05	05
	Other (SPECIFY:) _____	97	97	97
DO NOT READ	None	00	00	00
	Don't Know	98	98	98

10. Overall, do you think that (common/rare) disease research receives more, less, or about the same amount of funding as research focusing on (rare/common) diseases?

125-

	More	1
	Less	2
	About the same	3
DO NOT READ	Don't Know	8
	Refused	9

11. There are many areas for which researchers may receive support from funding institutions. I'd like to ask you now about conducting (common disease research as compared to research on rare diseases/rare disease research as compared to research on common diseases), and whether you think (common/rare) disease research receives more, less, or about the same amount of support as (rare/common) disease research. Here's the first one . . . Do you think (common/rare) disease research receives more, less, or about the same amount of support for [READ FIRST ITEM -- WITH RANDOM START] as (rare/common) disease research? (READ REMAINING ITEMS)

RANDOM START	AREA	More	Less	About The Same	Don't Know	Refused
	Facilities	127-1	2	3	8	9
	Access to patients	128-1	2	3	8	9
	Help in writing grant applications	129-1	2	3	8	9
	Student fellowships and training grants	130-1	2	3	8	9
	Research or postdoctoral graduate personnel	131-1	2	3	8	9
	Administrative/Secretarial aid	132-1	2	3	8	9

12. Now, think about your most recent (biomedical/rare disease) research project. Do you feel that the formal training you received to do research has been relevant or irrelevant?

133-

	SKIP TO Q.14	Relevant	1
	CONTINUE	Irrelevant	2
DO NOT READ	SKIP TO Q.14	Don't Know	8
		Refused	9

13. In what way do you feel that your training was irrelevant? (RECORD VERBATIM)

134(1)

406-10

14. Do you feel that the formal training you received to do research has been adequate or inadequate?

135-

	SKIP TO Q.16	Adequate	1
	CONTINUE	Inadequate	2
DO NOT READ	SKIP TO Q.16	Don't Know	8
		Refused	9

15. In what way do you feel that your training was inadequate? (RECORD VERBATIM)

136(1)

411-16

16. Now I am going to read you a list of problems that people sometimes encounter when conducting (biomedical/rare disease) research. For each one, please tell me if this has been a big problem, a small problem, or not a problem at all for you? (USE RANDOM START)

RANDOM START		Big Problem	Small Problem	Not A Problem At All	Do Not Read Not Applicable
	Staying aware of relevant literature	137-1	2	3	4
	Having colleagues to work with	138-1	2	3	4
	Coping with legal liability	139-1	2	3	4
	Having access to patients	140-1	2	3	4
	Paying for patient treatment	141-1	2	3	4
	Knowing where to go for research funding	142-1	2	3	4
	Knowing how to apply for research funding	143-1	2	3	4
	Not having relevant prior research experience	144-1	2	3	4
	Not having skills in preparing grant applications	145-1	2	3	4
	Obtaining funding to conduct your research	146-1	2	3	4

17. Have you ever heard or read about a training program to instruct researchers about how to write and submit a grant application?

147-

CONTINUE	Yes	1
SKIP TO Q. 20	No	2
	Don't Know	8

18. Have you ever participated in such a training program?

148-

CONTINUE	Yes	1
SKIP TO Q. 20	No	2
	Don't Know	8

19. How helpful was this training? Would you say: very helpful, somewhat helpful, not too helpful, or not at all helpful?

149-

	Very helpful	1
	Somewhat helpful	2
	Not too helpful	3
	Not at all helpful	4
DO NOT READ	Don't Know	8

20. Compared to researchers who work in the area of (rare/common) diseases, do you think your personal level of knowledge of sources of health-related research funding is better, about the same, or worse?

150-

	Better	1
	About the same	2
	Worse	3
DO NOT READ	Don't Know	8

21. Now, I'd like to ask you a few questions about applying for grants. Have you ever prepared a grant application for (biomedical/rare disease) research?

151-

CONTINUE	Yes	1
SKIP TO Q. 23	No	2
	Don't Know	8

22. In general, how would you rate yourself on "grantsmanship" compared to (rare /common) disease researchers -- better, about the same, or worse? (IF DEFINITION OF "GRANTSMANSHIP" IS REQUESTED: HOW TO WRITE A WINNING PROPOSAL)

152-

	Better	1
	About the same	2
	Worse	3
DO NOT READ	Don't Know	8

23. Do you feel it is more difficult or less difficult to prepare a grant application for research on a (common/rare) disease than on a (rare/common) disease?

153-

	CONTINUE	More difficult	1
		Less difficult	2
DO NOT READ	SKIP TO Q.25	About the same	3
		Don't Know	8

SRP NOTE -- CHECK Q. 23 TO SEE WHICH WORDING TO REPRESENT ON Q. 24:

- o IF RESPONSE IS 1, REPRESENT 'MORE DIFFICULT'
- o IF RESPONSE IS 2, REPRESENT 'LESS DIFFICULT'

24. And why do you think it is (more difficult/less difficult)? (RECORD VERBATIM)

154(1)

417-26

25. What information or services would enable you to write a better grant application? (RECORD VERBATIM)

155(1)

427-51

Now I'd like to ask a few questions about obtaining (biomedical/rare disease) research funding from private institutions, not the federal government . . .

26. Do you know which private institutions will fund your type of research?

156-

Yes	1
No	2
Don't Know	8

27. In general, would you say you are knowledgeable about how research is funded by private institutions?

157-

Yes	1
No	2
Don't Know	8

28. I'd like you to think about how much private institutions consider scientific merit when judging research proposals in general. On a scale of "1" to "5" where one means that scientific merit is Not Considered At All, and five means a proposal is Judged Solely On Scientific Merit, how would you rate how much scientific merit determines which projects are funded?

_____ (158)

29. Do you think private institutions consider scientific merit more in funding research on (rare/common) or (common/rare) diseases?

159-

	(Rare/Common)	(1/2)
	(Common/Rare)	(2/1)
DO NOT READ	Both the same	3
	Neither	4
	Don't Know	8

30. Other than scientific merit, what factors do you think these private institutions consider when reviewing grant proposals? (DO NOT READ CHOICES) (RECORD FIRST TWO MENTIONS)

		160-61 1st Mention	162-63 2nd Mention
	Investigator's qualifications	01	01
	Reputation of institution	02	02
	Potential for a cure	03	03
	Relationship of research topic to private institution's mission	04	04
	Other (RECORD VERBATIM:) _____ _____	97	97
SKIP TO Q. 32	Don't Know	98	98

31. Do you think private institutions consider these other factors more in funding research on (rare/common) or (common/rare) diseases?

		164-
	(Rare/Common)	(1/2)
	(Common/Rare)	(2/1)
DO NOT READ	Both the same	3
	Neither	4
	Don't Know	8

Now I'd like to ask a few questions about obtaining (biomedical/rare disease) research funding from the federal government . . .

32. Do you know which federal agencies fund your kind of research?

	165-
Yes	1
No	2
Don't Know	8

33. In general, would you say you are knowledgeable about how research is funded by the federal government?

166-

Yes	1
No	2
Don't Know	8

34. Now I'd like you to think about how much the federal government considers scientific merit in judging research proposals. With the same scale I mentioned earlier, one meaning scientific merit is Not Considered At All and five meaning a proposal is Judged Solely On Scientific Merit, how would you rate how much scientific merit determines which projects are funded by the federal government?

_____ (167)

35. Do you think the federal government considers scientific merit more in funding research on (rare/common) diseases or in funding research on (common/rare) diseases?

168-

	(Rare/Common)	(1/2)
	(Common/Rare)	(2/1)
DO NOT READ	Both the same	3
	Neither	4
	Don't Know	8

36. Other than scientific merit, overall what factors do you think the federal government considers when reviewing grant proposals? (DO NOT READ CHOICES) (RECORD FIRST TWO MENTIONS)

		169-70 1st Mention	171-72 2nd Mention
	Investigator's qualifications	01	01
	Reputation of institution	02	02
	Potential for a cure	03	03
	Relationship of research topic to federal government's mission	04	04
	Other (RECORD VERBATIM:) _____ _____	97	97
SKIP TO Q. 38	Don't Know	98	98

37. Do you think the federal government considers these other factors more in funding research on (rare/common) diseases or in funding research on (common/rare) diseases?

		173-
	(Rare/Common)	(1/2)
	(Common/Rare)	(2/1)
DO NOT READ	Both the same	3
	Neither	4
	Don't Know	8

38. Now I'd like to ask you some questions about obtaining funding. I'm going to read you a list of four types of research studies. Of these four, which would you say is easiest to get funding for? (READ LIST IN RANDOM ORDER)

(IF Q. 38 = DON'T KNOW, SKIP TO Q. 40)

39. Which would you say is the second easiest to get funding for?

40. And which would you say is the most difficult?

		174- Q.38	175- Q.39	176- Q.40
RANDOM START		Easiest	2nd Easiest	Most Difficult
	Basic research on rare diseases	1	1	1
	Basic research on common diseases	2	2	2
	Clinical research on rare diseases	3	3	3
	Clinical research on common diseases	4	4	4
DO NOT READ	Don't Know	8	8	8

SRP NOTE -- CHECK Q. 38 TO SEE WHICH WORDING TO REPRESENT ON Q. 41. REPRESENT RESPONSE FROM Q. 38.

(IF Q. 38 = DON'T KNOW, SKIP TO Q. 42)

41. Why is it easiest to get funding for (INSERT RESPONSE FROM Q. 38)? (DO NOT READ CHOICES. RECORD UP TO TWO MENTIONS)

		177-78 1st Mention	206-07 2nd Mention
FUNDING:	More funding/research money available	01	01
	More places to apply for funding	02	02
	Relates to funding institution's mission/goal/purpose	03	03
	Grant reviewers more likely to approve proposal	04	04
PUBLIC:	Affects more people	05	05
	More public interest/awareness	06	06
	More attention in media	07	07
SUPPORT:	More technology available	08	08
	Easier to get patients	09	09
	Easier to get other support (personnel, equipment, facilities)	10	10
Other (RECORD VERBATIM:) _____ _____		97	97
Don't Know		98	98

SRP NOTE — CHECK Q. 40 TO SEE WHICH WORDING TO REPRESENT ON Q. 42. REPRESENT RESPONSE FROM Q. 40.

(IF Q. 40 = DON'T KNOW, SKIP TO Q. 43)

42. Why is it most difficult to get funding for (INSERT RESPONSE FROM Q. 40)? (DO NOT READ CHOICES. RECORD UP TO TWO MENTIONS)

		208-09 1st Mention	210-11 2nd Mention
FUNDING:	Less funding/research money available	01	01
	Fewer places to apply for funding	02	02
	Does not relate to funding institution's mission/ goal/purpose	03	03
	Grant reviewers less likely to approve proposal	04	04
PUBLIC:	Affects fewer people	05	05
	Less public interest/awareness	06	06
	Less attention in media	07	07
SUPPORT:	Less technology available	08	08
	Harder to get patients	09	09
	Harder to get other support (personnel, equipment, facilities)	10	10
Other (RECORD VERBATIM:) _____ _____		97	97
Don't Know		98	98

The next few questions deal with basic and clinical research. First, let's talk about basic research.

43. If you were trying to get funding for (a basic research study/basic research on a rare disease study), to which of the following funding sources would you apply first? (READ LIST WITH RANDOM START AND RECORD "1ST CHOICE" IN Q. 43 BELOW)

44. And if they turned you down, to whom would you go next? (RECORD "2ND CHOICE" IN Q. 44 BELOW)

RANDOM START		212-13 Q.43 1st Choice	214-15 Q.44 2nd Choice
	The Federal government	01	01
	The Pharmaceutical industry	02	02
	A University/Academic institution	03	03
	A Private foundation	04	04
	The State/Local government	05	05
	A Voluntary Rare Disease Organization	06	06
DO NOT READ	Other (SPECIFY:) _____ _____	97	97
SKIP TO Q.46	Don't Know	98	98

SRP NOTE -- CHECK Q. 43 TO SEE WHICH WORDING TO REPRESENT ON Q. 45. REPRESENT RESPONSE FROM Q. 43.

45. And why would you go to (INSERT 1ST CHOICE RESPONSE FROM Q. 43) first? (DO NOT READ CHOICES) (RECORD UP TO TWO MENTIONS)

		216-17 1st Mention	218-19 2nd Mention
FUNDING/ SUPPORT:	More funding/research money available	01	01
	Larger grants given	02	02
	Grants given for longer period of time	03	03
	Has designated funds for basic research	04	04
GRANT REVIEW PROCESS:	Has good grant review process	05	05
	More knowledgeable/Better trained reviewers	06	06
	Quicker review time	07	07
	Easier to apply	08	08
	Easier to reapply	09	09
	More likely to fund basic research	10	10
	History of funding basic research	11	11
	Relates to funding institution's mission/goal/purpose	12	12
Other (RECORD VERBATIM:) _____ _____		97	97
Don't Know		98	98

46. If you were trying to get funding for (a clinical research study/clinical research on a rare disease study), to which of the following funding sources would you apply first? (READ LIST WITH RANDOM START AND RECORD UNDER "1ST CHOICE" IN Q. 46 BELOW)

47. And, if they turned you down, to whom would you go next? (RECORD "2ND CHOICE" IN Q.47 BELOW)

	RANDOM START		220-21 Q.46 1st Choice	222-23 Q.47 2nd Choice
		The Federal government	01	01
		The Pharmaceutical industry	02	02
		A University/Academic institution	03	03
		A Private foundation	04	04
		The State/Local government	05	05
		A Voluntary Rare Disease Organization	06	06
	DO NOT READ	Other (SPECIFY:) _____ _____	97	97
SKIP TO Q.49		Don't Know	98	98

SRP NOTE -- CHECK Q. 46 TO SEE WHICH WORDING TO REPRESENT ON Q. 48. REPRESENT RESPONSE FROM Q. 46.

48. And why would you go to (INSERT FIRST CHOICE RESPONSE FROM Q. 46) first? (DO NOT READ CHOICES) (RECORD UP TO TWO MENTIONS)

		224-25 1st Mention	226-27 2nd Mention
FUNDING/ SUPPORT:	More funding/research money available	01	01
	Larger grants given	02	02
	Grants given for longer period of time	03	03
	Has designated funds for clinical research	04	04
GRANT REVIEW PROCESS:	Has good grant review process	05	05
	More knowledgeable/Better trained reviewers	06	06
	Quicker review time	07	07
	Easier to apply	08	08
	Easier to reapply	09	09
	More likely to fund clinical research	10	10
	History of funding clinical research	11	11
	Relates to funding institution's mission/goal/purpose	12	12
Other (RECORD VERBATIM:) _____ _____		97	97
Don't Know		98	98

49. In general, if your research proposal was not funded, which one of these steps would you be most likely to take first? (READ LIST WITH RANDOM START. ONE ANSWER ONLY)

RANDOM START		228-
	Resubmit the proposal to the original sponsor with revisions	1
	Submit the proposal to other potential sponsors	2
	Move to a different area of research	3
	Contemplate a change in career direction	4
DO NOT READ	Something else (SPECIFY:) _____	7
	Don't Know	8

50. Have you ever switched from common disease research to rare disease research to obtain funding?

	229-
Yes	1
No	2
Started doing both	3
Don't Know	8

51. Have you ever switched from rare disease research to common disease research to obtain funding?

		230-
CONTINUE	Yes	1
SKIP TO Q.53	No	2
	Started doing both	3
	Don't Know	8

52. And in addition to funding problems, were there other reasons you switched? (RECORD VERBATIM)

231(1) _____

452-59 _____

_____

Now, I'd like to ask you a general question about research.

53. Is there a suitable forum to report your research findings at national meetings?

232-

Yes	1
No	2
Don't Know	8

SRP NOTE -- CHECK Q. 4/5. IF "2", REPRESENT INTRO.

Next, I will ask you some questions about research on <u>rare diseases</u> in the United States.

54. I'm going to read a series of statements. For each one, please tell me if you strongly agree, somewhat agree, somewhat disagree, or strongly disagree. (READ LIST WITH RANDOM START)

RANDOM START		Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	(DO NOT READ) No Opinion
	Private and public organizations should coordinate more in setting priorities for health-related research	1 233-	2	3	4	5
	Overall, the federal government places sufficient emphasis on rare disease research	1 234-	2	3	4	5
	Rare disease research gets a fair review in the federal grant review process	1 235-	2	3	4	5
	Rare disease proposals are often lacking in scientific rigor	1 236-	2	3	4	5
	Overall, the private sector places sufficient emphasis on rare disease research	1 237-	2	3	4	5
	In general, it is more difficult to get rare disease research published than research on common diseases	1 238-	2	3	4	5

55. To the best of your knowledge, where would you say most rare disease research is being conducted today? (READ CHOICES WITH RANDOM START) (RECORD ONE ANSWER ONLY)

RANDOM START		239-40
	Universities or academic institutions	01
	Private clinics	02
	Private foundations	03
	Pharmaceutical industry	04
	Federal laboratories such as NIH	05
	State and local government facilities	06
DO NOT READ	Other (SPECIFY:) _____	97
	Don't Know	98

56. In your opinion, what is the single biggest problem preventing the discovery of more treatments for rare diseases? (DO NOT READ CHOICES) (RECORD ONE MENTION ONLY) (PROBE WHERE NECESSARY)

241-42

INVESTIGATOR:	Investigators prefer other type of research	01
	Lack of awareness of investigators	02
	Lack of interest of investigators	03
	Too few investigators	04
FUNDING/ GRANT REVIEW:	Not enough research money available	05
	Grant reviewers don't understand rare disease grant proposals	06
	Need better reviewers	07
	Need better proposals	08
	Not enough places to apply for funding	09
	Lack of awareness/interest by funders	10
	Doesn't relate to funding institution's mission/goal/purpose	11
PUBLIC:	Doesn't affect large enough population	12
	Not enough public interest/awareness	13
	No sense of immediacy to public	14
	Not enough attention by media	15
SUPPORT:	Technology not available	16
	Hard to get patients	17
	Hard to get other support (personnel, equipment, facilities)	18
	Animal models not available	19
OTHER:	Common disease research is more important	20
	Common disease research is more interesting	21
	Not profitable for pharmaceutical companies	22
	Not enough knowledge/understanding in the field	23
	(RECORD VERBATIM:) _____ _____	97
SKIP TO Q.58	Don't Know	98

57. What would you suggest would solve that problem? (DO NOT READ CHOICES. RECORD UP TO TWO MENTIONS) (PROBE WHERE NECESSARY)

		243-44 1st Mention	245-46 2nd Mention
INVESTIGATOR:	Financial incentives for investigators	01	01
	Training/educational incentives for investigators	02	02
	Better information exchange among investigators	03	03
	Better training for investigators in writing proposals	04	04
FUNDING/ GRANT REVIEW:	More research funding available	05	05
	More funding available for specific rare diseases	06	06
	More federal funding available	07	07
	More private funding available	08	08
	Revise grant review process	09	09
	More training for reviewers	10	10
	Grants given for longer periods of time	11	11
PUBLIC:	More public awareness	12	12
	More attention in media	13	13
SUPPORT:	Better technology available	14	14
	Easier access to patients	15	15
	More institutional support (personnel, equipment, facilities, etc.)	16	16
	Better animal models	17	17
OTHER:	Limit legal liability for researchers	18	18
	Limit legal liability for pharmaceutical manufacturers	19	19
	Provide financial incentives for pharmaceutical manufacturers	20	20
OTHER:	(RECORD VERBATIM:) _____ _____	97	97
Don't Know		98	98

58. Now I will read you three reasons why treatments for rare diseases may be most often discovered. Please tell me which reason you feel is the most important. (READ IN RANDOM ORDER)

RANDOM START		247-
	Specific research being conducted on that rare disease	1
	Research being conducted on other diseases or health matters that can be applied to treatments for rare diseases	2
	Research on drugs or devices in the same therapeutic class	3
DO NOT READ	Other (RECORD VERBATIM:) _____	7
	Don't Know	8

Finally, I would like to ask you just a few questions for classification purposes only. . .

59. Could you please tell me in what year you were born? 19__ (248-49)
(317-318 Age in Years)

60. And what is the highest degree or degrees you have received? (DO NOT READ CHOICES. CIRCLE ALL THAT APPLY)

	250-53
M.D.	1
D.O.	2
Ph.D.	3
Other (SPECIFY:) _____	7

61. And in what year(s) did you receive your (REPRESENT ANSWERS FROM Q. 60) degree(s)?

Degree(s)	Year(s)
M.D.	19__ (254-55)
D.O.	19__ (256-57)
Ph.D.	19__ (258-59)
Other (SPECIFY:)	19__ (260-61)

(319-320 # Yrs. M.D.)
(321-322 # Yrs. D.O.)
(323-324 # Yrs. Ph.D.)
(325-326 # Yrs. Other)
(327-378 Blank)

62. What is your current field of research? (RECORD VERBATIM)

_____ 262(1)
460-62

63. How many years have you been in your current research field?

_____ Years
(263-64)

64. In general, what percentage of your total professional time would you say is spent in research, including <u>related</u> administrative tasks, compared to your other professional duties?

_____ %
(265-67)

65. Where is your <u>primary place</u> of research? (DO NOT READ) (IF MORE THAN ONE IS MENTIONED, PROBE FOR <u>PRIMARY</u>. IF NEITHER IS PRIMARY, WRITE UP A PROBLEM SHEET)

268-

University/academic institution	1
Private, non-academic institution	2
Medical center (other than university academic institution)	3
Commercial research center	4
Someplace else (SPECIFY:) _____	7
Don't Know	8

66. In what state do you work? (USE STATE LIST)

_____
(269-70)

67. SEX. (DON'T ASK, JUST RECORD)

271-

Male	1
Female	2
Can't tell	3

This concludes our survey. Your participation is greatly appreciated. Thank you very much.

(272-277 Blank)
(306-315 Telephone #)

STUDY OF PATIENTS WITH RARE DISEASES

TABLE OF CONTENTS

LIST OF TABLES

I. INTRODUCTION

This report presents the results of a pilot study of 801 rare disease patients or their caregivers who have contacted the National Organization for Rare Disorders (NORD) since 1985. The purpose of this survey was to question patients with rare diseases about their experiences with the diagnosis and treatment of their condition and availability of information about health related research. The National Commission on Orphan Diseases contracted with Hamilton, Frederick, and Schneiders Inc. to assist in developing the survey questionnaire and completing the analysis of the data. Chilton Research Service, Inc. conducted telephone interviews during the month of June 1988. The questionnaire can be found in Appendix A.

The areas of inquiry for the survey include:

(a) ramifications of coping with a rare disease, including effects on and quality of life,

(b) the kind of information on rare disease research and the sources of such information that have been most helpful to patients and their families,

(c) types of information needed by patients and their families to better understand their disease,

(d) the importance of voluntary support groups in assisting patients in coping with their disease,

(e) the willingness and interest of patients to take an investigational drug when approved effective drugs are not available,

(f) the willingness and interest of patients to participate in research studies,

(g) the accessibility of treatments to patients, and

(h) barriers that exist to finding effective diagnostic methods or treatments for rare diseases.

It should be noted at the outset that 35% of respondents were caregivers who were proxies for patients incapable of a telephone interview; hence, throughout this report respondent refers to patients who participated in the survey and the patients who were represented by a caregiver. All data tables

reflect patient information as given by patients themselves or a patient's caregiver.

Percentages in tables often may not add up to 100% due to rounding into whole percentage points. Similarly, subtotals may not agree with their components. For example, 8% "excellent" and 42% "good" may add to different positive scores such as 49%, 50%, or 51%.

II. METHODOLOGY/SAMPLE CHARACTERISTICS

The pilot study described below was conducted by the National Commission on Orphan Diseases.

The combination sample of n=1609 was composed of:

1. N1 = 1289, a sample of a universe of 2,461 select telephone numbers out of a total NORD data base of 16,370 records. The sample contained household telephone numbers of patients, parents, relatives, friends, and other interested persons who had inquired since late 1985 about a rare disease at the National Organization for Rare Disorders (NORD) and had provided a telephone number. Telephone numbers were ordered by State; and

2. N2 = 320, a proportionate supplement consisting of randomly generated telephone numbers for each telephone prefix in N1. This "decoy" method was used to forestall expectations by the interviewers that the households they contacted contained a person with a rare disease and to give respondents the opportunity to keep information about their disease to themselves and provide some measure of privacy.

N1 was selected using a random start and fixed intervals to avoid bias in terms of geographic location. Interviewers asked whether someone in the household has a rare disease. If the answer was no, the interview was discontinued. If the answer was yes, the interview commenced. Interviewing ceased when the predetermined quota of 800 was reached (n = 801).

Of the combined sample, 67% of the respondents were eligible, that is, there was a person in the household with a rare disease. The response rate for this survey was 89%.

In the strictest sense, findings in this preliminary analysis can only be used to generalize to the 2,461 persons from

which the sample was selected. However, an additional 9,300 persons inquired under almost identical circumstances but telephone numbers were not available from the NORD data base. We expect that these persons may not differ in a manner that would prohibit generalization to all of the 11,700 persons who inquired about a rare disease at NORD since last 1985.

However, it may well be that persons inquiring about a rare disease at NORD are different in their socioeconomic status and level of sophistication in obtaining information about a rare disease from the norm for persons who have a rare disease. The geographic distribution of persons inquiring about rare diseases at NORD shows a concentration of inquiries from the east and west Coasts with fewer inquiries from the south and midwest.

Table 1 displays a demographic profile of the rare disease patient population surveyed. In keeping with the previously stated caveat on this pilot study's generalization to the rare disease population in the U.S., the following NORD sample anomalies should be taken into consideration:

- A greater survey participation rate by women female rare disease patients (66%) than males (34%). One plausible explanation is that women are more likely than men to respond to the NORD, and that this proportion by gender accurately reflects the NORD patient universe.

- A greater percentage of male (44%) than female (22%) rare disease patients are under the age of 18, thereby over-representing men among younger patients, and under-representing women among this same group, under the hypothesis that distribution by gender should approximate that of the general population in the U.S.

III. KEY FINDINGS

- Slightly more than half (51%) of respondents report receiving a diagnosis less than one year after first visiting a doctor; almost one-third (31%) took between one and five years to obtain a diagnosis, and one-in-seven (15%) went undiagnosed for six years or more.

- In terms of illness hardships:

  - forty-two percent (42%) say the illness prevents them from either working or attending school, and an additional 31% who are able to work say the amount or kind of work they can do is limited by the illness;

TABLE 1

DEMOGRAPHIC PROFILE OF PATIENTS

	Total %
Patient Gender	
Men	34
Women	66
Patient Age (Years)	
<6	17
7 - 17	12
18 - 34	13
35 - 44	14
45 - 54	14
55 - 64	16
65+	14
Income	
<$20,000	31
$20,000 - $40,000	39
>$40,000	24
Don't Know	6
Area	
Urban	14
Suburban	23
Medium-sized city	18
Small town or city	28
Rural	17
Region of U.S.	
Northeast	22
Midwest	28
South	30
West	20

- less than one-in-ten (8%) say they have had to change their residence in order to get access to treatment or special education.

o Forty-three percent (43%) of respondents say the illness has caused an extreme financial burden on themselves or their family at some point in their lives. Level of family income is a significant factor. By subgroup, lower income families are more likely (63%) than mid-income (39%) or upper income (29%) families to say the illness posed an extreme financial burden. The major sources of financial burden mentioned were partial (rather than full) insurance coverage of medical expenses related to the illness (25%), and an inability to work/produce income due to the illness (15%).

o The top two sources of information on the illness respondents turned to first were physician specialists (42%) and family physicians (19%).

o A majority of respondents felt it difficult to locate information related to their illness for each of the following six items:

- research projects for participation (76% rate it "difficult" to obtain this information);
- new types of treatment (74%);
- research advances (73%) related to the illness;
- voluntary support groups for people with the illness (68%);
- written, easy-to-understand information about the illness (61%); and
- the location of treatment centers (57%).

o About one-third (32%) of patients or their caregivers surveyed currently participate in an illness-related support group, and the majority of these group participants (90%) rate their group positive on keeping participants up-to-date on new information and developments related to the illness. Most respondents first learned about their support group through either the media (32%) or NORD -- the National Organization for Rare Disorders (21%).

o One-fifth of respondents (21%) have contacted the Federal government in an attempt to get information about their illness, with most having contacted NIH (33%) or a member of Congress (36%).

- Twelve percent (12%) of respondents report having used an experimental drug or device for their illness in the past.

- The majority of respondents (68%) indicate a willingness to consider using an experimental drug or device in the future, including 86% of those with a previous experience. The single greatest barrier given for hesitancy about using experimental drugs or devices is their inherent risk (61%).

IV. ILLNESS DIAGNOSIS

Slightly more than half (51%) of rare disease patients received a successful diagnosis within a year of initially consulting a physician (Table 2). Nearly one-third (31%) were unable to obtain a diagnosis from one to five years after first seeking help, and one-in-seven (15%) went undiagnosed for six years or more after first seeking professional help.

There are no significant differences in length of diagnosis time by either respondent family income level or area of residence -- rather, these diagnosis problems are common to all respondents regardless of income or residence location.

In terms of difficulties encountered in obtaining a correct diagnosis, the majority of respondents (52%) who went undiagnosed for three months or longer (60% of the sample) feel that physician knowledge was not sufficient enough to enable their doctor to make a correct diagnosis. Also mentioned as barriers were confusing symptoms (27%), improper or incorrect initial diagnosis (18%), and the need to see a specialist (13%). Thus, the ability of medical professionals to interpret patient symptoms correctly is the major difficulty, rather than the access to such diagnoses.

Most respondents (81%) are currently receiving some form of treatment for their illness (Table 3). Patients were not asked what "treatment" included and thus the Commission is unable to draw any firm conclusions as to the status of patients who are receiving treatment. Patients under the age of 18 are slightly more likely (89%) than adult patients to be receiving some form of treatment for their illness. However, no efforts were made to determine what treatment was being made available.

Of the nearly one-in-five patients (19%) who are not currently receiving any type of treatment, about half say no treatment exists for their particular rare disease (equal to 10%

TABLE 2

LENGTH OF TIME FOR DIAGNOSIS BY AREA

	Total %	Area: Large City %	Suburban %	Medium Size %	Small Town %	Rural %
*How long after first visiting a doctor did it take to obtain the diagnosis?						
Less than one year	51	54	52	41	51	55
1 to 5 years	31	26	31	37	30	31
More than 5 years	15	18	14	19	14	13
Don't Know	3	3	3	2	4	1

WHY DID IT TAKE THIS LENGTH OF TIME TO OBTAIN DIAGNOSIS?*
(IF DIAGNOSIS TOOK LONGER THAN THREE MONTHS)

	Total %
(Multiple Mentions Allowed)	
Doctor Didn't know	52
Symptoms Confusing	27
Improper Diagnosis	18
Need to See Specialist	13
Because It's So Rare	4
Symptoms Occur Slowly, Making it Difficult to Diagnose	2
Patient Failed to Tell Doctor Necessary Information/Symptoms	2
Other	4
Don't Know	3

* Base N=457

TABLE 3

CURRENT TREATMENT

	Total %	Patient Age: < 6 %	7-17 %	18-34 %	35-44 %	45-54 %	55-64 %	65+ %
Receiving Treatment From Physician for Illness?								
Yes	81	89	89	76	80	81	76	77
No	19	11	11	24	20	19	24	23

(IF NO)

	Total %
Reasons Not Receiving Treatment	
None Exists	10
Treatment Is No Longer Necessary	3
Treatment Is Not Necessary	2
None Available	2
Severe Side Effects	1
Other	1
Not Asked	81

of the total sample). A quarter of the patients no longer need treatment for their illness (5%), and the remainder either have no access to existing treatment (unavailable -- 2%), or the side effects are too severe (1%) -- only 1% mention cost as the prohibitive factor preventing them from receiving treatment.

V. HARDSHIPS POSED BY ILLNESS

Several kinds of hardships rare disease patients might bear as a result of their illness were tested -- effect on ability to work/attend school, financial burdens, and travel or relocation.

Few (8%) patients/their families have ever changed their residence or moved in order to get access to treatment or special education. Possible implications:

- Most patients are able to obtain treatment or any special education in their area.
- Patients/their families are not able to obtain treatment/special education locally, but are a) unable to move, but willing (financial situation prevents), or b) are able to move, but unwilling (no need for treatment/special education, or cost is prohibitive).

Interestingly, current area of residence does not show any significant differences with past relocation -- for example, no rural to urban movement is indicated. By length of diagnosis, those with the most difficult cases (five years or more to diagnoses) are twice as likely (14%) as patients diagnosed within a year (7%) to have relocated in order to access treatment or special education related to the illness.

Fully 42% of respondents are unable to either work (23%), attend school (5%), or both (14%) because of their illness (Table 5), and an additional 31% of respondents (55% of those who are not prevented from working) say the illness does limit the amount or kind of work they are able to do. Thus, 73% of respondents say their illness has some impact on their ability to work or pursue an education -- only 27% claim no impairment in this regard.

Among the 42% who cannot work or attend school at all, by income, lower income patient households (less than $30,000) are more likely (52%) than higher income households (36%) to say their illness poses a problem in this regard. By age, patients

TABLE 4

HARDSHIPS CAUSED BY ILLNESS -- TRAVEL FOR DIAGNOSIS AND RESIDENCE CHANGE BY AREA

	Total %	Area: Large City %	Suburban %	Medium Size %	Small Town %	Rural %
Has the illness involved traveling more than 50 miles one way to receive diagnosis or treatment?						
Yes	56	38	40	59	65	75
No	44	62	60	41	34	25
Has the illness ever caused change of residence in order to get access to treatment or special education?						
Yes	8	12	8	6	9	6
No	92	88	92	94	91	94

TABLE 5

HARDSHIPS CAUSED BY ILLNESS -- EMPLOYMENT/EDUCATION

	TOTAL %	FAMILY INCOME <20K %	FAMILY INCOME 20K-40K %	FAMILY INCOME >40K %
Does the illness prevent you/the patient from working at a job or business or from attending school?				
Yes -- Job	23	28	22	17
Yes -- School	5	6	5	6
Yes -- Both	14	25	10	8
No	58	41	64	69

(IF NO)

	TOTAL %
Is the amount or kind of work patient can do limited by the illness?	
Yes	31
No	24
Don't Know	2
Not Asked	42

under age 18 are most likely to be unable to attend school (18%) -- only 1% of adults give this response. Also, the proportion whose illness prevents them from employment increases as one moves up the age ladder to age 65, the popular retirement age, then drops:

	% Can't Work
18-34	45
35-44	47
45-54	53
55-64	70
65+	47

Of the 58% who are not prevented from working or attending school by their illness, half (55%) say the illness does affect or limit the amount or kind of work these rare disease patients can do. Thus, most rare disease patients (73%) are either unable to produce income from a job/attend school (42%) or are limited in their work (and possibly financially as well) (31%).

Testing financial burdens caused by rare diseases, 43% of patients or their families have at some point borne "an extreme financial burden" (Table 6). Results differ by level of family income; patient households with lower than a $20,000 a year income were most likely to have felt extreme financial pressure (63%). The majority of both middle income patient households (61%) and upper income households (over $40,000) have not faced extreme financial pressure (71%).

By age, patients over age 55 are least likely to have suffered from financial pressures as a result of their illness (30%), compared to younger patient age groups (0-17 years -- 48%, 18-54 years -- 49%).

The major financial pressures felt are due to only partial insurance coverage for illness treatment expenses (25%), loss of (potential) income due to patient's inability to work (15%), and an inability to either get insurance coverage for the illness (9%) or illness exclusion under current policy parameters (7%). Thus, for most patients who suffered a financial hardship, their insurance coverage was insufficient to meet the patient's medical needs.

TABLE 6

FINANCIAL HARDSHIPS CAUSED BY ILLNESS

	Total %	FAMILY INCOME <20K %	FAMILY INCOME 20K-40K %	FAMILY INCOME >40K %
Has the illness ever created an extreme financial burden for you/the patient's family?				
Yes	43	63	39	29
No	56	36	61	71

(IF YES)

Sources of extreme financial burden caused by illness (close-ended - multiple mentions)

	Total %	PATIENT'S AGE < 6 %	7-17 %	18-34 %	35-44 %	45-54 %	55-64 %	65+ %
Insurance only covers part of expense	25	35	25	25	30	23	19	15
Patient cannot work	15	--	3	27	25	25	18	10
Patient cannot get insurance	9	8	11	14	7	15	5	3
Insurance does not cover medical expenses	7	7	8	5	9	12	5	4
Travel/transportation expenses	2	3	2	2	--	2	--	2
Others	7	10	14	10	5	5	7	--
Not Asked	56	48	57	45	48	57	67	72

VI. AVAILABILITY OF INFORMATION ON ILLNESS

After being diagnosed, most patients (or caregivers) first sought out a physician specialist to obtain information about the rare disease (42%); 19% consulted their regular family physician (Table 7). Thus, the majority (61%) of respondents turned to a medical professional first. A second tier (25%) of patients (or caregivers) turned to libraries (11%), universities/colleges (8%), or medical books and journals (6%) for information about the illness.

Interestingly, by age, patients over 55 years of age are slightly more likely to name their family physician, while younger patients are, in turn, more likely to have sought information from a physician specialist (Table 7). Additionally, there are no significant differences by area of residence.

By income, the most affluent households ($40,000 a year or more) are slightly more likely to have consulted a physician specialist (49%) than middle income patient households (41%) or patients from lower income households of less than $20,000 a year (39%).

Table 8 lists six different areas in which information availability was tested related to rare diseases. A majority of respondents in each of the six cases rated the information more "difficult" than "easy" to obtain on that subject, mostly by two-to-one margins or greater. Importantly, level of income and area of residence have no significant effect on the ease/ difficulty of obtaining information for each instance.

- Three-quarters (76%) say it is difficult to obtain information on research studies in which the patient could participate, with 59% saying this information is "very difficult" to obtain.
- Almost three-quarters (74%) find it difficult to get information on new types of treatment, with 55% saying "very difficult."
- 73% say information on recent research advances is hard to come by (54% "very difficult").
- 68% say support group information is scarce, with 49% feeling it is "very difficult" to obtain.
- 61% find it difficult obtaining easy-to- understand information about the illness (39% "very difficult").

TABLE 7

WHERE WENT FIRST TO OBTAIN INFORMATION BY AGE

	Total %	PATIENT AGE						
		< 6 %	7-17 %	18-34 %	35-44 %	45-54 %	55-64 %	65+ %
Physician Specialist	42	52	43	45	37	38	38	38
Family Doctor	19	7	14	19	16	17	26	38
Library	11	18	18	8	9	8	9	6
University/College	8	9	7	6	16	7	6	7
Medical Books/Journals	6	7	1	5	7	10	6	4
Voluntary Health/Support Organization	2	2	4	1	3	1	4	1
Hospital/Medical Center/ Clinic	2	1	1	6	2	4	1	1
NIH	2	2	2	5	2	2	1	1
Friends/Family	1	1	--	1	2	2	2	2
NORD	1	1	2	--	--	4	1	1
Other	6	--	8	4	6	7	6	1

TABLE 8

AVAILABILITY OF INFORMATION ON ILLNESS

(%)*	--OBTAINING INFORMATION IS-- Difficult	Easy	Don't Know	--(INTENSITY)-- Very Difficult	Very Easy
Research studies you/ the patient could participate in	76	17	7	59	7
New types of treatment	74	21	5	55	10
Recent research advances	73	23	4	54	11
Voluntary support groups for people with the illness	68	27	5	49	12
Easy-to-understand written information about the illness	61	38	1	39	17
Location of treatment centers	57	37	6	42	18

* Percentages read across.

- A majority (57%) say treatment center location/information is difficult to obtain (42% "very difficult").

Again, there are no significant associations of the six items above with either income, area of residence, or patient age or gender. Thus, obtaining current information on their illness is a difficulty faced by the large majority of these rare disease patients.

VII. SUPPORT GROUP PARTICIPATION

Most rare disease patients (68%) do not currently participate in a voluntary support group or organization related to their illness. The 32% who do participate can be broken down as follows: 22% -- patient only, 7% -- caregiver only, and 3% -- both caregiver and patient (Table 9).

There are no statistically significant differences by income, age, gender, or residence in predicting support group participation. However, a correlation does exist between length of diagnosis time and support group participation. The proportion who participate increases from 26% among those diagnosed within a year, to 36% among the 1 to 5 year diagnosis period group, to 40% among patients unable to obtain a diagnosis more than 5 years after it was initially sought.

Current support group participants (32% of sample) are most likely to have initially become aware of the group through either the media (32%) or the National Organization for Rare Disorders (NORD) (21%). This number may be a little higher than would normally be expected because the surveyed population included primarily those who had requested information from NORD. Single digit percentages mention physicians (9%), friends (8%), or family (4%), and 7% have started their own support group (Table 10).

Nearly all support group participants are satisfied with the group's performance on keeping its members informed and up-to-date about the illness -- 73% rate the group's performance either "excellent" (40%) or "good" (33%), and only 10% rate it "poor." Interestingly, by intensity of performance rating, younger respondents (less than 34) are most likely to rate the group "excellent;" older patients (45 and older) are more likely to rate the group "good," a less intense positive rating.

TABLE 9

SUPPORT GROUP PARTICIPATION

	Total %	Area: Urban %	Suburban %	Medium City %	Small City/ Town %	Rural %
Do you/does the patient currently participate in a voluntary support group for people with the illness?						
Yes, Patient	22	28	21	19	19	21
Yes, Care Giver	7	5	9	7	8	7
Yes, Both	3	4	2	5	3	5
No, Both do not	68	63	69	69	71	67

TABLE 10

HOW FOUND OUT ABOUT GROUP/HOW RATE GROUP

		AREA				
	TOTAL %	URBAN %	SUBURBAN %	MEDIUM CITY %	SMALL CITY/ TOWN %	RURAL %
How did you/the patient find out about the group? (of 32% who participate)						
Media	32	22	43	32	27	33
NORD	21	15	16	23	30	17
Physician	9	7	7	4	12	9
Friend	8	5	12	9	6	9
Started Own Group	7	6	7	11	5	7
Family	4	2	5	2	5	7
Social Worker	2	4	2	--	3	2
Other	16	18	19	14	11	17
Don't Know	1	--	1	2	2	--

		PATIENT AGE						
	TOTAL %	< 6 %	7-17 %	18-34 %	35-44 %	45-54 %	55-64 %	65+ %
How would you rate the group on keeping you/the patient up-to-date on information about the illness?								
Excellent	40	51	41	45	29	39	38	33
Good	33	20	24	21	29	43	43	43
Fair	16	11	24	21	16	16	13	17
Poor	10	13	10	14	23	2	6	7
Don't Know	1	4	--	--	3	--	--	--

VIII. FEDERAL GOVERNMENT CONTACT

Despite respondent-professed difficulty in obtaining information about their particular rare disease, only 20% of patients (or their caregivers) have ever initiated contact with a federal government agency or elected official seeking help or information about the illness and/or treatments (Table 11). While there are no significant variable associations with age, gender, or income, patients whose illness took longer than five years to diagnose are twice as likely (34%) as patients who were diagnosed within a year's time (only 17%) to have self-initiated contact with an agency or elected official in the federal government.

Patients who sought help from the federal government in the past were most likely to have turned to either a member of Congress (19% -- House member, 17% -- Senator) or the National Institutes of Health -- NIH (33%). The National Organization for Rare Disorders (not a government agency) was named by 9%.

Although cell counts are too small to assess statistical significance, by income, more affluent patient households ($30,000 or more) are more likely to mention contacting NIH (44%) than lower income patient households (27%) -- perhaps a function of level of education, which is often correlated with level of income.

By 18 points, more respondents (57%) said the information they obtained from the agency/official contacted was useful as opposed to those reporting it not useful (39%).

IX. EXPERIMENTAL DRUGS/DEVICES

Some patients have had previous experience with experimental drugs or devices not yet approved by the FDA -- 12% have used them in the past (Table 12). Responses are uniform across most subgroups. By length of diagnosis, those who went longer than five years without a diagnosis are twice as likely (17%) as those diagnosed within a year (8%) to have used an experimental drug or device.

On a question concerning refusals to take an experimental drug or device, 7% have refused such a treatment, and 19% say this type of treatment was never offered to them. Taken with the above finding, as would be expected, few respondents have had the opportunity offered to take investigational drugs and/or devices for their illness, rather than having refused to do so. In a measure of patient knowledge about FDA restrictions on

TABLE 11

SELF-INITIATED CONTACT WITH FEDERAL GOVERNMENT

	TOTAL %	YEARS BEFORE DIAGNOSIS: <1 %	1-5 %	≥5 %
Have you/the patient ever contacted the government or an elected official to get information about the illness or available treatments?				
Yes	20	17	20	34
No	80	83	79	66

-(IF YES)

	TOTAL %
What government agency or official did you/the patient contact?* (multiple mentions allowed)	
NIH	33
Member, House of Representatives	19
Member, Senate	17
NORD	9
President/Administration	5
CDC	5
Other	16
Don't Know	7
Social Security Office	5
State/County Health Department	4
State Senator/Representative	4
VA	3
FDA	3
And was the information you received useful?	
Yes	57
No	39
Don't know	4

* BASE N=162

TABLE 12

PREVIOUS EXPERIENCE WITH/WILLINGNESS TO USE EXPERIMENTAL DRUGS OR DEVICES IN FUTURE

	Total %	Length of Diagnosis Time: <1 Yr %	1-5 Yrs %	5+ Yrs %
(Previous Use)				
"Have you ever used an experimental drug or device, that is, a drug or device that is still in research status and not yet approved by the FDA for sale to the general public?				
Yes, used	12	8	15	17
No, have not used	87	91	84	81
Don't know	1	1	1	2

	Total %	Used in Past? "Yes" %	"No" %
	(100%)	(12%)	(87%)
(Future Use)			
"Would you consider letting the patient use an experimental drug or device in the future?			
Yes	68	86	65
No	27	12	30
Unsure	5	2	5

TABLE 13

MAIN QUALMS ABOUT USING AN EXPERIMENTAL DRUG/DEVICE

	TOTAL %
Risk Versus Benefits	61
Too Risky	40
Dangerous/Serious Side Effects	12
Little Benefit	7
Alternative Treatments Available	1
Low Medication Tolerance	1
Experience/Information	15
Lack of Information	11
Other Patient's Experiences	2
Personal Experience	2
No Reason/Would Take	10
Family/Doctor/Personal	5
Doctor Doesn't Recommend	2
Prefer FDA-Approved Drugs	2
Family Opposed	1
Cost	1
Other	6
Don't Know	3

investigational drugs, respondents are divided 48% -- "yes" to 44% -- "no" on whether FDA regulations permit rare disease patients to take experimental drugs not yet approved for public use if the patient's life is threatened by the rare disease.

Despite the low level of experience with experimental drugs, the large majority (68%) of respondents would considering using an experimental drug or device in the future (Table 12). There are no significant correlations by patient age, gender, area, or family income level. Patients who have previously used experimental drugs or devices are more likely (86%) to use them in the future than respondents with no such experience (65%).

Thus, while the past experience of these respondents has been limited, given the opportunity, most respondents would weigh the decision to take an experimental drug or device rather than refuse outright.

When all respondents were asked what would be the main reason they would hesitate to use an experimental drug or device, the majority focused on the risks (61%) of such treatment -- that it might be "too risky" (40%), could cause serious or even dangerous side effects (12%), or that the benefits did not outweigh the risks involved (7%). In non-risk related categories, one-in-five (15%) cite a lack of information (11%) or their own/someone else's bad past experiences (4%). Ten percent (10%) have no qualms about participating in experimental drug trials -- these patients are more likely to be over 45 years of age (younger patients have slightly more qualms). Interestingly, cost is not volunteered as a major barrier (only 1% mention).

In summary, most respondents would be willing to consider experimental treatments -- despite the fact that 81% are currently being treated. These patients/caregivers would want the risks of such treatments carefully detailed before making a final decision to participate in these types of drug or device trials.

X. RARE DISEASE RESEARCH PROBLEMS/SOLUTIONS

Respondents were asked to identify (unaided) the single biggest problem they feel is preventing treatment discovery for rare diseases, and then asked what solution/action they would suggest to solve that problem or barrier to treatment discovery.

As shown in Table 14, funding problems (35%) and lack of knowledge about the disease (28%) comprise the majority bloc of responses. Respondents who mention funding problems primarily

TABLE 14

SINGLE BIGGEST PROBLEM PREVENTING TREATMENT DISCOVERY FOR RARE DISEASES*

	TOTAL %
Funding Problems	**35**
Funding/Not Enough Money For Research	28
Not Enough Government Funding	6
Lack of Knowledge	**23**
Doctors Not Knowledgeable About Disease and/or Treatment	8
Lack of Knowledge About Disease Itself	6
Not Enough Published Information/Lack of Sharing Information	6
Lack of Public Awareness/Knowledge	3
Rareness of Disease	**17**
No/Not Enough Research Because It's Rare	11
Concentration is on Better Known/ More Common Diseases	3
Only Small Number Suffer from Disease	4
Other Reasons	**21**
No Profit Involved	6
Doctors/Researchers Not Interested	6
Lack of Public Interest/Concern	2
Other	7
Don't Know	4

*RESPONDENTS WERE ALLOWED MORE THAN ONE RESPONSE, SO FIGURES MAY ADD TO MORE THAN 100 PERCENT.

feel rare disease research is underfunded (or not funded at all); patients/caregivers who see lack of knowledge as the biggest problem point to the research data side of the equation (lack thereof) and not enough dissemination of existing knowledge to those who need it, mainly physicians. The rareness of the diseases (incidence in population) is volunteered by 17%, with concern expressed that research is difficult give the prevalence of "more common" diseases and thus the research focus away from rare conditions or disorders.

In response to these problems, a plurality (43%) suggest a public education effort or a physician education effort as actions to stimulate research/ interest in rare diseases and treatments, with 14% envisioning a centralized information clearinghouse mechanism for patients and physicians alike to use as a resource (Table 15).

Financial solutions are mentioned by 39% of respondents, including "more government funding" (21%). More than a quarter (27%) emphasize expanding research.

XI. POSITIONS ON PROPOSALS

Not surprisingly, respondents monolithically favor each of three proposals which would facilitate more access to and/or up-to-date information about rare illnesses and treatments (Table 16).

First, respondents support (98%) the concept of a public/physician education program to raise awareness of rare diseases and how to get help.

Second, another monolithic 97% support establishment of a privately-funded, toll free rare disease hotline which would provide information on both research advances and new types of treatments.

Last, 84% would favor a 900 number (caller pays for) one could call for up-to-date information on their illness, although the intensity of support ("strongly favor") is lower on this proposal (54%) than the previous two. Yet, importantly, there are no significant differences by family income level -- all income groups would favor a 900 number where patients/caregivers pay for each call.

TABLE 15

ACTIONS WOULD SUGGEST TO SOLVE SINGLE BIGGEST PROBLEM PREVENTING TREATMENT DISCOVERY*

	TOTAL %
Education/Awareness	**43**
Make Public More Aware of Rare Diseases	22
Central Information Center to Find Information About Disease/People Who Have Had the Disease and Can Provide Support	14
More Information Given to Doctors/ Communication Between Doctors About Rare Diseases	13
More Education/Seminars for Doctors on Rare Diseases	6
Financial	**39**
More Money from Government	21
More Money for Research	12
Encourage Public Fund-Raising/Donations	9
Research	**27**
More Research	15
Interest More Doctors/People in Research	5
Persuade Drug Companies to Research a Medication for the Disease	3
Need More Genetic Research	2
Need to Find a Cure	2
Other Reasons	**32**
Generate Government Interest	13
Doctors Need to be More Interested in Patient/Give Better Explanations and Answer Questions	7
Approve Drugs/Treatments Sooner	2
Competitive Salaries/Incentives for Researchers	2
Other	8
Don't Know	9

*RESPONDENTS WERE ALLOWED MORE THAN ONE RESPONSE, SO FIGURES MAY ADD TO MORE THAN 100 PERCENT.

TABLE 16

POSITIONS ON PROPOSALS

	Total %	
Conducting a National Information and Education Program on Rare Diseases Stressing How to Get Help		
Strongly Favor	85	> 98
Somewhat Favor	13	
Total Oppose	2	
Establish a Privately-Funded Rare Disease Hot-Line or 800 Toll Free Number to Provide the Newest Information on Research and Treatments		
Strongly Favor	83	> 97
Somewhat Favor	14	
Total Oppose	3	
Establish a 900 Number Where the Caller Pays for the Telephone Call to Provide the Newest Information on Research and Treatments for Rare Diseases		
Strongly Favor	54	> 84
Somewhat Favor	30	
Total Oppose	16	

APPENDIX A: SURVEY QUESTIONNAIRE

#4022Q
Chilton Research Services
Radnor, Pennsylvania

Revised 8/22/88
Study #7641
June, 1988

- SRP Columned -
ORPHAN DISEASES STUDY

Screener

Time Dialed _____AM _____PM

Interview #_____
(01-05 on all cards)

Time Began _____AM _____PM

Time Ended _____AM _____PM

INTRODUCTION: Hello, I'm _____. We are conducting a survey of persons with rare diseases for the U.S. Public Health Service.

A rare disease is defined as any disease or condition that affects fewer than 200,000 persons in the United States. There are about 5,000 rare diseases. They include some fairly well-known diseases you've probably heard of such as:

- Insulin Dependent Diabetes
- Tuberculosis

as well as some lesser known diseases such as:

- Muscular Dystrophy
- Lou Gehrig's Disease

Your participation in this study is very important to us and to our ability to help people with these diseases. Participation is voluntary, and all your answers will be kept confidential.

(INTERVIEWER NOTE: IF ASKED WHETHER A SPECIFIC DISEASE IS A RARE DISEASE BY THE DEFINITION GIVEN ABOVE, REFER TO LIST OF RARE DISEASES.)

1. I would like to speak with a person who has a rare disease or condition and lives at this address. Do you or someone else have a rare disease?

	CONTINUE	Yes	1
Thank you very much.	TERMINATE	No	2

(IF MORE THAN ONE HOUSEHOLD MEMBER HAS A RARE DISEASE, READ THE FOLLOWING:)
Since you mentioned that more than one household member would qualify to participate in our study, we need to randomly select one of these people to speak with. Thinking of the household members who have a rare disease, which of them had the most recent birthday?

2. Would the age of that person be . . . (READ LIST)?

106

SKIP TO Q. 7	Under 15	1
CONTINUE	15 - 17	2
	18 or older	3

3. Would that person be you or someone else at this address?

107

SKIP TO INTRO BEFORE Q. 16	Respondent	1
CONTINUE	Someone else	2

4. Is the person with the rare disease able to answer questions?

108

CONTINUE	Yes	1
SKIP TO Q. 7	No	2

5. Is that person available to speak with me?

109

	REINTRODUCE, IF NECESSARY, AND SKIP TO INTRO BEFORE Q. 16	Yes	1
	SCHEDULE CALLBACK	No, Not Available	2
YELLOW REFUSAL	CONTINUE	Refuses to get respondent	3

6. May I ask why not?

110(1)

_____

_____

_____

7. May I talk with the individual in the household who is most involved in the care of the person and could answer some questions on behalf of that person?

111

	REINTRODUCE, IF NECESSARY, AND SKIP TO Q. 9	Yes	1
	SCHEDULE CALLBACK	No, Not Available	2
YELLOW REFUSAL	CONTINUE	Refuses to give respondent info	3

8. May I ask why not?

112(1)

_____

_____

_____

9. Are you the patient's . . . (READ LIST)?

		113
SKIP TO Q. 11	Parent	1
	Spouse	2
	Child	3
	Other Relative	4
CONTINUE	Or some other relationship (SPECIFY:) _____	9

10. Are you a paid or non-paid caregiver?

	114
Paid	1
Non-Paid	2

11. Are you fairly familiar with this person's health history?

		115
REINTRODUCE, IF NECESSARY, AND SKIP TO INTRO BEFORE Q. 16	Yes	1
CONTINUE	No	2

12. Who else can I talk to who knows the health history? (INTERVIEWER NOTE: REFERRAL SHOULD NOT BE PATIENT'S DOCTOR)

			116
	SKIP TO Q. 14	Name given	1
YELLOW REFUSAL	CONTINUE	No name given	2

13. May I ask why not?

117(1) _____

_____

_____

14. May I speak to that person?

			118
	RE-ASK Q. 11	Yes	1
YELLOW REFUSAL	CONTINUE	Refuses to allow us to speak to respondent	2
	SCHEDULE CALLBACK	No, Not Available	3

15. May I ask why not?

119(1) _____

_____

_____

#4022Q
Chilton Research Services
Radnor, Pennsylvania

Study #7641
June, 1988

ORPHAN DISEASES STUDY

Main Questionnaire

(INTERVIEWER NOTE: RE-READ THIS INTRODUCTION WHEN TALKING TO PATIENT OR CAREGIVER IF NOT ORIGINAL RESPONDENT.)

SRP NOTE: USE THIS INTRODUCTION WHEN A NEW RESPONDENT COMES TO THE PHONE.

RE-INTRODUCTION: Hello, I'm _____. We are conducting a survey of persons with rare diseases for the U.S. Public Health Service.

Your participation in this study is very important to us and to our ability to help people with these diseases. Participation is voluntary, and all your answers will be kept confidential.

SRP NOTE -- CHECK Q. 11 TO SEE WHICH CATEGORY TO REPRESENT THROUGHOUT QUESTIONNAIRE:

- IF RESPONSE IS 1, REPRESENT "PATIENT" THROUGHOUT QUESTIONNAIRE (CAREGIVER)
- IF Q. 11 NOT ASKED, REPRESENT "YOU" THROUGHOUT QUESTIONNAIRE (PATIENT)

SRP: USE INTRODUCTION BELOW IF SPEAKING WITH THE PATIENT

I'd like to start by talking briefly about your illness.

SRP: USE INTRODUCTION BELOW IF SPEAKING WITH PERSON OTHER THAN THE PATIENT

I'd like to start talking briefly about the person with the rare disease or illness. To help things flow smoothly, this person will be referred to as "the patient" throughout the questionnaire.

16. What is the name of (your/the patient's) illness? (RECORD ON VBA SHEET) (PROBE FOR CORRECT SPELLING.) (IF RESPONDENT/PATIENT HAS MORE THAN ONE RARE DISEASE, ASK WHICH IS MOST SERIOUS AND RECORD.) (DO NOT REFER TO RARE DISEASE LIST, UNLESS RESPONDENT ASKS IF THEIR DIAGNOSIS IS CONSIDERED A RARE DISEASE. -- IF DISEASE IS NOT ON LIST, SEE SUPERVISOR)

247-50
120(1)

17. How long after first visiting a doctor with these symptoms did it take to obtain this diagnosis?

CONTINUE	_____ years (121-122)
3 MONTHS OR LESS SKIP TO Q. 19	_____ months (123-124)

18. Why did it take this length of time to obtain this diagnosis? (DO NOT READ LIST)

125-134

Symptoms confusing	01
Doctors didn't know	02
Improper diagnosis	03
Needed to see specialists	04
Other (RECORD ON VBA SHEET) (SEE CODING MANUAL)	99

19. (Are you/Is the patient) currently being treated by a physician?

135

SKIP TO Q. 21	Yes	1
CONTINUE	No	2

20. Why (aren't you/isn't the patient) being treated for the illness? (DO NOT READ LIST)

136-145

Treatment not available	01
Treatment not necessary	02
Treatment too experimental	03
Treatment too expensive	04
Treatment by person other than physician	05
Treatment no longer necessary	06
There is no treatment	07
Other (RECORD ON VBA SHEET) (SEE CODING MANUAL)	99

21. Does the illness prevent (you/the patient) from working at a job or business or from attending school? (IF YES:) PROBE: Is that job or school?

146

SKIP TO INTRO BEFORE Q. 23	Yes, job	1
	Yes, school	2
	Yes, both	3
CONTINUE	No	4

22. (Are you/Is the patient) limited in the amount of or the kind of work (you/the patient) can do because of the illness?

147

Yes	1
No	2

Now I would like to talk a little bit about problems (you/the patient) may have had because of the illness.

23. First, has the illness ever involved traveling more than 50 miles one way to receive diagnosis or treatment?

148

Yes	1
No	2

24. Has the illness ever caused (you/the patient) to change residence in order to get access to treatment or special education?

149

Yes	1
No	2

25. Has the illness ever created an extreme financial burden for (you or your/the patient or the patient's) family?

150

CONTINUE	Yes	1
SKIP TO Q. 27	No	2

26. What is the source of the extreme financial burden caused by the illness? Would it be . . . (READ LIST)? (SRP: ACCEPT MULTIPLE ANSWERS.)

151-60

that insurance does not cover medical expenses	01
that insurance only covers part of expenses	02
that (you/the patient) can/could not get insurance	03
that (you/the patient) cannot work	04
or some other reason (RECORD ON VBA SHEET) (SEE CODING MANUAL)	99

Now I would like to talk briefly about what (you/the patient) did to obtain information about the illness.

27. To the best of your knowledge, how many people in the U.S. have this disease? (IF RESPONSE IS A RATIO OR PERCENTAGE, RECORD ON PROBLEM SHEET AND ENTER '1234567'.)

#_____
(161-67)

28. Where did (you/the patient or the patient's family) go first to obtain information about the illness? (DO NOT READ LIST) (PROBE FOR SPECIFICS)

168-69

Family doctor	01
Physician specialist	02
Voluntary health/support organization	03
State health department	04
Federal official (President, Senator, Congressman, etc.)	05
National Institutes of Health	06
Other people with the disease or illness	07
Friends/family	08
No information available	09
Other (SPECIFY:) (SEE CODING MANUAL) _____	99

170-77
Blank

The next few questions have to do with the availability of certain types of information about rare diseases.

29. I would like to read you a list of several types of information. Please tell me for each item whether it was very easy, somewhat easy, somewhat difficult or very difficult for (you/the patient) to obtain this type of information. Let's start with . . . (START WITH HIGHLIGHTED ITEM)

RANDOM START		Very Easy	Somewhat Easy	Somewhat Difficult	Very Difficult	Don't Know/ Refused
	Information about location of treatment centers	206 1	2	3	4	8/7
	Information about research studies (you/the patient) could participate in	207 1	2	3	4	8/7
	Information about voluntary support groups for people with the illness	208 1	2	3	4	8/7
	Information about recent research advances	209 1	2	3	4	8/7
	Information about new types of treatment	210 1	2	3	4	8/7
	Written information about the illness that was easy to understand	211 1	2	3	4	8/7

(SRP: USE "DO YOU" IF PATIENT. USE "DO YOU OR THE PATIENT" IF CAREGIVER.)

31. (Do you/Do you or the patient) currently participate in a voluntary support group for people with the illness?

212

CONTINUE	Yes, patient does	1
	Yes, you do	2
	Yes, both patient and you do	3
SKIP TO Q. 34	No, both do not	4

SRP: CHECK Q. 31 TO SEE WHAT TO REPRESENT FOR Q. 32 & 33.

- IF CODE 1 -- CHECK Q. 11
  - IF Q. 11 EQ 1 REPRESENT "THE PATIENT"
  - IF Q. 11 NOT ASKED, REPRESENT "YOU"
- IF CODE 2 -- REPRESENT "YOU"
- IF CODE 3 -- REPRESENT "YOU OR THE PATIENT"

32. How did (you/the patient/you or the patient) first find out about this group? (DO NOT READ LIST)

213-14

Physician	01
Friend	02
Clergy	03
Media	04
Family	05
Other (SPECIFY:) (SEE CODING MANUAL) _____	99

215-22 Blank

33. Please rate this group in terms of keeping (you/the patient/you or the patient) up-to-date on information about the illness. Would you rate this group . . .?

223

	Excellent	1
	Good	2
	Fair	3
	Poor	4
DO NOT READ	Don't Know/Refused	8/7

34. (Have you/Have you or the patient) ever contacted the government or an elected official to get information about the illness or available treatments?

224

CONTINUE	Yes	1
SKIP TO INTRO BEFORE Q. 37	No	2

35. What government agency or official did (you/you or the patient) contact? (DO NOT READ LIST) (IF CONGRESS MENTIONED, PROBE FOR CODE 1 OR CODE 2.)

225-34

Member of the House of Representatives	01
Member of the Senate	02
President/Administration	03
Clearinghouse/Information Center	04
National Institutes of Health (NIH)	05
Centers for Disease Control (CDC)	06
Food and Drug Administration (FDA)	07
Veteran's Administration (VA)	08
Alcohol, Drug Abuse & Mental Health Administration (ADAMHA)	09
Other (RECORD ON VBA SHEET) (SEE CODING MANUAL)	99

36. Was the information (you/you or the patient) received useful?

235

Yes	1
No	2
Don't know	8

Now, let's talk a little bit about research on rare diseases.

37. (Have you/Has the patient) ever used an experimental drug or device, that is, a drug or device that is still in research status and not yet approved by the FDA for sale to the general public?

236

Yes	1
No	2
Don't know	8

SRP NOTE: IF PATIENT -- USE "YOU". IF CAREGIVER -- CHECK SCREENER Q. 2. IF PATIENT IS 18 OR OLDER (CODE 3), REPRESENT THE SECOND PART OF THE FIRST BRACKET IN Q. 38-40. OTHERWISE, REPRESENT THE SECOND BRACKET.

38. [Would (you/you recommend that the patient) consider using] [Would you consider letting the patient use] such a drug or device in the future?

237

Yes	1
No	2
Don't know	8

39. [(Have you/Has the patient) ever refused] [Have you ever refused to allow the patient] an experimental treatment for the illness?

238

Yes	1
No	2
No experimental treatment offered	3

SRP NOTE: FOR Q. 40, IF RESPONSE TO Q. 39 IS 'YES', REPRESENT 'DID', IF 'NO', REPRESENT 'MIGHT'.

40. For what main reason (did/might) [(you hesitate/the patient hesitate)] [you hesitate to allow the patient] to use an experimental drug or device? (DO NOT READ LIST) (PROBE FOR SPECIFICS)

239-40

COST:	Too expensive	01
	Insurance won't cover	02
INCONVENIENCE:	Difficult to obtain	03
	Too far to travel	04
RISK/BENEFIT:	Little benefit	05
	Alternative treatments available	06
	Too risky	07
EXPERIENCE/ INFORMATION:	Lack of information	08
	Other patients' experience	09
	Personal experience	10
FAMILY/DOCTOR/ PERSONAL:	Doctor doesn't recommend	11
	Family doesn't approve	12
	Religious consideration	13
Other (RECORD ON VBA SHEET) (SEE CODING MANUAL)		99

243-46 (Blank)
251-57 (Blank)
258-Region (See Attached)

41. From (your experience/your experience with the patient), what is the single biggest problem preventing the discovery of treatments for rare diseases? (PROBE TO CLARIFY) (RECORD ON VBA SHEET) (ONE ANSWER ONLY)

241-42
259(1)

SKIP TO Q. 43	Don't Know/Refused	8/7

42. What action would (you/you) suggest to solve this problem? (PROBE: What else?) (PROBE TO NEGATIVE) (REFER TO PROBLEM IN Q. 41) (RECORD ON VBA SHEET)

307-16
260(1)

43. Now I would like to read you several possible proposed actions concerning information on rare diseases. Please tell me whether you strongly favor, somewhat favor, somewhat oppose or strongly oppose these actions. Let's start with . . .

RANDOM START		Strongly Favor	Somewhat Favor	Somewhat Oppose	Strongly Oppose	Don't Know/ Refused
	Establish a privately funded, rare-diseases hotline or 800 (toll-free) telephone number to provide the newest information on research and treatments for rare diseases.	261 1	2	3	4	8/7
	Establish a 900 telephone number where the caller pays for the telephone call to provide the newest information on research and treatments for rare diseases.	262 1	2	3	4	8/7
	Conduct a national information and education program on rare diseases stressing how to get help.	263 1	2	3	4	8/7

44. Is it your understanding that in life threatening situations, Federal rules permit patients with a rare disease to take an experimental drug not yet approved by the FDA for sale to the general public?

264

Yes	1
No	2
Don't Know	8

Now, we have a few questions that help us with the statistical analysis.

45. What is the highest grade (you/the patient) completed in school or college? (READ LIST)

265-66

	8th grade or less	01
	Some high school	02
	High school graduate	03
	Some college	04
	College graduate	05
	Post-grad or professional degree	05
	Vocational or technical school	07
DO NOT READ	Preschool	08
	Too young for school	09
	Other (SPECIFY:) (SEE CODING MANUAL) _____	99

46. Would you describe the area (you live/the patient lives) in as: (READ LIST)

267

a large city with over 1/2 million people	1
a suburban area surrounding a large city	2
a medium sized city	3
a small town or city	4
a rural area	5

47. What is (your/the patient's) Zip Code?

_____
(268-72)

48. What is (your/the patient's) age? (READ LIST)

276-77

CONTINUE	17 or under	01
SKIP TO Q. 49	18 to 20	02
	21 to 24	03
	25 to 34	04
	35 to 44	05
	45 to 54	06
	55 to 64	07
	65 to 74	08
	75 to 84	09
	85 to 94	10
	95 and over	11
DO NOT READ	Don't know	98
	Refused	97

48A. Is (YOUR/THE PATIENT'S) age . . .? (READ LIST)

306

	Under 1 year	1
	1 - 3	2
	4 - 6	3
	7 - 10	4
	11 - 14	5
	15 - 17	6
DO NOT READ	Don't Know	8
	Refused	7

49. Was (your/the patient's) total family income for 1987, before taxes, over or under $30,000?

273

CONTINUE	Under $30,000	1
SKIP TO Q. 51	Over $30,000	2
SKIP TO Q. 52	Refused	7

50. Is it:

274

SKIP TO Q. 52	Under $10,000	1
	Between $10,000 and $20,000	2
	Between $20,000 and $30,000	3
DO NOT READ	Don't know	8
	Refused	7

51. Is it:

275

	Between $30,000 and $40,000	1
	Between $40,000 and $50,000	2
	Between $50,000 and $60,000	3
	$60,000 or more	4
DO NOT READ	Don't know	8
	Refused	7

SRP NOTE: ASK EITHER Q. 52 OR Q. 53 — CHECK SCREENER Q. 11. IF Q. 11 NOT ASKED, ASK Q. 52. IF Q. 11 EQUALS CODE 1, ASK Q. 53.

52. SEX OF RESPONDENT (DON'T ASK) RECORD:

178

Male	1
Female	2
Difficult to tell from respondent's voice	3

53. Is the patient male or female? (ASK, IF NECESSARY)

278

Male	1
Female	2

CLOSING: This concludes our interview. Thank you very much for your time.

317-349 Blank
350-59 Callback Telephone Number
360-67 Blank
368-77 Telephone Number
378 Refusal Conversion

STUDY OF PHYSICIANS' EXPERIENCES IN TREATING PATIENTS WITH RARE DISEASES

TABLE OF CONTENTS

LIST OF TABLES

I. INTRODUCTION

The National Commission on Orphan Diseases developed and implemented a workplan that included four regional public hearings throughout the United States. In conjunction with these hearings, several independent information collection efforts including targeted information requests by telephone from physicians, patients, and biomedical researchers were conducted. Additionally, the Commission collected information from Federal agencies, rare disease organizations, foundations, and those segments of the pharmaceutical industry that support research activities related to rare diseases.

The purpose of the physician survey was to collect information on the availability and dissemination of information on rare diseases and the willingness of physicians to use investigational drugs (not yet approved by the FDA) as a means to further research on rare diseases.

To complete this task, a national random sample of 440 physicians who spent at least 25 percent of their time in patient care was drawn from the Physician Masterfile of the American Medical Association (AMA). This Masterfile is considered the most comprehensive source of physician information in the United States. The Masterfile contains both current and historical information on every Doctor of Medicine (M.D.), about half of the Doctors of Osteopathy (D.O.) in the United States, and on graduates of American medical schools who are temporarily located overseas. The file includes members and non-members of the AMA as well as students in United States medical schools and foreign medical school graduates who graduate medical residency training. The telephone survey took approximately 10 minutes per physician.

II. METHODOLOGY

This report represents the results of a study conducted by the National Commission on Orphan Diseases (NCOD) and the American Medical Association (AMA). The population from which a targeted random sample size of 440 physicians was selected consisted of 343,856 physicians in the U.S. who spend 25 percent or more of their professional time in patient care activities. The survey excluded residents, physicians located outside the U.S., and physicians whose addresses were unknown. The sample was proportionately selected from six cells:

SAMPLE SIZE
(# of physicians in sub-samples)

Age	Rural/ non-SMSA	SMSA* w/ pop. under 1 Million	SMSA w/ pop. of 1M or more	Total
Under 45 years	30	61	88	179
45 years or older	42	85	134	261
TOTAL	72	146	222	440

* An SMSA is a Standard Metropolitan Statistical Area. For example, the SMSA Washington, DC includes the City of Washington and the surrounding suburban counties of Virginia and Maryland.

The preliminary analysis in this report consists of 247 completed interviews with physicians who had seen at least one rare disease patient. Eligible physicians were excluded from the survey if they responded that they had not seen any patient with a rare disease.

To increase the response rate, a letter encouraging physician participation in the survey was sent from Dr. James H. Sammons, Executive Vice President of the American Medical Association. A follow-up letter signed by Dr. Glenna Crooks, Chairperson of the NCOD, was forwarded to physicians who had not been contacted or had refused to participate in an earlier interview. Interviewing continued until July 29, 1988.

III. KEY FINDINGS

- Two-in-five physicians (42%) say they need but are unable to find printed information to give to patients on their illness. One-fifth to over one-third (21% to 35%) say they are lacking a resource for information on various topics ranging from summaries of ongoing research and names of active researchers to the availability of treatments.

- A majority of physicians use various information sources, as tested in this study in diagnosing or treating rare disease patients. The most frequently used resource, pharmaceutical companies, is reported to only be used often by 14% of physicians, 32% use these sources of information occasionally.

  The least frequently used resources are information clearinghouses, only 2% of physicians use them often, 10% occasionally.

- A near majority of physicians feel that there are an adequate number of voluntary support groups for patients with rare diseases, both in their communities (48%) and at the national level (44%). One-fourth (25%) of physicians, however, consider the inadequate number of support groups to be either a very a serious or somewhat serious problem.

- Less than a majority (39%) of physicians seeing rare disease patients have used an investigational drug or device. Nearly all (92%) of those having used these drugs or devices would do so again.

  Of those never having used an investigational drug or device (62%), nearly three-fourths (72%) would not consider using them. One-in-four (25%) would contemplate this measure.

- A need to have more information about an investigational drug or device is cited as the most likely reason physicians would be hesitant to use them (88% hesitant). The cost of the drugs or devices,

difficulty in obtaining them, and whether they are covered by the patient's insurance are less frequently mentioned as barriers, but are still cited by a majority of physicians as reasons they would be hesitant to use them.

- The most frequently volunteered comment on other factors which have influenced or might influence a physician's decision to use an investigational drug or device is concern for the patient's safety and side effects (26%). More information on the research being done is offered by 17% of physicians as a factor, and legal considerations (10%) follows third. Other mentions, such as paperwork, effect on patient's family, and lack of other available treatments follow.

- The strongest agreement for actions to support rare disease research is to allow patients with life-threatening illnesses to take non-FDA approved experimental drugs would help support research on rare diseases (92% agree, 65% strongly agree). Physicians are also nearly unanimous in their agreement limiting the legal liability for doctors who use investigational drugs (91% agree, 64% strongly agree).

  More than a majority of physicians (59% agree) also support transferring funds from common to rare disease research as a possible action, but are less intense in their agreement (12% strongly agree).

- More frequent updates in medical journals is considered by one-third (33%) of physicians as a way to improve the dissemination of information on rare diseases and research. Fourteen percent (14%) feel public database access would be the best way to get information to physicians.

IV. SOURCES OF PHYSICIANS' INFORMATION ABOUT DIAGNOSING OR TREATING RARE DISEASE PATIENTS

Of various information sources tested, none is reported as a source of information that is "very often" or "somewhat often" used by more than 15% of the physicians survey.

When taking into account occasional use of an information source, none of the sources tested were reported to be used with any frequency by more than a majority of the physicians.

Pharmaceutical companies (46% at least occasional use) were the most frequently cited source of information by physicians in diagnosing or treating rare disease patients (Table 1). Approximately 40% of the physicians stated that they use, at least occasionally, either the Centers for Disease Control (41%), the National Institutes of Health (39%), or the National Library of Medicine (38%).

Roughly one-third report using Rare Disease Voluntary Organizations (32%), while about one-quarter report having used, at least occasionally, as an information source either telephone hotlines (25%) or the FDA (24%). About one-in-seven physicians say that they have used the National Institute of Mental Health (15%) or the Veteran's Administration (16%) as a source of information. Just over one-in-ten say that they used three other information sources tested: Information Centers/Clearinghouses (12%), the National Institute on Alcohol Abuse and Alcoholism (12%), and the National Institutes on Drug Abuse (11%). Tables 1, 2 and 3 show the use of the twelve different information sources by variable such as location of medical school, employment structure and number of rare disease patients seen. Some differences in the use of the various information sources was observed.

For all twelve sources tested, graduates of foreign medical schools are more likely than graduates of domestic schools to report at least occasional use of that information source for diagnosing or treating rare disease patients (Table 1).

In fact, over a majority of foreign medical school graduates claim that they use pharmaceutical companies, CDC, NIH, and the National Library of Medicine, whereas 40% or less of domestic medical school graduates claim to use these sources for information.

By type of practice, those physicians in solo practice report using information sources such as pharmaceutical companies, the rare disease voluntary organizations, telephone hotlines and FDA more than physicians who are in group or hospital practice (Table 2). Meanwhile, physicians in group practice are less likely than physicians in solo or in hospital

TABLE 1

USE OF VARIOUS INFORMATION SOURCES FOR DIAGNOSING OR TREATING RARE DISEASE PATIENTS BY COUNTRY OF MEDICAL SCHOOL GRADUATION

	TOTAL+ % (N=247)	U.S. % (N=192)	FOREIGN % (N=55)*
Pharmaceutical Companies	46	41	61
Centers for Disease Control	41	37	55
National Institutes of Health	39	36	50
National Library of Medicine	38	33	51
Rare Disease Voluntary Organizations	32	31	35
Telephone Hotlines/800 #'s	25	22	38
Food and Drug Administration	24	23	29
Veteran's Administration	16	13	23
National Institute of Mental Health	15	12	29
Information Clearinghouses	12	11	17
National Institute on Alcohol Abuse and Alcoholism	12	6	31
National Institutes on Drug Abuse	11	7	27

+ PERCENTAGES REPORTED ARE SUM OF RESPONSES: "VERY OFTEN," "SOMEWHAT OFTEN," AND "OCCASSIONALLY" USE OF INFORMATION SOURCE. THUS, PERCENTAGES REPRESENT ANY USE OF SOURCE REGARDLESS OF HOW FREQUENT.

* INFORMATION NOT AVAILABLE FOR ONE PHYSICIAN'S COUNTRY OF MEDICAL GRADUATION.

TABLE 2

USE OF VARIOUS INFORMATION SOURCES FOR DIAGNOSING OR TREATING RARE DISEASE PATIENTS BY PRESENT EMPLOYMENT STATUS

	TOTAL % (N=247)	SOLO % (N=88)	GROUP % (N=109)	HOSPITAL % (N=29)*
Pharmaceutical Companies	46	53	40	41
Centers for Disease Control	41	45	39	51
National Institutes of Health	39	33	40	45
National Library of Medicine	38	39	34	45
Rare Disease Voluntary Organizations	32	37	28	27
Telephone Hotlines/800 #'s	25	36	16	24
Food and Drug Administration	24	34	16	21
National Institute of Mental Health	15	22	6	24
Veteran's Administration	16	11	16	17
Information Clearinghouses	12	15	9	6
National Institute on Alcohol Abuse and Alcoholism	12	13	7	20
National Institutes on Drug Abuse	11	13	8	14

* OTHER RESPONDENTS FOR PRESENT EMPLOYMENT STATUS ARE TOO FEW FOR SUBGROUPS ANALYSIS.

practice to report using any of the available physician's sources of information for diagnosing or treating rare disease patients. But, physicians who are in hospital practices are more likely than others to report using CDC, NIH, The National Library of Medicine and the National Institute on Alcohol Abuse and Alcoholism.

The small group of physicians (n=37) who report treating 11 or more rare disease patients, also report being more likely than other physicians to use many of the information sources available. These include pharmaceutical companies, NIH, the National Library of Medicine, Rare Disease Voluntary Organizations, telephone hotlines, the FDA and the National Institute of Mental Health. Of these information sources, three are reported to be used at least occasionally or more, by a majority of those who treat 11 or more patients. These are pharmaceutical companies, NIH and the National Library of Medicine. Those who treat one or fewer rare disease patients are most likely to use either pharmaceutical companies or the National Library of Medicine as an information source, whereas those who report treating between two and ten rare disease patients are less likely to use the National Library of Medicine and slightly more likely to use NIH along with CDC and pharmaceutical companies as a source of information about diagnosing and treating patients with rare diseases.

V. INFORMATION RESOURCES NEEDED BUT UNAVAILABLE

A majority of physicians report that they do not have problems in locating various information resources in diagnosing or treating rare disease patients.

The resource reported most often by physicians as needed, but unavailable, is "printed information to give patients" (Table 4). Forty-two percent (42%) of all physicians tested say that they had a need for such printed information for patients in the past, but were unable to find it.

One out of three physicians say that they had trouble finding either information summarizing continuing research (33%) or information about the names or addresses of researchers studying rare diseases (27%), or information about names and addresses of support groups (35%).

TABLE 3

USE OF VARIOUS INFORMATION SOURCES FOR DIAGNOSING OR TREATING RARE DISEASE PATIENTS BY NUMBER OF RARE DISEASE PATIENTS SEEN

	Total % (N=247)	Less Than One % (N=25)	One % (N=48)	2-10 % (N=138)	11+ % (N=37)
Pharmaceutical Companies	46	44	47	41	62
Centers for Disease Control	41	44	35	42	43
National Institutes of Health	39	24	27	41	65
National Library of Medicine	38	44	41	31	57
Rare Disease Voluntary Organizations	32	24	23	32	46
Telephone Hotlines/800 #'s	25	20	19	23	41
Food and Drug Administration	24	24	23	22	30
National Institute of Mental Health	15	8	14	16	21
Veteran's Administration	16	16	12	15	17
Information Clearinghouses	12	8	6	13	17
National Institute on Alcohol Abuse and Alcoholism	12	4	17	13	3
National Institutes on Drug Abuse	11	0	8	15	8

TABLE 4

PHYSICIANS NEEDING BUT BEING UNABLE TO FIND INFORMATION FOR DIAGNOSING OR TREATING RARE DISEASE PATIENTS

	TOTAL SAMPLE N=247		
	YES	NO	DON'T KNOW
(%)*			
Printed information to give to patients	42	51	7
Information summarizing ongoing research	33	62	5
Information about name or address of researchers studying rare diseases	29	65	6
Information about name or address of support groups	35	58	7
Information about name or address of specialists treating rare diseases	27	70	3
Information about location of treatment	23	72	5
Information on whether treatment was available	21	75	4

* PERCENTAGES READ ACROSS.

Less than 30% of the physicians said they had a need for, but were unable to find, information about names and addresses of specialists treating rare diseases (27%), information about the location of a given treatment (23%) or information on whether treatment was available (21%).

Thus, information about treatment appears to be readily available when physicians need it, whereas information about researchers or ongoing research and printed information about a rare disease or condition is more difficult for physicians to obtain when needed.

VI. SUPPORT GROUPS FOR PATIENTS

A majority of physicians (58%) say that they have never had a need to find information about support groups that they were unable to find. In separate questioning, more physicians said that adequate support groups were available at both the local and national level. Forty-eight percent (48%) of the physicians say that there are an adequate number of support groups available in the community, 28% say there are not. While at the national level -- roughly the same level -- 44% say adequate support groups are available, but a lower percentage (18%) say that such support groups are not available (Table 5).

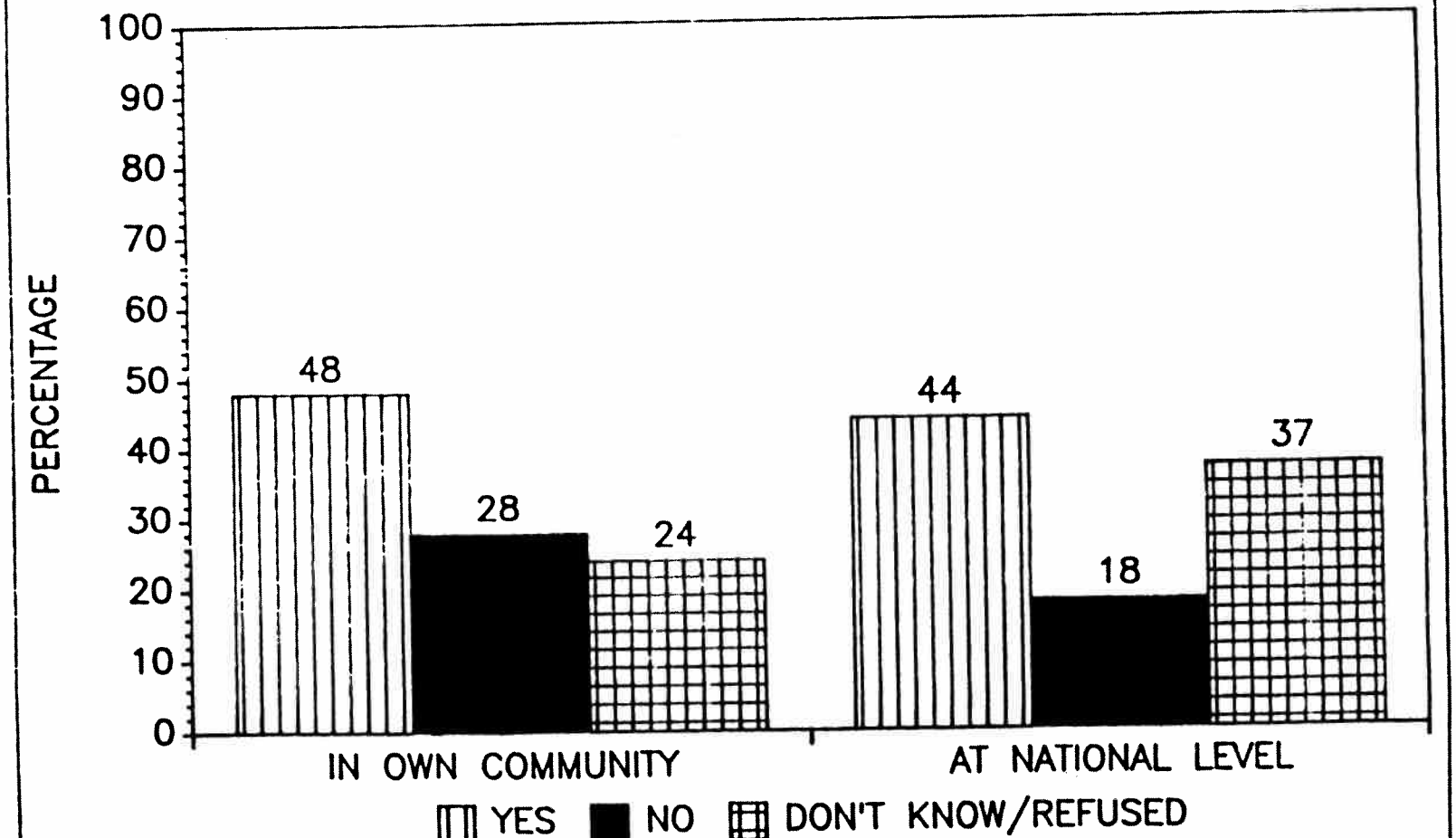
Size of community has some bearing on physicians' perception of whether local support groups are available or not. In rural areas, just 38% of the physicians say that adequate support groups are available. In metropolitan areas, 51% say that adequate local voluntary support groups are available. The difference between physicians' perceptions of the availability of support groups for rare disease patients, among physicians practicing in areas under a million and areas over a million in population, does not exist.

In perceptions about support groups at the national level, those who graduated from a U.S. medical school appear more likely than those who graduated from a foreign school to perceive the availability of support groups.

Also, those who practice in a hospital seem less likely than those who practice either in solo or in groups to perceive adequate numbers of voluntary support groups both at the national

TABLE 5

"Are there an adequate number of voluntary support groups . . . ?"



n=247 Physicians who have seen rare disease patients

and the local level.

Among the 34% of physicians who say that there is not a sufficient number of adequate rare disease patient support groups at either the local or national level, one out of seven say that this is a "very serious problem." Three out of five say it is a "somewhat serious problem" and the remaining one-fifth say that the problem is "not too serious at all." Those in the non-metropolitan (or rural) areas seem to be less concerned about the lack of support groups than those in metropolitan areas.

VII. INVESTIGATIONAL DRUGS AND DEVICES

Less than a majority of physicians (39%) said that they have ever used an investigational drug or device or have considered using one (26%). But, among those physicians who have used an investigational drug or device, the vast majority (92%) say that they would use that investigational drug or device again if they had the chance.

Experience with the use of an investigational drug or device appears to be associated with a number of factors, including number of patients the physician has, the age of the physician, where the physician practices, and where the physician graduated from medical school.

As Table 6 demonstrates, those physicians who have 11 or more rare disease patients are more likely than others to have used an investigational drug or device. Sixty-two percent (62%) of these physicians with 11 or more patients claim to have used such devices compared to 39% who have just two to ten patients and 35% that have one patient.

In addition, those physicians who are under the age of 45 are more likely than those who are over 45 to have used such an investigational drug. Living in a non-metropolitan area also seems to make a physician less likely to have used investigational drugs. Just 21% of physicians living in rural areas compared to 43% living in urban areas have used investigational drugs or devices. Also, those physicians who graduated from U.S. medical schools are twice as likely as those who graduated from foreign medical schools to say they have used an investigational drug or device.

TABLE 6

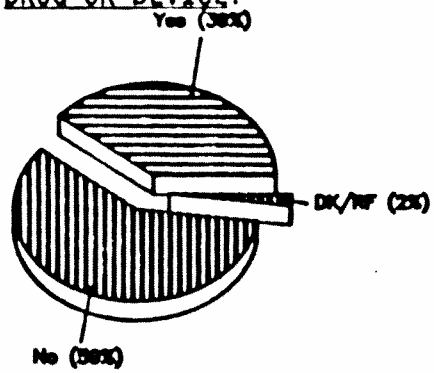
PERCENTAGE OF PHYSICIANS USING AN INVESTIGATIONAL DRUG OR DEVICE: By Various Traits

	USED INVESTIGATIONAL DRUG	
	Yes	No/Don't Know
	%	%
Total Sample (n=247)	39	61
Number of Rare Disease Patients		
Less than one	12	88
One	35	65
Two to ten	39	61
11 or more	62	38
Age of Physician		
Under 45	45	55
45 or older	35	65
Metro Classification		
Rural	21	79
50,000 - 1 million	43	57
Over 1 million	43	57
Country of Medical School		
United States	44	55
Foreign	21	79

While physicians who have used an investigational drug or device are nearly unanimous in the consensus that they would use an investigational drug or device again, those who have never used such an investigation tool, by two-to-one, say that they never considered using such an investigational drug or device (Table 7).

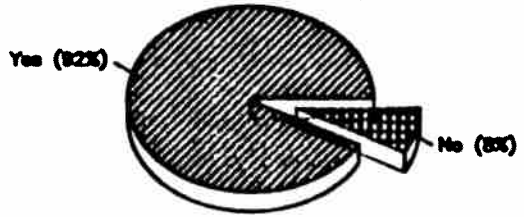
TABLE 7
INVESTIGATIONAL DRUGS OR DEVICES

HAVE YOU EVER USED AN INVESTIGATIONAL DRUG OR DEVICE?



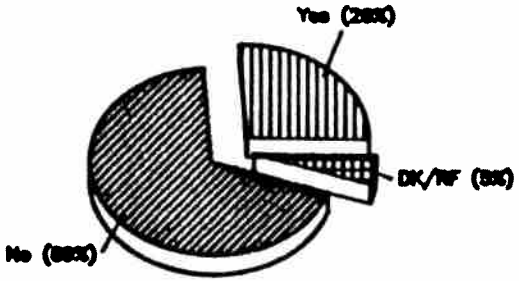
N = 247 TOTAL SAMPLE OF PHYSICIANS

"Based on your experience, would ever use an investigational drug or device again?"



(n = 96 Physicians who have used an investigational drug or device)

"Have you ever considered using an investigational drug or device?"



(n = 151 Physicians who have never used an investigational drug or device)

The factor which makes physicians most hesitant to use an investigational drug or device is that information about that drug or device is limited: 48% said this factor makes them "very hesitant" and an additional 10 percent reported being "somewhat hesitant" to use such a drug or device (Table 8). In comparison, the fact that the drug is expensive, that it is difficult to obtain or it is not covered by a patient's insurance makes far fewer doctors "very hesitant" to use that drug or device. However, a majority of physicians say that these three factors--expense, difficulty in obtaining, or not covered by insurance--makes them either "somewhat or very" hesitant to use an investigational drug or device.

In a follow-up question, the physicians were asked to volunteer what factors might influence their interest in using an investigational drug or device. The most often mentioned factors are safety, side effects, and possible adverse reactions (26%), the information available from research and testing (17%), the legalities of using that drug or device (10%), and how it works and what results it can attain. Less important to physicians are factors such as cost, the need to educate patients on the drug, the lack of other treatments, by whom the drug is manufactured or whether FDA has approved it, and the need to supervise the administration. Table 9 contains some examples of verbatim quotes physicians have given regarding factors that influence their use of investigational drugs.

VIII. OPINIONS ON PROPOSALS TO SUPPORT RESEARCH ON RARE DISEASES

Physicians show strong support for two actions tested to support research on rare diseases: "limiting legal liability for doctors who use investigational drugs" and "allowing patients with life-threatening rare diseases to take experimental drugs that have not received final approval by the FDA, if the patient consents to do so."

Both of these potential actions are "strongly" supported by more than 60% of the physicians interviewed. For both of these potential actions, less than ten percent think they are bad ideas (Table 10).

One other issue tested proves more controversial. A smaller majority (59%) support the idea of "transferring funds from

TABLE 8

FACTORS INFLUENCING HESITANCIES TO USE INVESTIGATIONAL DRUGS OR DEVICES

	HESITANT						
	Very %	Some-what %	Not Very %	Not at all %	Don't Know/ Refused %	Total Hesitant %	Total No Hesitant %
Information about drug or device is limited.	48	40	3	5	4	88	8
The drug or device is expensive.	13	44	21	18	4	57	39
The drug or device is difficult to obtain.	23	35	22	15	6	58	37
The treatment is not covered by the patients insurance.	17	40	17	19	7	57	36

TABLE 9

FACTORS INFLUENCING PHYSICIANS' INTEREST IN USING INVESTIGATIONAL DRUGS OR DEVICES*

	TOTAL %
Safety/side effects/adverse reactions/ toxicity	26
Research/testing/success & effectiveness/ available information	17
Legalities	10
How it works/what benefits/is it a cure/ what results	10
Cost/availability of drug	6
Education of patients/nature of patient's condition/effect on patient's family	5
Lack of other available treatments	5
Who is sponsoring drug/FDA or DEA approval/ presentation of drug by manufacturer	4
Interest of specialist/availability of consultants/supervision of administration	4
No time for paperwork/bureaucratic red tape	3
Other	6
None	25

(continued)

* RESPONDENTS WERE ALLOWED MORE THAN ONE RESPONSE SO FIGURES MAY ADD TO MORE THAN 100 PERCENT.

TABLE 9

FACTORS INFLUENCING PHYSICIANS' INTEREST IN USING INVESTIGATIONAL DRUGS OR DEVICES

CONTINUED

VERBATIM COMMENTS

"YOU HAVE TO BE VERY SURE THAT YOUR PATIENT UNDERSTANDS WHAT YOU'RE DOING AND WHY AND IS COMFORTABLE WITH IT. YOU NEED THE CAPACITY TO UNDERSTAND POTENTIAL SIDE EFFECTS WHEN POSSIBLE AND BE ABLE TO EXPLAIN THEM TO THE PATIENT."

"CONCERN ABOUT WHETHER IT'S LEGAL OR ETHICAL AND WILL IT INCREASE THE LIABILITY OF LAWSUITS."

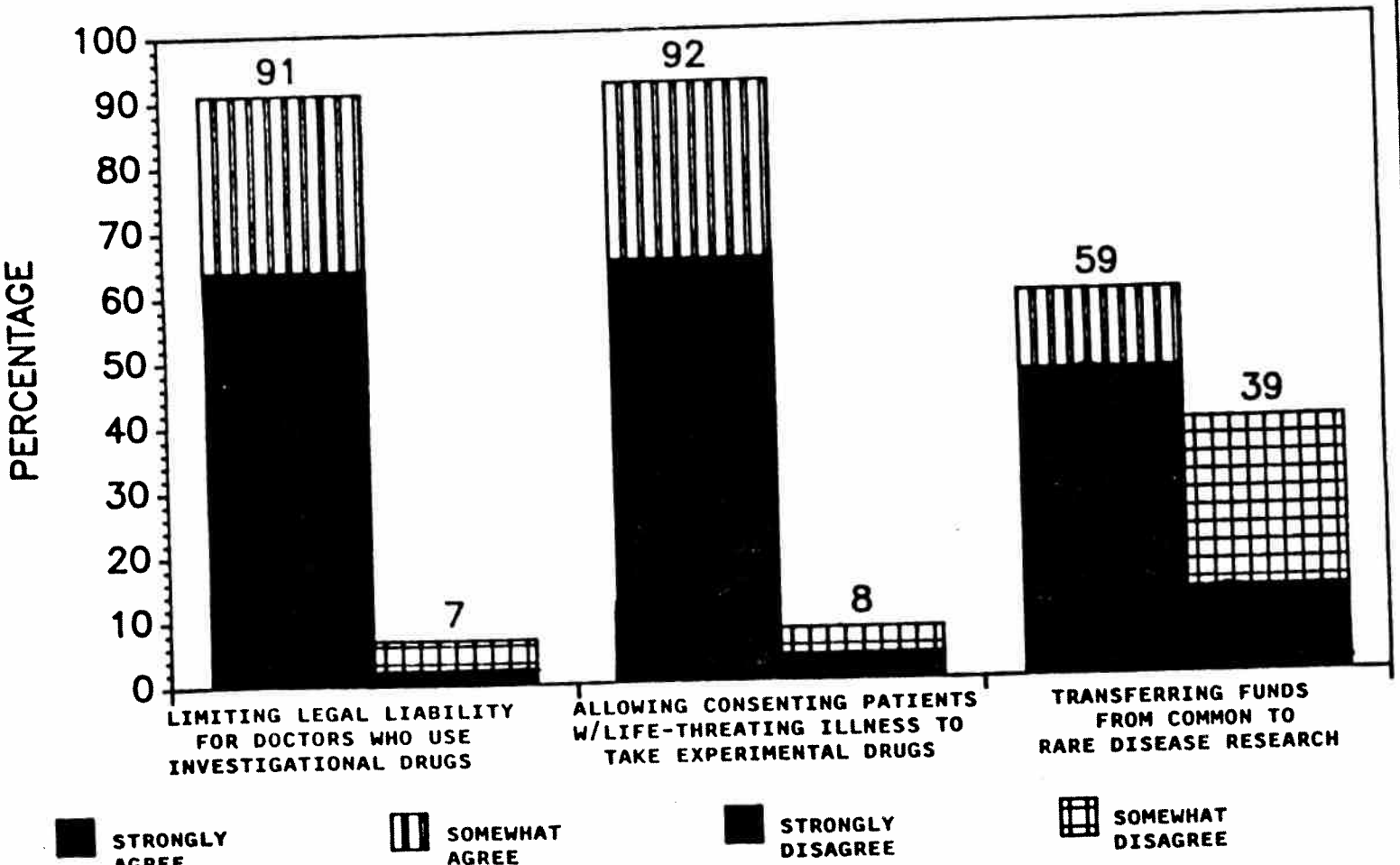
DOCTOR WOULD TURN THEIR PATIENTS WITH RARE DISEASES OVER TO RESEARCHERS WHO WERE INVESTIGATING THE DRUG AND PATIENTS COULD BE PROPERLY SUPERVISED WHILE UNDER THE MEDICATION."

"IF THIS WERE THE ONLY HOPE OF TREATMENT. IF DISEASE WOULD CAUSE FATALITY."

"CONCERNS AS TO THE QUALITY OF LIFE BEFORE AND AFTER DRUG/DEVICE IS USED. THE PROLONGATION OF LIFE AND HOW THIS AFFECTS FAMILY. IMPROVEMENT OF DIAGNOSIS PROCEDURES."

"REMARKABLE SUCCESS WITH THE NEW DRUGS AND WE KNOW THAT ALL DRUGS THAT GO THROUGH THE FDA HAVE BEEN TRIED IN EUROPE."

TABLE 10
LEVELS OF AGREEMENT ON WHETHER VARIOUS ACTIONS
WOULD BE APPROPRIATE WAYS TO SUPPORT RARE DISEASE RESEARCH



n = 247 Physicians who have seen rare disease patients

* No opinions and refusals comprise the balance of the total for 100.

common disease research to rare disease research" (39% oppose). Just one out of ten physicians strongly support this transfer of funds. Opinions do not differ on this issue based on the number of rare disease patients a physician treats. For example, 60% of those who treat 11 or more patients agree with the funds transfer, 59% of those who treat just one patient agree with the change of emphasis.

In response to an open-ended question, the physicians were allowed to volunteer their suggestions on improving the dissemination of information on rare disease and research to physicians. The most common suggestion related to more frequent written informational updates either in journals, newsletters, pamphlets or other specialty publications (Table 11). One out of seven volunteered that some kind of access through a clearinghouse or database should be available. Less than ten percent said that such information should be disseminated directly to patients, through seminars, or general increases in the funds available for research.

TABLE 11

SUGGESTIONS ON HOW TO IMPROVE THE DISSEMINATION OF INFORMATION ON RARE DISEASES AND RESEARCH TO PHYSICIANS*

	TOTAL %
More frequent updates on information/through medical journals/newsletters/pamphlets/ specialty publications, etc.	33
Public database access/central clearinghouse/ catalog of information sources	14
More information should be provided to patients -- mailings, printed information and media/genetic counseling/public information	7
Continuing physician education/seminars/programs	7
Better research/more money for research/better communication of researchers	6
Lists/contacts/consultants	5
Local support groups/specialty groups/regional centers	5
Other	4
None	25

(continued)

* RESPONDENTS WERE ALLOWED MORE THAN ONE RESPONSE SO FIGURES MAY ADD TO MORE THAN 100 PERCENT.

TABLE 11

SUGGESTIONS ON HOW TO IMPROVE THE DISSEMINATION OF INFORMATION ON RARE DISEASES AND RESEARCH TO PHYSICIANS*

CONTINUED

VERBATIM COMMENTS

"IF SOMEONE WOULD MAKE A LIST AND THEN HAVE ONE BODY OF THE NIH TO SPEAK FOR A RARE DISEASE LOBBY TO ASSURE THEM BETTER SUPPORT AND BETTER DISSEMINATION OF INFORMATION. WOULD REPRESENT ALL RARE DISEASE PATIENTS IN ONE GROUP."

"A CENTRAL CLEARINGHOUSE WITH ALL RARE DISEASE INFORMATION THAT'S UPDATED AS NEEDED WOULD ALLEVIATE CALLING TEN DIFFERENT PLACES TO GET INFORMATION."

"THROUGH A SATELLITE INFORMATION SERVICE WHICH COULD EASILY DISSEMINATE INFORMATION BY LISTING THE FEATURES OF THE SERVICE IN THE AMA JOURNAL."

"I'M IN A PECULIAR POSITION. I HAVE TIME TO READ. MANY PRACTICING PHYSICIANS DON'T HAVE THE TIME TO KEEP UP WITH THEIR READING. I IMAGINE THEY GET MOST OF THEIR INFORMATION FROM PHARMACEUTICAL COMPANIES. THAT'S A GOOD SOURCE."

"COMPUTERIZED ACCESS SYSTEM WITH LIGHT PENS THAT ALLOWS DICHOTOMOUS ACCESS: USER-FRIENDLY WITH NEW PROTOCOLS, NEW DRUGS OR LITERATURE THAT CAN BE USED IN TEN MINUTES. ACCESSIBILITY IS THE KEY; AND INTERACTIVE SYSTEM HOOKED INTO A CENTRAL COMPUTER."

"ORGANIZATIONS INVOLVED WITH RARE DISEASES SHOULD DISTRIBUTE UPDATES ON RESEARCH AND PROGRESS ON THEIR PARTICULAR CAUSE TO PHYSICIANS ON A REGULAR BASIS."

LOCAL SOCIETIES MUST PUBLISH MORE ARTICLES ON THIS SUBJECT. MUST FIND A WAY TO MINIMIZE DEAD ENDS. PEOPLE MUST BE INFORMED THAT THEY HAVE SOME PLACE TO GO AND THE DOCTOR MUST HAVE CLEAR CUT INFORMATION SOURCES FOR THE PATIENTS."

"AS IN JAMA FEATURE, "RARE DISEASE OF THE MONTH." ALSO, CONSULTATIVE PROGRAMS IN EACH SPECIALTY."

"SOME RESEARCHERS IN ACADEMIC SETTINGS WHO ARE SECRETIVE ABOUT THEIR RESEARCH SHOULD BE MORE OPEN AND WRITE BRIEF DESCRIPTIONS OF THEIR RESEARCH, SUBMIT THEM TO THE PUBLICITY OFFICE IN LOCAL HOSPITALS AND MONITOR ANY REVISIONS TO INSURE ACCURATE QUOTATIONS."

FINAL REPORT ON THE SURVEY OF PHYSICIANS AND INFORMATION ABOUT RESEARCH ON RARE DISEASES

Prepared for: National Commission on Orphan Diseases

Prepared by: Department of Survey Design and Analysis
Division of Survey and Data Resources
American Medical Association

August, 1988

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I. INTRODUCTION

Background and Purpose

This report describes the results of the Survey of Physicians and Information About Research on Rare Diseases conducted by the American Medical Association for the National Commission on Orphan Diseases (NCOD) during June and July, 1988. Rare (or orphan) diseases have been defined by Congress as any disease or condition affecting fewer than 200,000 persons in the United States. The survey was designed to provide data about the information sources used to diagnose and treat rare disease patients, the use of investigational drugs and devices, attitudes towards possible actions to support rare disease research, and suggestions for improving the dissemination of information about rare diseases. This section of the report describes the survey methodology.

Survey Population

The population for the Survey of Physicians and Information About Research on Rare Diseases was defined as physicians (including osteopaths) who spent 25 percent or more of their professional time in direct patient care. Residents, physicians currently outside the United States, and physicians whose age or current address was unknown were excluded from the population. Information about the survey population was obtained from the AMA Physician Masterfile, the most comprehensive source of data on U.S. physicians including both AMA members and nonmembers. The total eligible population for the survey was 343,856.

Sample Selection

A stratified random sample of 440 physicians was selected for the survey. The eligible population was first divided into six strata defined by age (less than 45 years old/45 years old or older) and county metropolitan status (rural non-Standard Metropolitan Statistical Area (SMSA) counties/ SMSA counties with populations under one million/ SMSA counties with populations of one million or more). An independent subsample was then selected from each stratum, with the size of the subsample proportionate to the size of the stratum population. Table 1 reports the total number of eligible physicians in the six strata and the number of physicians in the six subsamples.

Data Collection

The questionnaire for the survey was developed by NCOD in consultation with other individuals and organizations, including the AMA. The questionnaire was designed to be administered by telephone. However, a separate written version of the

questionnaire was also prepared and mailed to every physician included in the sample before the start of telephone interviewing. The written version of the questionnaire was intended for physicians who did not expect to be available for a telephone interview. These individuals were asked to complete the written version of the questionnaire instead so that a member of their office staff could read the physician's answers to the interviewer over the telephone. A copy of the survey questionnaire is included in Appendix A.

The telephone and written versions of the survey questionnaire both began with a short definition of a rare disease that named four specific examples (Huntington's disease, muscular dystrophy, amyotrophic lateral sclerosis (ALS), and Marfan's syndrome).

Every physician included in the sample was notified about the survey in an advance letter signed by Dr. James H. Sammons, Executive Vice President of the AMA. The advance letter was mailed on May 25, 1988. A copy of the written version of the survey questionnaire was also enclosed. The letter explained that an AMA telephone interviewer would be calling during the next few weeks, and suggested that physicians might wish to complete the written version of the questionnaire in advance of the interview. Physicians who did not expect to be available for an interview were asked to have a member of their office staff read the physician's answers to the interviewer from the written version of the questionnaire. Physicians were also advised that the information they provided would be kept confidential, and would be used to guide program development for NCOD as authorized by the Orphan Drug Amendments of 1985 (Public Law 99-91). A copy of the advance letter is also included in Appendix A.

Telephone interviewing for the survey began on June 2 and ended on July 29, 1988. The telephone interviewers were trained in both general interviewing techniques and the specific procedures for the survey. The actual interviewing was conducted using a CATI ("Computer-Aided Telephone Interviewing") system on weekdays between 8:30 A.M. and 4:30 P.M. Central Time. Physicians were initially called at their office. Interviewers asked to speak directly to the physician unless the physician's receptionist (or "gatekeeper") confirmed that the physician had already completed the written version of the questionnaire and instructed a staff member to provide the answers over the telephone. In the latter case, the interview was conducted with the designated member of the physician's staff. If the physician or designated staff member was unavailable, an appointment was scheduled for a telephone interview at a later time. Supervisory staff monitored interviews throughout the field period in case any problems occurred. Additional copies of the advance letter and the written version of the questionnaire were also mailed to 39 physicians who requested replacement copies after being

contacted by an interviewer.

All 95 physicians who had not been interviewed by July 18 were sent a reminder letter signed by Glenna Crooks, Ph.D., Chairperson of the National Commission on Orphan Diseases. The reminder letter was mailed on July 18. The letter explained the importance of the survey, and again requested physicians to participate. The letter also provided a more detailed definition of rare diseases, as well as 39 examples of rare diseases that were randomly selected from the NCOD alphabetical list of rare diseases. Physicians who received this letter were thus given more information about rare diseases than those who were interviewed before July 18. A copy of the reminder letter is also included in Appendix A.

Data Analysis

The eligible sample for the Survey of Physicians and Information About Research on Rare Diseases was reduced to 393 physicians after the exclusion of 47 physicians who were found to be unlocatable, inactive, retired, no longer involved in direct patient care, or unavailable during the field period. A total of 316 of these physicians were interviewed, yielding a final survey response rate of 80.4 percent (Table 2). Most of the completed interviews (270, or 85 percent) were conducted directly with physicians. The remaining interviews (46, or 15 percent) were conducted with office staff members (primarily secretaries) who read the physician's answers from the written version of the questionnaire. The number of telephone calls per completed interview ranged from 1 to 23 (Table 3). The average number of calls per completed interview was 4.8.

The professional and demographic characteristics of the survey respondents, the eligible sample, and the survey population were compared according to the following nine variables:

- Age
- Sex
- Region
- County metropolitan classification
- Type of practice
- Present employment
- Major professional activity
- Self-designated practice specialty
- Country of medical school graduation

The comparison indicated that the survey respondents were generally representative of both the eligible sample and the survey population (Tables 4 - 12). A separate comparison also indicated that approximately the same proportions of survey respondents, the eligible sample, and the survey population were AMA members.

Section II of this report examines the information sources used by physicians to diagnose and treat rare disease patients. Section III describes the use of investigational drugs and devices by physicians. Section IV considers physician attitudes towards possible actions to support research on rare diseases. Finally, Section V reviews physician suggestions for improving the dissemination of information on rare diseases and research.

TABLE 1: SAMPLING STRATA FOR SURVEY OF PHYSICIANS AND INFORMATION ABOUT RESEARCH ON RARE DISEASES

Sampling Strata	Eligible Population	Survey Sample
Age Less Than 45 Years		
Non-SMSA Counties	23,485	30
SMSA Counties, Under One Million	47,720	61
SMSA Counties, One Million or More	68,994	88
Age 45 Years or Older		
Non-SMSA Counties	33,054	42
SMSA Counties, Under One Million	66,033	85
SMSA Counties, One Million or More	104,570	134
TOTAL	343,856	440

SMSA = Standard Metropolitan Statistical Area

TABLE 2: RESPONSES TO SURVEY OF PHYSICIANS AND INFORMATION ABOUT RESEARCH ON RARE DISEASES

Response Category	TOTAL
Number Sampled	440
Unlocatable	10
Inactive	4
Retired	27
No Longer in Direct Patient Care	2
Unavailable During Field Period	4
Eligible Sample	393
Total Completed Cases	316
Response Rate	80.4 %

TABLE 3: PERCENT DISTRIBUTION OF COMPLETED INTERVIEWS BY NUMBER OF INTERVIEWER TELEPHONE CALLS

Number of Telephone Calls	Percent
1	11.1
2	23.7
3	15.2
4	12.3
5	6.3
6	6.0
7	6.3
8	4.1
9	2.2
10	3.5
11	2.5
12	2.2
13	0.3
14	1.3
15	0.9
16	0.3
19	1.3
23	0.3
TOTAL*	99.8

* Percentage does not total to 100.0 due to rounding.

TABLE 4: PERCENT DISTRIBUTION OF SURVEY POPULATION, ELIGIBLE SAMPLE, AND RESPONDENTS BY AGE

Age	Survey Population	Eligible Sample	Respondents
Less than 35 Years	7.8	3.6	3.8
35 to 44 Years	29.8	36.9	37.3
45 to 54 Years	26.8	29.0	28.8
55 to 64 Years	19.9	21.4	20.9
65 Years and Over	15.6	9.2	9.2
TOTAL*	99.9	100.1	100.0
Number of Cases	343,856	393	316

* Percentages may not total to 100.0 due to rounding.

TABLE 5: PERCENT DISTRIBUTION OF SURVEY POPULATION, ELIGIBLE SAMPLE, AND RESPONDENTS BY SEX

Sex	Survey Population	Eligible Sample	Respondents
Male	88.8	88.5	86.7
Female	11.2	11.5	13.3
TOTAL	100.0	100.0	100.0
Number of Cases	343,856	393	316

TABLE 6: PERCENT DISTRIBUTION OF SURVEY POPULATION, ELIGIBLE SAMPLE, AND RESPONDENTS BY REGION

Region	Survey Population	Eligible Sample	Respondents
Northeast	24.2	24.7	25.0
North Central	21.6	20.4	21.8
South	31.3	29.8	29.4
West	22.9	25.2	23.7
TOTAL*	100.0	100.1	99.9
Number of Cases	343,856	393	316

* Percentages may not total to 100.0 due to rounding.

TABLE 7: PERCENT DISTRIBUTION OF SURVEY POPULATION, ELIGIBLE SAMPLE, AND RESPONDENTS BY COUNTY METROPOLITAN CLASSIFICATION

County Metropolitan Classification	Survey Population	Eligible Sample	Respondents
Nonmetropolitan Counties	16.4	16.5	17.1
SMSA Counties, Under One Million	33.1	33.6	34.8
SMSA Counties, One Million or More	50.5	49.9	48.1
TOTAL	100.0	100.0	100.0
Number of Cases	343,856	393	316

TABLE 8: PERCENT DISTRIBUTION OF SURVEY POPULATION, ELIGIBLE SAMPLE, AND RESPONDENTS BY TYPE OF PRACTICE

Type of Practice	Survey Population	Eligible Sample	Respondents
Direct Patient Care	93.0	95.2	95.3
Administration	1.3	1.8	1.6
Medical Teaching	0.9	0.5	0.6
Medical Research	0.8	0.8	0.9
Postgraduate Training	0.1	0.3	0.3
Semi-Retired	2.8	1.0	0.9
All Other	1.0	0.5	0.3
TOTAL*	99.9	100.1	99.9
Number of Cases	343,856	393	316

* Percentages may not total to 100.0 due to rounding.

TABLE 9: PERCENT DISTRIBUTION OF SURVEY POPULATION, ELIGIBLE SAMPLE, AND RESPONDENTS BY PRESENT EMPLOYMENT

Present Employment	Survey Population	Eligible Sample	Respondents
Solo Practice	37.4	37.4	36.7
Two-Physician Practice	9.9	12.2	12.3
Group Practice	27.0	28.8	28.2
Medical School	4.5	4.3	4.1
Nongovernment Hospital	5.9	6.6	7.3
Government Organization	9.1	6.9	7.0
Other Patient Care	2.6	1.8	2.2
All Other	3.6	2.0	2.2
TOTAL*	100.0	100.0	100.0
Number of Cases	343,856	393	316

TABLE 10: PERCENT DISTRIBUTION OF SURVEY POPULATION, ELIGIBLE SAMPLE, AND RESPONDENTS BY MAJOR PROFESSIONAL ACTIVITY

Major Professional Activity	Survey Population	Eligible Sample	Respondents
Office-Based	81.8	85.0	84.5
Hospital-Based	11.2	10.2	10.8
Administration	1.3	1.8	1.6
Medical Teaching	0.9	0.5	0.6
Research	0.9	1.0	1.3
Other	3.9	1.5	1.3
TOTAL*	100.0	100.0	100.1
Number of Cases	343,856	393	316

* Percentages may not total to 100.0 due to rounding.

TABLE 11: PERCENT DISTRIBUTION OF SURVEY POPULATION, ELIGIBLE SAMPLE, AND RESPONDENTS BY SELF-DESIGNATED PRACTICE SPECIALTY

Self-Designated Practice Specialty	Survey Population	Eligible Sample	Respondents
General/Family Practice	16.0	12.7	12.7
Internal Medicine	20.7	22.1	21.2
Surgery	20.5	17.8	16.1
Obstetrics-Gynecology	6.7	8.7	8.2
Radiology	5.3	6.4	7.9
Pediatrics	6.9	6.6	5.7
Psychiatry	7.8	8.4	9.8
Anesthesiology	4.5	4.3	4.7
Other Specialties	11.6	13.0	13.6
TOTAL*	100.0	100.0	99.9
Number of Cases	343,856	393	316

* Percentages may not total to 100.0 due to rounding.

TABLE 12: PERCENT DISTRIBUTION OF SURVEY POPULATION, ELIGIBLE SAMPLE, AND RESPONDENTS BY COUNTRY OF MEDICAL SCHOOL GRADUATION

Country of Medical School Graduation	Survey Population	Eligible Sample	Respondents
U.S. and Canadian Graduates	78.4	76.8	75.0
Foreign Graduates	21.6	23.2	25.0
TOTAL	100.0	100.0	100.0
Number of Cases	343,856	393	316

II. INFORMATION SOURCES USED BY PHYSICIANS TO DIAGNOSE AND TREAT RARE DISEASE PATIENTS

Physicians Seeing Rare Disease Patients

The distribution of responding physicians by the number of rare disease patients seen during the average year is shown in Table 13. More than 78 percent of the physicians reported seeing at least some rare disease patients. The remaining physicians either saw no rare disease patients (20.3%), or else did not give a definite answer (1.6%). The latter two groups were not asked any further questions. Nearly one-half (49.1%) of all physicians saw less than five rare disease patients per year. Another 17 percent saw from five to ten rare disease patients per year. Only 12 percent of physicians reported seeing more than ten rare disease patients per year.

Institutional Information Sources

All physicians who saw at least some rare disease patients were asked how frequently they used 12 different institutional information sources to help diagnose or treat their own rare disease patients. The results for each institution are reported in Table 14. Physicians were most likely to have made some use of pharmaceutical companies. They were least likely to have used the National Institute of Drug Abuse, the National Institute on Alcohol Abuse and Alcoholism, or information clearinghouses.

Types of Information

All physicians who saw at least some rare disease patients were also asked if they ever needed but were unable to find seven different types of information to help diagnose or treat their own rare disease patients. The results for each type of information are reported in Table 15. Physicians were most likely to have needed but not found printed information to give to patients. They were least likely to have needed but not found information on whether treatment was available.

Voluntary Support Groups

All physicians who saw at least some rare disease patients were asked whether they thought there was an adequate number of voluntary support groups for rare disease patients in their own community and in the nation. The results for the physician's own community are reported in Table 16. Nearly 49 percent of physicians thought there was an adequate number of voluntary support groups in their own community. However, 28 percent thought that the number of support groups was inadequate, and 23 percent did not know whether the number was adequate or not.

The results for the national level are reported in Table 17. More than 44 percent of physicians thought there was an adequate number of voluntary support groups for rare disease patients at the national level. However, 18 percent thought that the number of national level groups was inadequate, and 36 percent did not know whether the number was adequate or not.

Those physicians who thought that the number of voluntary support groups was not adequate at either the community or national levels were also asked whether the lack of support groups was a problem. The results for this question are reported in Table 18. More than 76 percent of the 84 physicians who thought that the number of support groups was not adequate at either the community or national levels also thought that the lack of support groups was a very serious or somewhat serious problem.

TABLE 13: REPORTED NUMBER OF RARE DISEASE PATIENTS SEEN BY PHYSICIANS

Number of Rare Disease Patients Seen Each year on Average	Percent
None	20.3
At Least Some	78.2
Less than 1	7.6
1	15.2
2	12.0
3	10.1
4	4.1
5	7.6
6	3.5
7	0.6
8	0.6
9	0.6
10	4.4
11 to 20	2.8
21 to 30	3.5
31 to 50	1.9
51 to 100	1.9
More than 100	1.6
Don't Know	1.3
Refused	0.3
TOTAL*	100.1
Number of Respondents	316

* Percentage does not total to 100.0 due to rounding.

TABLE 14: PERCENT OF PHSICIANS WHO REPORTED USING DIFFERENT INSTITUTIONAL INFORMATION SOURCES TO HELP IN DIAGNOSING OR TREATING RARE DISEASE PATIENTS

Information Source	Percent Using Source: Very Often	Somewhat Often	Occasionally	Never	Don't Know	Total
Centers for Disease Control	4.5	4.9	32.0	57.5	1.2	100.1
Food and Drug Administration	0.8	2.4	20.6	75.7	0.4	99.9
Veterans Administration	1.2	1.6	12.6	83.8	0.8	100.0
National Institute of Mental Health	0.4	3.2	11.7	84.2	0.4	99.9
National Institute of Drug Abuse	1.2	0.8	9.3	88.3	0.4	100.0
National Institute on Alcohol Abuse and Alcoholism	0.8	1.6	9.3	87.9	0.4	100.0
National Library of Medicine	5.7	6.1	26.3	60.7	1.2	100.0
National Institutes of Health	2.8	6.5	30.4	59.5	0.8	100.0
Pharmaceutical Companies	5.7	8.1	32.4	53.4	0.4	100.0
Rare Disease Voluntary Organizations	1.6	3.2	26.7	67.6	0.8	99.9
Telephone Hotlines or 800 Numbers	2.0	2.0	20.6	74.9	0.4	99.9
Information Clearinghouses	0.8	1.2	9.7	86.6	1.6	99.9

* Percentages may not total to 100.0 due to rounding.
N= 247

TABLE 15: PERCENT OF PHYSICIANS WHO EVER NEEDED BUT WERE UNABLE TO FIND DIFFERENT TYPES OF INFORMATION FOR THEIR RARE DISEASE PATIENTS

Type of Information	Ever Needed But Were Unable to Find: Yes	No	Don't Know	Refused	Total
Information on Whether Treatment Was Available	20.6	75.3	2.8	1.2	99.9
Information on Location of Treatment	23.5	72.1	2.8	1.6	100.0
Name or Address of Support Groups	35.2	57.9	4.9	2.0	100.0
Printed Information to Give to Patients	41.7	51.0	4.9	2.4	100.0
Name or Address of Specialists Treating Rare Diseases	27.1	70.0	1.6	1.2	99.9
Name or Address of Researchers Studying Rare Diseases	29.6	64.8	4.0	1.6	100.0
Information Summarizing Ongoing Research	33.2	62.3	2.8	1.6	99.9

* Percentages may not total to 100.0 due to rounding.
N=247

TABLE 16: PERCENT OF PHYSICIANS WHO THOUGHT THERE WAS AN ADEQUATE NUMBER OF VOLUNTARY SUPPORT GROUPS FOR RARE DISEASE PATIENTS IN THEIR COMMUNITY

Adequate Number of Voluntary Support Groups in Community	Percent
Yes	48.6
No	27.9
Don't Know	22.7
Refused	0.8
TOTAL	100.0
Number of Respondents	247

TABLE 17: PERCENT OF PHYSICIANS WHO THOUGHT THERE WAS AN ADEQUATE NUMBER OF VOLUNTARY SUPPORT GROUPS FOR RARE DISEASE PATIENTS AT THE NATIONAL LEVEL

Adequate Number of Voluntary Support Groups at National Level	Percent
Yes	44.5
No	18.2
Don't Know	36.4
Refused	0.8
TOTAL*	99.9
Number of Respondents	247

* Percentage does not total to 100.0 due to rounding.

TABLE 18: PERCENT OF PHYSICIANS WHO THOUGHT THAT THE LACK OF VOLUNTARY SUPPORT GROUPS FOR RARE DISEASE PATIENTS WAS A PROBLEM*

Is Lack of Voluntary Support Groups a Problem	Percent
Very Serious Problem	14.3
Somewhat Serious Problem	61.9
Not a Very Serious Problem	20.2
Not a Problem at All	1.2
Don't Know	2.4
Refused	0.0
TOTAL	100.0
Number of Respondents	84

* Only those physicians who thought that the number of voluntary support groups for rare disease patients was inadequate at either the community or national levels were asked this question.

III. PHYSICIAN USE OF INVESTIGATIONAL DRUGS AND DEVICES

Experience With Investigational Drugs and Devices

The telephone and written versions of the survey questionnaire defined investigational drugs and devices as dru gs or devices that were still under research and not yet approved by the FDA for sale to the general public. All physicians who saw at least some rare disease patients were asked whether they had ever used an investigational drug or device. The results of this question are reported in Table 19. More than 39 percent of responding physicians had used an investigational drug or device.

The 97 physicians who had used an investigational drug or device were asked whether they would use one again. The results of this question are reported in Table 20. Nearly 92 percent of these physicians reported that they would use an investigational drug or device again.

The remaining 150 physicians were asked whether they had ever considered using an investigational drug or device. The results of this question are reported in Table 21. Only 27 percent of the physicians who had not used (or did not know if they had used) an investigational drug or device reported that they had ever considered using such a drug or device.

Factors Considered Before Using Investigational Drugs or Devices

All physicians who saw at least some rare disease patients were also asked whether four different factors would make them hesitant to use an investigational drug or device if no other treatment were available. The results for each factor are reported in Table 22. Nearly 48 percent of the responding physicians reported that they would be very hesitant and another 40 percent of physicians would be somewhat hesitant to use an investigational drug or device if information about the drug or device was limited. In contrast, physicians were less likely to be very hesitant to use such a drug or device if it was expensive (13.0%), if it was difficult to obtain (22.7%), or if the treatment was not covered by the patient's insurance (17.4%).

All physicians who saw at least some rare disease patients were then asked whether any other factors had influenced or might influence their interest in using an investigational drug or device. A total of 192 physicians (or 78 percent) provided detailed answers. These answers are listed verbatim in Appendix C.

TABLE 19: PERCENT OF PHYSICIANS WHO HAVE EVER USED AN INVESTIGATIONAL DRUG OR DEVICE

Ever Used an Investigational Drug or Device	Percent
Yes	39.3
No	59.1
Don't Know	0.8
Refused	0.8
TOTAL	100.0
Number of Respondents	247

TABLE 20: PERCENT OF PHYSICIANS WHO HAVE USED AN INVESTIGATIONAL DRUG OR DEVICE WHO WOULD USE ONE AGAIN

Would Use an Investigational Drug or Device Again	Percent
Yes	91.8
No	8.2
Don't Know	0.0
Refused	0.0
TOTAL	100.0
Number of Respondents	97

TABLE 21: PERCENT OF PHYSICIANS WHO HAVE NOT USED AN INVESTIGATIONAL DRUG OR DEVICE WHO EVER CONSIDERED USING ONE

Ever Considered Using an Investigational Drug or Device	Percent
Yes	26.7
No	68.7
Don't Know	3.3
Refused	1.3
TOTAL	100.0
Number of Respondents	150

TABLE 22: PERCENT OF PHYSICIANS WHO THOUGHT THAT DIFFERENT FACTORS WOULD MAKE THEM HESITANT TO USE AN INVESTIGATIONAL DRUG OR DEVICE IF NO OTHER TREATMENT WERE AVAILABLE

Factor	Very Hesitant	Somewhat Hesitant	Not Very Hesitant	Not at all Hesitant	Don't Know	Refused	Total
Drug or Device is Expensive	13.0	44.1	20.6	18.2	0.8	3.2	99.9
Information About Drug or Device is Limited	47.8	39.7	3.2	4.9	1.2	3.2	100.0
Drug or Device is Difficult to Obtain	22.7	35.2	22.3	14.6	1.6	3.6	100.0
Treatment is Not Covered by Patient's Insurance	17.4	40.1	17.4	18.6	2.8	3.6	99.9

* Percentages may not total to 100.0 due to rounding.

N=247

IV. PHYSICIAN ATTITUDES TOWARDS POSSIBLE ACTIONS TO SUPPORT RESEARCH ON RARE DISEASES

All physicians who saw at least some rare disease patients were asked whether they agreed that three different proposals would be appropriate ways to help support research on rare diseases. The results for each proposal are reported in Table 23. More than 90 percent of responding physicians strongly agreed or somewhat agreed that limiting the legal liability for doctors using investigational drugs, and allowing patients with life-threatening rare diseases to take experimental drugs not yet approved by the FDA would both be appropriate ways to support research on rare diseases. In contrast, 59 percent of responding physicians strongly agreed or somewhat agreed that transferring some funds from common disease research to rare disease research would be an appropriate way to help support research on rare diseases.

IV. PHYSICIAN SUGGESTIONS FOR IMPROVING THE DISSEMINATION OF INFORMATION ON RARE DISEASES AND RESEARCH

Finally, all physicians who saw at least some rare disease patients were asked what suggestions they had for improving the dissemination of information on rare diseases and research to physicians. A total of 181 physicians (or 73 percent) provided detailed answers. These answers are listed verbatim in Appendix D.

TABLE 23: PERCENT OF PHYSICIANS WHO AGREED THAT DIFFERENT PROPOSALS WOULD BE AN APPROPRIATE WAY TO HELP SUPPORT RESEARCH ON RARE DISEASES

PROPOSAL	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Don't Know	Total
Transfer Funds From Common Disease Research to Rare Disease Research	12.1	47.0	27.1	12.1	0.8	99.9
Limit Legal Liability For Doctors Using Investigational Drugs	64.4	27.1	4.9	1.6	1.2	100
Allow Patients With Life-Threatening Rare Diseases to Take Experimental Drugs Not Approved by FDA	64.8	26.7	3.6	3.6	0.4	99.9

* Percentages may not total to 100.0 due to rounding.
N=247

APPENDIX A: ADVANCE LETTER, REMINDER LETTER, AND QUESTIONNAIRE

AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET • CHICAGO, ILLINOIS 60610 • PHONE (312) 645-5000 • Fax (312) 645-4184 • Telex 28-0248

JAMES H. SAMMONS, M.D.
Executive Vice President
(645-4300)

May 25, 1988

Dear Doctor:

The AMA and the National Commission on Orphan Diseases are conducting a study to determine physicians' opinions on some of the issues involved in the diagnosis and treatment of orphan diseases.

An interviewer from the AMA will be contacting you by telephone sometime during the next few weeks for a brief interview. Your participation is voluntary. We hope that you will cooperate and alert your office staff that we will be calling, and that you wish to participate in the study. The information you provide will be kept confidential and will not be disclosed to anyone but the researcher conducting the study, or as required by law. Data will be reported only in aggregate form, and will be used to guide program development for the National Commission on Orphan Diseases as authorized by the Orphan Drug Amendments of 1985 (Public Law 99-91).

For your information, we are enclosing a copy of the study questionnaire which you might wish to complete in advance of our telephone call. If you will not be available to participate in the telephone interview, you can ask a member of your office staff to read your answers to our interviewer.

If you have any questions about this study, please do not hesitate to contact Paul D. Frenzen, Ph.D., in AMA's Department of Survey Design and Analysis (312/645-5272).

Thank you very much for your cooperation.

Sincerely,

James H. Sammons, M.D.

Enclosure

DEPARTMENT OF HEALTH & HUMAN SERVICES
NATIONAL COMMISSION ON ORPHAN DISEASES

Public Health Service

5600 Fishers Lane, Room 1-20, Park Bldg., 301-443-6156

Rockville MD 20857

July 11, 1988

Dear Doctor:

You have been selected as a respondent for a survey of physicians' opinions about the diagnosis and treatment of orphan diseases. Orphan diseases are rare diseases with a prevalence of 200,000 cases or fewer.

We may not have been able to reach you by phone. Or, we may have contacted you by phone and terminated the interview after determining that you had not seen any patient with a rare disease in the last year. In this case, we think that we may not have adequately explained what an orphan or rare disease is.

In either case, we ask you to reconsider this matter for a moment. Your participation in this 10-minute telephone conversation is of great importance to us, and more importantly, to the 10 to 20 million people who suffer from one of the 5,000 or so rare diseases. The Commission will provide recommendations to the U.S. Congress that may include recommendations concerning information needs of physicians for diagnosis and treatment of rare diseases.

Rare diseases include most neurological disorders, all cancers other than lung, breast and colon, most metabolic diseases, blood diseases, most disabling skin diseases, and almost all genetic disorders. A random sampl of orphan diseases in the U.S. is printed on the reverse side of this letter. If you are in doubt about the rarity of diseases of patients you have see, you may contact Dr. Stephen Groft or Ms. Henrietta Hyatt-Knorr o our staff at 301-443-6156.

An interviewer from the American Medical Association will telephone your office within the next two weeks to conduct the interview. If you desire, you can call the American Medical Association interviewing staff now at 312-645-5174 to conduct the interview at this time or to designate a time for your interview. Interviewer staff at this number will be available or weekdays, 8:30 a.m. to 4:30 p.m. Central Daylight Time.

You are very important to the Commission. The Commission hopes that you will take the time to participate in this survey. Our survey is voluntary but it is essential that we have a complete questionnaire for everyone who is selected for the survey. Otherwise, important information from physicians involved in patient care will be missed.

Thank you for your help and cooperation.

Sincerely,

Glenna Crooks, Ph.D.

Glenna Crooks, Ph.D.
Chairperson

NOTE TO REVIEWERS: The final questionnaire format has not been completed.

April 11, 1988

PHYSICIAN SURVEY

Hello, my name is_____. I am calling for the American Medical Association. May I speak with [NAME ON LIST]? We recently sent you a letter requesting your participation in a survey. Do you remember receiving the letter?

If YES, GO TO: Is this a good time for the interview?

If NO, SAY: We are conducting a study concerning information about research on rare diseases. The study is conducted on behalf of the National Commission on Orphan Diseases. The Commission is authorized by the Orphan Drug Amendments of 1985 (Public Law 99-91). A rare disease is defined as any disease or condition that affects fewer than 200,000 persons in the United States. There are about 5,000 rare diseases in the United States, and they include [READ LIST OF EXAMPLES WITH RANDOM START].

Huntington's disease
Muscular dystrophy
ALS (Lou Gehrig's disease)
Neurofibromatosis

Your participation in this survey is very important to us. Participation is voluntary, and all your answers will be kept confidential.

Is this a good time for the interview?

IF NO: Would you perhaps fill out the questionnaire we sent you, and have someone in your office contact us and read your responses?

I would like you to think for a moment about patients with rare diseases that you have treated whose symptoms were perhaps unfamiliar and difficult to diagnose, and about the information sources that were useful in the diagnosis and/or treatment.

[IF PHYSICIAN VOLUNTEERS THAT HE/SHE NEVER TREATS PATIENTS WITH RARE DISEASES THANK HIM/HER AND CONCLUDE INTERVIEW].

1. To what extent have you used the following sources of information for the diagnosis and/or treatment of such patients? [READ LIST WITH RANDOM STARTS].

The first source is_____. Would you say that you use this source

Very Often Often Occasionally Never Don't Know.

a. The National Institutes of Health (NIH).
b. The Centers for Disease Control (CDC).
c. The Food and Drug Administration (FDA).
d. The Veterans Administration (VA).
e. The National Institute of Mental Health (NIMH).
f. The National Institute on Drug Abuse (NIDA).
g. The National Institute on Alcohol Abuse and Alcoholism (NIAAA).
h. The National Library of Medicine.
i. Pharmaceutical Companies.
j. Rare Disease Voluntary Organizations.
k. Hotlines or 800 Telephone Numbers.
l. Information Clearinghouses.

Now, voluntary organizations can be a source of information about rare diseases.

2. In your experience, is there an adequate number of voluntary support groups for patients with rare diseases?

2a. IF NO: Do you think that the lack of support groups for patients with rare diseases is a very serious problem, a somewhat serious problem, not a serious problem, or no problem at all?

3. Have you ever needed, but were unable to find, the following kinds of information for the diagnosis or treatment of patients with rare diseases?

a. Information on whether treatment is available.

b. Location(s) of treatment.

c. Name and address of support group(s).

d. Printed information for patients.

e. Names and addresses of specialists treating the disease.

f. Names and addresses of researchers specializing in disease.

g. Summaries of ongoing research.

4. What suggestions do you have on how to improve the dissemination of information on rare diseases and research to physicians? _____

_____

_____

Now I would like you to think about utilization of investigational drugs or devices that are being tested in ongoing research, and how this may have been helpful when diagnosing or treating patients with rare diseases.

5. Have you ever utilized an investigational drug or device, that is, a drug or device that is still in research status and not yet approved by the FDA for sale to the general public?

5a. IF YES: Based on your experience, would you use an investigational drug or device again?

5b. IF NO: Have you ever considered using an investigational drug or device?

6. Now I will read a list of factors that you may consider before using an investigational drug or device. Please tell me for each factor, whether you would be very hesitant, somewhat hesitant, not very hesitant, or not hesitant at all to use an investigational drug or device for this reason if no other treatment were available.

   a The drug or device is expensive to obtain.

   b. Information about the drug or device is limited.

   c. The drug or device is difficult to obtain.

   d. The treatment is not covered by the patient's insurance.

7. Are there other factors that have influenced your interest in using an investigational drug or device?

7a. IF YES: What are the other factors?

8. Now, I will read several possible actions to further research on rare diseases. Please tell me whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree that each action would help research efforts on rare diseases.

a. Transfer some funds from common disease research to rare disease research.

b. Limiting the legal liability for doctors who use investigational drugs.

c. Allowing patients with life threatening, rare diseases to take experimental drugs that have not received final approval by the FDA if the patient consents to do so.

This concludes our study. Your participation is greatly appreciated. Thank you very much.

APPENDIX B: ALPHABETICAL LIST OF RARE DISEASES

RANDOM SAMPLE OF ORPHAN DISEASES IN THE U.S.

Aplastic anemia
Autism
Sleep apnea
Bulimia
Cholera
Chronic Epstein-Barr virus
Ectodermal dysplasias
Friedreich's ataxia
Fructose intolerance, hereditary
Giant cell arteritis
Glycogen storage disease
Guillaine-Barre' syndrome
Hemochromatosis
Huntington's disease
Interstitial cystitis
Irritable bowel disease
Legionnaire's disease
Lou Gehrig's disease
Lupus erythematosus
Malignant hyperthermia
Marfan's syndrome
Meniere's disease
Multiple sclerosis
Muscular dystrophy
Narcolepsy
Neurofibromatosis
Parkinson's disease
Porphyria
Prader Willi syndrome
Psoriatic arthritis
Reye 's syndrome
Rubella
Sarcoidosis
Sickle cell disease
Stiff man syndrome
Tourette syndrome
Turner's syndrome
Von Willebrand's disease
Wilson's disease

APPENDIX C: OTHER FACTORS INFLUENCING PHYSICIAN INTEREST IN USING INVESTIGATIONAL DRUGS OR DEVICES

APPENDIX C: OTHER FACTORS INFLUENCING PHYSICIAN INTEREST IN USING INVESTIGATIONAL DRUGS OR DEVICES

I use them where I think it's indicated; period.

We are a preventive health facility.

Time considerations.

I don't use those. I stick with those already approved. I usually stay away from investigational drugs or devices.

Only the legal liability.

Primarily the patient's ability to understand the nature of investigational drugs and the ramifications of using unknown compounds.

The amount of paperwork involved.

Depends on how effective it is. Effectiveness is the key.

Reduction in litigation liability.

If I felt that the benefits out-weighed the serious consequences of the disease or I knew of an ongoing investigational study by the government or other agencies. Those things would influence me.

I don't think there's anything else. That pretty much covers it.

Success to date; side effects.

What developmental stage is the drug in: phase 1,2,3, etc. What amount of information can be gathered on drug.

Malpractice suits.

Being pathologists, we do not treat patients, therefore, we would not be in a position to be influenced.

Medical reports and responsible peer-reviewed medical journals.

I think in general I'm pretty conservative about drugs. I don't know. I'm reluctant to subject my patients to untried drugs.

The hassle of dealing with paperwork to get that done would make me somewhat hesitant.

I suspect in the practice of pediatrics, we're under the supervision of sub-specialists who control the use of investigational drugs.

Recent articles.

If existing treatments are not satisfactory, that would be the prime motivation for using an investigational drug.

How sick the patient was and how much I could learn about the drug.

Whether it's been of any benefit in a controlled study.

Patient's attitude - if they're the type of person I could explain potential benefits/risks to. Their insurance - if they could afford it or if someone else could. How much paperwork was required to administer it.

Resources for problems with the investigational drug or device.

My age precludes my using investigational drugs.

I never use investigational drugs of any kind. That's it!

Available information and tests.

Maybe a bulletin every six months summarizing findings.

Those sound like the main ones to me.

Difference in paperwork. I'm always concerned about the medical and legal aspects, so I refer them to the University (in Portland, OR).

No comment. I have no strong opinions based on my clinical experience.

Other than what was mentioned before, I can't think of anything.

If I didn't know whether it was available. Lack of information about the drug or device.

Research that would be done and approved by the FDA.

Side effects versus ability to help patient.

You already said availability....so I'd say if the patient can afford it. That seems to be the biggest problem.

That the available data suggests that it is safe and effective to use. By data, I mean experience or sufficient clinical trials.

Availability of a consultant to discuss drug if I encountered problems.

The primary investigator. Whoever is in charge of the research for the drug or device.

Knowledge of the device's results.

Interest of the specialist in that particular disease who would supervise my administration of the treatment.

Any side effects from the drugs that may be evident even with ongoing research.

Mostly whether I thought it would work.

None for me. I've never had the chance to use one.

Possible side effects of an investigational drug. I want to be sure that the research is properly done and checked on.

They should be used and tested at a local center and results given out to local physicians to see how interested they are.

Who is sponsoring the study of the drug or device.

Probably nothing. If I've come to that point, I've tried conventional ways.

I can't think of any others.

Elaborate protocols associated with the use of the treatment.

It's to me a question of the severity of the disease versus the potential benefits that would be a major influence.

Obviously the ease with which it's tolerated. Does it cause additional harm to the organism?

The proximity of the specialists who have information on the drug.

I have no comment on that. I'm not involved in the treatment, just diagnosis.

F.D.A approval and legal liability.

I have no interest in this kind of research.

Primary thing: safety.

How carefully researched is the drug/device and how much more do we need to know of its side effects.

Malpractice.

Lawsuits.

Just the lack of animal studies.

Potential adverse reactions.

If the evidence accumulated to date has shown it to be effective. But I refer all my patients to Washington U. or the Dept. of Dermatology and they are the ones to issue the investigational drugs. I don't personally use them.

Lack of time for book and paper work.

I would have to have a patient under my care. I'd need to see what the data is on safety, expense, and cost-benefit ratio.

Difficulties dealing with bureaucrats, paperwork--everything needs to be documented.

Malpractice.

Medical, legal considerations.

Liability.

There are no other factors.

Difficulty in obtaining it. Paperwork. Protocol.

Cost of treatment for a year is high; multiple side effects; measuring limits of how and when the drug is used. The frequency of blood lab tests required and frequency of visits required.

Amount of information; condition of patient; availability to patient.

Immediate mortality of the disease.

Medical-legal risks; potential disaster.

Effectiveness to date; side effects; morbidity.

I have no interest in investigational drugs because of my other obligations.

Legal ramifications. I would not use because I am not in research.

I would never do it as a primary care physician.

Welfare of the patient is the only factor.

Safety factors, especially concerning children.

If it will help the patient.

A study group should be formed.

Liability would be the only other factor I can think of.

The only other factor I can think of would be the safety factor.

If other people I know have tried it.

If the disease is life-threatening or severely impairs the quality of life.

Doctors could turn their patients with rare diseases over to researchers who were investigating the drug and, therefore, the patients could be properly supervised while under the medication.

Risk benefit ratio.

I think the ability to get information from others also involved in using the drug or device. Also, potential legal liability; to make sure there are no other choices, and the patient is clear and I'm clear.

Lack of any currently available treatments would influence doctors to use investigational drugs.

If this were the only hope of treatment, or the disease would cause a fatal circumstance.

If I was in a research project, it would be conceivable that I'd use them. I've not been asked to participate.

If there was no other available treatment, I would use an investigational drug or device

You have to be very sure that your patient understands what you're doing and why and is comfortable with it. You need the capacity to understand potential side effects when possible and be able to explain them to the patient.

The nature of the patient's condition.

The question of safety versus benefits.

Lack of exposure.

The risk and adverse effects to the patients.

Only it's need or demand.

I do not use them.

Whether or not you'd get sued if things go wrong. I'd have to work with a colleague who knows more than I do about the drug. If no one like that was around I wouldn't do it.

Well, with living in California, the malpractice suits are a huge problem for the physician.

The only other factor would be malpractice suits.

Research that would show the most adverse, deleterious effects.

The risk-benefit ratio must be weighed.

Potential toxicity for the patient; the distance that they need to travel for this drug; family considerations as to how long they must be away from their families.

The need of wanting to contribute to research and possible cures.

Toxic side-effects prevent me from being influenced to use devices.

The legal factors from a physician's standpoint.

Faith in the researchers who are advocating it's use.

Concern about whether it's legal or ethical; and will it increase my liability in a lawsuit.

The information showing that the drug is beneficial, with limited risk to the patient.

Concerns as to the quality of life before and after the drug/device is used. The prolongation of life and how this affects the family. Improvement of diagnosis procedures.

Availability or qualifying for permission to use them.

It's manner of presentation from those who developed the drug.

If it can relieve symptoms and possibly cure.

If it was part of an experimental program, I would consider being involved in it.

Consultations with other doctors who have expert knowledge or who have used the drug.

Low-risk; small expense; lack of negative side-effects; ease of access; and lack of paperwork. Most investigational things have to do with controlled substances which requires a lot of paperwork, which requires a full time person to do.

How much research has gone into the device/drug; safety ramifications; who else is using the drug/device at that given time.

Liability for the doctor.

How the drug provides benefits to the patient and how it would effectively contribute to the quality of their life

Get the medical-legal problems cleared up in this country.

Being a radiologist there have not been opportunities to use such a device.

The use of devices/drugs would be considered after extensive consultation with experts.

Credentials of the biomedical researchers and doctors using these drugs.

What red tape is involved in getting device to the patient.

Knowledge and availability of drug.

Any side-effects involved in the use of the drug.

I need to see the patient and diagnose him before I can be influenced to use an investigational drug or device.

Malpractice suits; I would not take a state aid patient.

Sending information.

The availability of investigational devices.

The availability of information, availability of the drug, red tape, and liability.

Where the drug is being investigated and the reputation of the investigator. For example, a university versus individual, U.S. versus non-U.S. I prefer in a university and the U.S. The only factors would be any legal aspects with using that type of drug.

Under no circumstances would I ever use an investigational drug or device. I will use a drug or device after it has been approved and on the market for at least 10 years.

Malpractice suits are the biggest issue for me.

A demonstration of safety and effectiveness.

Target the physicians involved.

I think one way is to make it easier. Do away with all those mounds of paperwork and civil servants.

Adverse risk-reward ratio.

Safety is an important factor.

A life-saving treatment that cannot be done otherwise.

The great risk involved.

Legal advice. Fit the bio practice or not.

Safety.

My main concern is liability to me.

The FDA approval and DEA approval to use drugs in appropriate cases.

Patient population; time constraints.

Good research data to support the use of an investigational drug.

Cost and access, availability of information.

Medical liability. Patient's response.

I would want to know about safety. Health benefits and financial costs.

The safety of the drug or device.

The cost of the drug/device and it's long term results.

I would like to use it if it was supported in other countries by studies and clinical experience.

Have the confidence of patients, discuss legal issues and document same. Get a second opinion. Discuss pros and cons in detail.

Safety. Side effects.

Lack of data on the device or drug.

If there is no other treatment.

Remarkable success with the new drugs and we know that all drugs that go through the FDA have been tried in Europe.

Safety factor.

No other factors.

Side effects would be an important factor. Unknown results may occur from using medication.

The drug has to be proven effective before I use it.

If no other treatment is available to the patient.

Availability of drugs. Accessibility of other physicians to compare results.

The side effect profile; the effectiveness profile.

Side effects. Evaluation of availability to patients; investigation of same.

There is a medical-legal problem, you can't be able to justify using the drug.

All the factors that you have just mentioned, the availability of the drug, the cost and insurance coverage, etc.

If it's really beneficial to the patient and the drug has good results, then I would try it.

Approval by the FDA.

If the drug proves to be effective, I would not be hesitant to use it.

Not knowing what it's side affects will be.

Availability and ease of distributing it.

If it is an improvement of medical care, I might consider it.

Like I said, our set-up at the hospital doesn't warrant using investigational drugs.

Non-availability of other accepted modalities.

Reliable report of it's success and absence of serious risk.

Sufficient experience with it; sufficient reports from colleagues; malpractice.

Regardless of the lack of data, I would use the drug if it's going to help. What the level of toxicity is.

The kind of research that is available to analyze.

Depends on the patient's condition.

I would look at the benefits versus the potential side effects.

Having subjective results for similar circumstances.

Irreversible side-effects; genetic effects.

If the drug has side effects then it would make me very hesitant to use it. You can't control the side effects.

Whether or not established treatment is available, and whether the patient can tolerate the treatment, that is, the toxicity and allergy.

Side effects; that is my primary concern.

APPENDIX D: SUGGESTIONS FOR IMPROVING THE DISSEMINATION OF INFORMATION ON RARE DISEASES TO PHYSICIANS

APPENDIX D: SUGGESTIONS FOR IMPROVING THE DISSEMINATION OF INFORMATION ON RARE DISEASES TO PHYSICIANS

Through JAMA, New England Journal, and through FDA bulletins.

It should be done on a physician specialty basis, whether local, regional or national. Also, pharmaceutical companies should be given more support with reference to investigational drugs.

I think the best thing to do is use the National Library of Medicine computer search service. Each orphan disease would have it's own library that doctors can access, with a panel of people responsible for updating the information.

I think it would be helpful if some organization had a set of compendiums with regular updates in a hospital library, with the most recent information on the research.

Don't know off-hand. We have a specialist at the University so that hasn't been too much of a problem.

I do believe we need more research regarding these rare diseases with dissemination of information about the results, particularly the results of effective treatment, via existing educational channels.

More articles on rare diseases should be included in FDA bulletins and in JAMA.

No opinion on that. I don't interface with patients in that manner.

Make sure information is in telephone books.

I have no complaints. With congenital heart disease, we have medical journals, the Heart Assn. recommendations, and the NHLB. We don't need anything else.

I'm in a peculiar position where I have time to read. Many practicing physicians don't have the time to read. I imagine they get most of their information from pharmaceutical companies and that's a good source.

Voluntary organizations should begin personal contact with patients and physicians and maintain patient and physician advocates. They could help doctors get investigational drugs and information.

Through medical journals. I suspect primary care physicians use sub-specialists appropriately. Through continuing medical education.

The best way is to put the research in the appropriate medical journals.

(1) A central information center on rare diseases and their courses. (2) A list of facilities anywhere in the world treating these diseases. (3) Some help in funding to get the patient there if necessary.

Every sub-specialty has its own journal. I think a regular report, on a bi-yearly basis on treatment available experimentally showing the modalities of the disease, would be my approach.

You have to depend on your own intellectual curiosity to find the information.

Distribution of phone numbers and literature to medical offices and hospitals.

No, I haven't. That's one of the problems I'm having with research that I have done.

It might be a good idea to put out informational mailers on a regular basis.

Well, bulletins sent to physicians and publication in journals.

Don't really have any other than what you've mentioned before.

Well, I think that those educational channels directed to physicians are the best way.

I think the best way are hotlines. They're an excellent means of getting information.

No suggestions. My specialty is ophthalmology and I think it's more unusual for primary physicians to see those types of patients.

Well, the only thing I can think of is public information and more support groups and good public relations.

A monthly newsletter spot-lighting a different rare disease each month.

Information should be provided in specialty bulletins and journals which are really the main center of information for the physicians. That's all I can think of.

I don't know. Most practitioners are not real interested. Residents are very interested. But it's so specialized, they may feel uncomfortable and send them to a specialist.

I suppose it would be easier if there was a central manual that gave addresses of support groups, and have them all together in one file or with one phone number.

It would be helpful if you had a single clearing house or 800 number where you could get the information or where they could tell you where to go.

A central coordinating office for information distribution, for all parts of the country instead of an office here or there.

I feel unqualified to respond to this question.

Medical journals do a pretty good job of that.

A central system of repeated information bulletins on certain selected rare diseases, that is, rare diseases that are occurring most often.

This could best be done by local disease groups in the area.

Whatever local specialists are in the area should be encouraged to use these devices and then give out the information they find and consult with other local physicians.

I don't have much trouble with the current system. If you had a list of those diseases and a contact person, a physician who was knowledgeable, it would make it easier.

I haven't found that much of a problem with cardiology, but I don't know about with those other diseases you named. We get information through journals and seminars, etc.

A newsletter or something. I don't recall having seen anything like that.

A national toll-free hotline to give information on centers.

Certainly educational programs. Post-grad programs are not geared to getting information to physicians. It has to be made available. The voluntary organizations are not visible. Public relations has to be better; meetings, conventions, etc.

A telephone database would be the most easily accessible.

Literature through the AMA.

Over and above what we've talked about? I'm afraid I don't have any.

A central clearing house with all rare disease information that's updated as needed. This would alleviate calling 10 different places to get information.

A central headquarters where information is updated and easy to obtain.

Get more information to them through the mail: journals and newsletters. Closed-circuit TV.

Researchers in academic settings who are secretive about their research should be more open and write brief descriptions of their research to submit to the hospital publicity office and monitor any revisions to insure accuracy.

Efforts need to be increased to provide printed and mass media (TV, newspapers, etc.) to patient. Physician education about rare diseases.

The journal JAMA.

You have to put it out in the AMA Health News, the news media for fillers. The print media is more effective.

Communication and dissemination of printed material.

Educate physicians on how to use computers so they can access data bases which contain the information.

Use one of the current avenues: AMA newsletter, JAMA, or mailings, and put current listing of contact places. Designate one number as the contact number for that disease or group of diseases: a clearinghouse.

Some kind of a central location for the dissemination of this information.

Newsletters from various organizations.

TV media and audio tapes should be used that are directed directly to specialists who most frequently see these rare disease cases.

I don't think there's a major problem in obtaining information. Medical school libraries are good sources. I never have difficulty.

Direct mail to physicians, and a traveling city-to-city seminar with 3 or 4 national experts which goes from Boston to N.Y. to Chicago. It worked out very well with orthopedics.

A system called Micro-Medics, which is available in hospitals, should include information on rare diseases. This would allow information to be current. This system should also be in physicians' offices.

Send newsletter to all AMA members that lists information and sources for physicians. It should be indexed by disease.

Send out a precise letter.

No suggestions, the literature already addresses the issue.

I find no fault with that. You can find a fair amount of information on rare diseases, especially at the National Institute of Health.

An AMA summary statement with a catalogue of rare diseases and their respective agencies.

List of diseases and information which includes support groups, phone numbers, and where to obtain printed material.

A medical newsletter is needed to be sent to all physicians with updates on rare diseases.

Use of a newsletter published by the AMA would be most helpful.

Some kind of a central clearinghouse where we can get information on rare diseases when we need it.

A central directory of all agencies treating rare diseases and a yearly bulletin on the current progress being made on the diseases.

Phone contact by the AMA. Conventional ways are not as effective.

The AMA News should have articles and advertisements educating physicians on rare diseases.

I think a bulletin every three months.

Information should be advertised in various medical journals.

A central clearing house is needed which contains information on rare diseases as well as a central hotline number.

Through the AMA, educational programs, AMA News, journals; centers that see most rare disease patients could coordinate a national clearinghouse for patient information and seminars. One center could be for ALS, one for another, and so on.

Mailings stating what organizations are available to the public. I was not even aware of the organizations you mentioned and I would like to be more aware of them.

A directory of organizations to render support.

I think through the media, TV, and magazines. My only contact is through the mail. I think that's a good way.

A research letter like CDC or MMWR sent monthly or bi-annually would be helpful. Information from Medline should be readily accessible.

If someone would make a list and then have one body of the NIH to speak for a rare disease lobby to assure them better support and better dissemination of information. It would represent all rare disease patients in one group.

Direct mail literature should be sent to physicians focusing on the issues of the various rare diseases in order to educate the public as well as the medical community.

Better trained specialists are needed.

Organizations involved with rare diseases should distribute updates on research and progress on their particular cause to physicians on a regular basis.

Advertise in major medical journals, in the AMA Newsletter. Editorials in the New England Journal. Educate and advertise in the medical societies.

Continuation of the status quo.

Publishing articles in journals generally read by top executives and physicians.

Try to attract physicians' interest through journals and try to reach the lay population or community. Make sure legislators work with medical associations on rare disease legislation.

An informative newsletter.

A central medical line having search facilities for information either verbal, computer printout, or in Fax form.

I guess through some hotline they could funnel information through. An AMA hotline, if you will, under their auspices.

A handbook of all orphan diseases, with the name and address of a central organization, along with 1-800 numbers.

I really don't see a problem.

Just better inform doctors.

Through a satellite information service; it would be easy to disseminate the information by listing the features of the service in the AMA journal.

Information regarding how to use your personal computer to access information on this subject.

Continuing education programs sponsored through industry, support groups, or specific disease groups.

Have a catalogue of the information sources mentioned in this study. Have a central source: maybe a computer file which could be upgraded as information increases along with who to contact.

Written material.

Design a central clearinghouse out of an established association, such as the AMA.

Add rare diseases to the FDA.

I would think if there is an organization, properly funded, there could be a monthly review which could be kept on file and I would know where to look for information.

To see more articles in medical journals on the subject.

A computerized access system with lite pens that allows dichotomous access - user-friendly with new protocols, new drugs or literature that can be used in 10 minutes. Accessibility is the key; an interactive system hooked into central computer.

To design a central clearinghouse that puts out a newsletter.

Through journals.

A central location for information.

Print more articles in medical journals.

We need a central or national clearinghouse for information on rare diseases. Send out bulletins, mailers, etc. We have a good facility in Houston, but it is only regional.

Educational programs in the various medical societies.

In JAMA design, "Rare Disease of the Month"; also, consultative programs in each specialty.

Place more articles in reputable journals.

The FDA sends out a quarterly newsletter. Use it as a source in educating the physician.

I think the dissemination is pretty good if someone has the initiative to find it.

I have no knowledge of how the information is disseminated at present; therefore, I have no suggestions as to how to improve it.

On-line (computer) access to current information and treatment of rare diseases.

There is a sufficient amount of information out there; it's up to the doctor to find this information.

Local societies must publish more articles on this subject. Must find a way to minimize dead-ends. People must be informed that they have some place to go and the doctor must have clear cut information sources for the patient.

Hotline seminars.

Communication through specialty organizations. Efforts by JAMA have been very successful.

It's just a matter of increasing our awareness of information sources.

Mailings to physicians in a specialty area including support groups and research summaries.

Some type of central location to get the information when you need it. Or perhaps a number to call where they could give you directions on where to go.

From what I see and read and the material that crosses my desk I would say there is adequate information provided to physicians at this time. We don't always have the time to read it.

Designing educational programs through the AMA.

Specified mailings to physicians in their fields.

Give genetic counseling for rare diseases like Huntington's disease.

I didn't know it was that bad. If you read journals and have access to databases. Well, you've got the AMA News, why not add a 2 page quarterly supplement?

Researchers should distribute information on rare diseases to physicians.

To have the information sent by the AMA through journals printed by the AMA or any other printings sponsored by the AMA.

Establish a center to distribute information to hospitals and doctor's offices.

Have a monthly magazine and an annual summary of accomplishments.

Put a short, brief pamphlet of diseases in JAMA.

There needs to be appropriation of funds from government or other sources for research. FDA needs to recognize research done outside US and approve more of the investigational drugs that have been used in Europe, Australia, etc.

Cassette tapes on the subject; seminars; and dissemination of brochures, tapes, and pamphlets.

Mailings from the AMA to physicians.

Information should be sent directly to physicians. We should have adequately informed regional centers.

Seminars and audio-visual aids; one-on-one contact is the best way.

Have information available to the general public. Use direct mailings.

Include this kind of information in CME courses.

First, physicians need to know what is considered a rare disease. Set up a central clearinghouse that updates information on rare disease and one that is easily accessible to physicians.

Send information on two or three rare diseases a year through the FDA bulletin.

I think we need more government support for orphan diseases.

Doing studies from tissues of living patients affected with disease and also autopsies of patients that died of rare diseases.

Join with those who know. Get funding lobby to get federal funding.

Immediate access in hospital computers and medical libraries.

To establish good communication between the physician and the research foundation.

Computer access on a national scheme. I feel confident doctors won't mind rendering a fee for this service.

National journals.

Send out literature to physicians. That is most important.

I believe this should be done on a local or county level rather than national.

Publish information in journals.

Checking with colleagues and conferring with the medical community.

Continuing education for physicians which includes tapes and television programs.

Use government agencies to inform physicians.

Local conferences; dissemination of transcripts of conferences to physicians; dissemination of research articles to physician.

Using the computer terminal, if available, to plug in to the NIH.

More direct mailings to physicians about rare diseases.

Mail individual letters to physicians and also do something to incorporate continuing medical education.

Publications for rare diseases, just like specialty publications.

Constant information from research groups.

Information literature through AMA and FDA.

The government spends so much on research. That's very helpful.

Also, use the mediums of radio and television and pamphlets from different organizations.

Periodic newsletters.

Bulletins and pamphlets sent to physicians, and public reminders.

Talk to individual petitioners and educate the public. Best advertisement is through television. Also, send letters and brochures through the mail to the medical community.

I guess the news media, TV, radio; those specialists could come out and talk to the patients.

The best thing is dissemination through AMA journals. Dissemination would be wide, and we can have them available in office for reference. National and local 800 numbers would make it easier to deal with rare diseases.

Articles in AMA News, JAMA etc.

There should be one recognized, national place that has information so you don't have to hunt for it.

The CDC and the NIH should set up a mailing list.

Local chapters and community hospitals should have telephone numbers. There should be a national source of information that is easy to access for the physician.

Publish a text book on rare diseases.

Have centralized locations for information on how to treat patients.

Getting more involved in international research in order to insure high standards and use the information obtained instead of redoing the same research. That will save money and time in many cases.

A central clearinghouse that is AMA operated where doctors could call an 800 number and get updated information on rare diseases.

Publications every six months; send them to physicians across the country.

I'm not unhappy about information but time is the problem. There are consultants to use, 9 out of 10 doctors use consultants to confer about difficult situations.

I think inform the public on transmission of the diseases. Improve education via television. Get more money for research.