

Incentives and barriers to neurological clinical research participation

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Background: Understanding barriers and incentives to neurological research participation may improve clinical trial enrollment. **Results:** Telephone-based focus groups were conducted with four neurological disorder patient groups (n = 22) and one caregiver group (n = 6). A total of 14 neurologists and neurosurgeons participated in structured interviews. Topics discussed included identifying ways in which health information is gathered and attitudes toward participation in medical research. Interestingly, 86% of physicians interviewed have referred patients to clinical trials and 82% of patients expressed interest in clinical trials participation. Patients cited their primary physician as the best source of health-related information, including information about clinical trials. Barriers to patients and physicians regarding clinical trials participation included compensation. Patients expressed concern about increased visit frequency and required treatment changes. **Conclusion:** Patients are willing to participate in clinical trials and physicians are willing to refer patients for participation with appropriate compensation for their time and sensitivity to change in care.

Keywords: clinical trials recruitment • focus groups • neurology • patients • physicians

Great strides have been made in the diagnosis and treatment of numerous medical conditions. At the heart of these advances is the medical research funded by the NIH. A key component of this research is conducting clinical trials to test the safety and efficacy of new therapies. Completing studies in a timely fashion and translating results from those trials into clinical practice can be challenging. Balas and Boren estimated that it takes, on average, 17 years to turn only 14% of original research findings into improved patient care [1]. Although there are numerous reasons for the extensive lag between research and practice, one of the most significant barriers to bringing better treatments to patients faster is the challenge associated with clinical trials recruitment.

To date, NIH research in the areas of cancer, heart disease and other areas of medicine have involved both academic and practice-based physicians. The development of community partnerships in these research areas has provided expanded access to clinical trials participants, thus enabling more rapid integration of research findings into practice. The National Institute of Neurological Disorders and Stroke (NINDS), one of the 27 NIH Institutes, supports more than 1200 clinical research projects and over 3000 laboratory research projects, conducted principally at medical schools and universities [101].

In 2005, as part of the Rebuilding the Clinical Research Enterprise effort, the NINDS Clinical Trials Group established the Clinical Research Collaboration (CRC) Project and the NINDS CRC Operations Center. The CRC was developed in order to spur the completion of clinical research efforts by providing more rapid access to potential study participants through the expanded participation of community-based neurologists and neurosurgeons.

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A report by Green *et al.* estimates that 217 in 1000 persons per month visit a physician's office, while eight in 1000 per month are hospitalized, with fewer than one in 1000 persons per month admitted to an academic medical center [2]. These estimates indicate that tapping into the patient population of community-based physicians could dramatically expand the number of potential research participants and, therefore, accelerate the completion of studies and subsequent integration of research findings into medical practice.

In 2005, the NINDS CRC Operations Center sampled 112 out of 1000 active NINDS-sponsored clinical research studies and found that 41% of the clinical trials in the study sample were considered amenable to community physician involvement (which exceeded referral only), 21% could involve full community-based physician participation in all study elements and 20% of the studies were appropriate for community-based physician follow-up activities [3]. Thus, there are plenty of opportunities for community-based physicians to participate in NINDS-sponsored neurological research.

Input from patients and physicians was an important component of the CRC. Community input was solicited through focus groups and structured interviews.

Methods

During the period October 2005 through to November 2006, the NINDS CRC Operations Center and Equals Three Communications, Inc., conducted a series of telephone-based focus groups and structured interviews with caregivers, physicians and patients who have had a neurological disorder and/or stroke for more than 1 year. The protocol was reviewed and approved by a Central Institutional Review Board prior to implementation. [Table 1](#) summarizes the demographic characteristics of the participants.

Focus group participants (with the exception of caregivers and physicians) were recruited and screened by Delve, a marketing research and focus group management company, through a text-only advertisement placed in four major daily newspapers in the following markets: Dallas, Los Angeles, Philadelphia and St Louis, USA. The advertisement narrative indicated that the study was seeking individuals who may have experienced a stroke or have multiple sclerosis, cerebral palsy, migraine headaches, Parkinson's disease, epilepsy, intracranial aneurysm, peripheral neuropathy or other neurological disorder. Disease diagnosis was by self-reporting. Nonprofessional caregivers were identified by the CRCs Minority Outreach Coordinator, Quality Research Services. Physicians were sampled from current CRC physicians, members of the American Academy of Neurology and through random web searches of active neurology practices. Separate standard screening

protocols were administered for each participant group: physicians, patients and caregivers. Interviewees represented a mixture of gender, age groups, income levels, ethnicities, income, education levels, employment status, neurological conditions and geographic locations (with an emphasis on recruiting participants from areas outside of large urban centers).

Four patient focus groups were conducted, including four men and 18 women spanning seven states. Approximately eight to ten patients were recruited with an average participation level of six individuals per 90 min session. Median age of participants was between 40 and 59 years, with 27% being 60 years of age or older, 51% were African-American, 9% Hispanic and 4% Asian. Median household income was between US\$40,000 and \$59,000 per year and 64% did not have a college degree. A moderator conducted the focus groups using a standard discussion guide to ensure consistency. Volunteers for the focus groups were placed into one of the following groups:

- Focus Group 1 = people with neurological disorders and stroke living outside major metropolitan areas;
- Focus Group 2 = African-American adults with neurological disorders and stroke living in geographically dispersed areas;
- Focus Group 3 = people with neurological diseases and stroke among African-American, Asian and Hispanic adults;
- Focus Group 4 = people with neurological disorders and/or stroke.

Focus Groups 1 through 3 were defined to create groups of individuals who are perceived to be under-represented in medical research (e.g., race, ethnicity other than Caucasian, non-Hispanic individuals and persons living outside major metropolitan areas). In addition, a single focus group was conducted with six individuals who provided care for patients with a neurological disorder or disease. Four of the participants in this group were African-American and four were female. All had taken at least some college courses (data not shown).

A total of 14 neurologists and neurosurgeons spanning nine states in the USA (CA, AZ, GA, IL, TN, KY, MA, MS and OR), including nine community-based physicians and five academic physicians participated in the structured interviews. Two of the physicians were female and four were Hispanic.

Focus group protocols

Standard discussion protocols were used to guide each of the focus groups (patients and caregivers) and to conduct the structured interviews (physicians). Protocol

content was similar for each group, however, the emphasis on particular questions varied depending on the type of participant.

■ Patients & caregivers

The following topics were included in the patient and caregiver focus groups:

- Finding health information – identifying ways in which health-related information is gathered and the types of information sources used. Special emphasis was placed on identifying the degree to which the internet is used as a key information source and level of satisfaction with the internet experience;
- Attitudes toward medical research – familiarity and experience with medical research and knowledge, understanding and attitudes toward clinical trials. The role a physician or caregiver played, if any, in identifying and/or suggesting opportunities for clinical trials participation. Questions were posed to determine incentives or barriers to clinical trials participation and to assess willingness to modify care patterns to enable participation in a clinical trial, for example, changing physicians, traveling, changes in visit frequency and cost;
- Knowledge and experience with NIH and NINDS – previous experience, if any, with NIH and NINDS.

■ Physicians

Structured interviews with physicians included discussion on the following topics:

- Clinical research – physicians were asked about their knowledge and attitudes towards clinical research, the degree to which research is integrated into their practices and their perspectives regarding the likelihood of their patients participating in a clinical trial;
- Knowledge and experience with NIH and NINDS – physicians were asked about their previous experience with NIH, if any;
- Internet usage – questions were asked about physician use of the internet as part of their practice.

Findings

■ Patient focus groups

Table 2 provides a summary of responses from the patient focus groups. Patients reported a variety of neurological disorders, including multiple diagnoses: multiple sclerosis (7), stroke (6), migraine (3), epilepsy (3), chronic pain (2), intracranial aneurysm (1) and Parkinson's disease (1). Most patients emphasized the role of their primary care physician or their neurologist as the best source of health-related information (100%) and research studies

Table 1. Characteristics of participants in focus groups and structured interviews.

Characteristic	n (%)
Patient focus groups (n = 4)	
Total participants	22 (100)
Male	4 (18)
Median age	40–59 years
No college degree	14 (64)
African–American	11 (51)
Hispanic	2 (9)
Asian	1 (4)
Caregiver focus group (n = 1)	
Total	6 (100)
Male	2 (33)
Median age	40–59 years
No college degree	1 (17)
African–American	4 (67)
Asian	0 (0)
Hispanic	0 (0)
Physician interviews	
Total	14 (100)
Male	12 (86)
Median age	40–59 years
African–American	0 (0)
Asian	0 (0)
Hispanic	4 (29)

(72.7%; data not shown). Other information sources cited by patients included: the internet (77.3%), literature (77.3%), neurological disorders societies and associations (50%) and news sources (45.5%). Most commonly used applications on the internet were websites from neurological disorders societies and associations (77.3%), WebMD (77.3%) and Yahoo (54.5%).

In the first three focus groups, only 59% of the participants reported having a computer with internet access. Other barriers to internet use for finding health information included: lack of confidence in information (77.3%), cost of internet service (54.5%), lack of interest (54.5%), information overload (50%), privacy concerns (27.3%) and lack of user-friendly sites (27.3%). 82% of the patients interviewed were willing to consider research study participation. None of these patients, however, had actually participated in research related to their neurological disorder or stroke. Key factors and motivations for research participation included having information provided from a trusted source (77.3%), adequate compensation (54.5%), potential for a cure (50%), the researchers' attitude toward the patient (27.3%), having

Table 2. Patient focus group responses.

Response (n = 22)	n (%)
Sources of health information	
Physician (primary care or neurologist)	22 (100)
Internet	17 (77.3)
■ WebMD	17 (77.3)
■ Neurological disorders societies and associations	17 (77.3)
■ Yahoo	12 (54.5)
Literature	17 (77.3)
Neurological disorders societies and associations	11 (50.0)
News source	10 (45.5)
Barriers to accessing online information	
Lack of confidence in information	17 (77.3)
Cost of internet service	12 (54.5)
Lack of interest	12 (54.5)
Information overload	11 (50.0)
Privacy	6 (27.3)
Sites not user-friendly	6 (27.3)
Key factors & motivations for research participation	
Trusted information source	17 (77.3)
Compensation	12 (54.5)
Potential for cure	11 (50.0)
Staff attitude toward patients	6 (27.3)
Medication cost covered	6 (27.3)
Benefit to self and others	5 (22.7)
Barriers to research participation	
Transportation	11 (50.0)
Frequency of visits	11 (50.0)
Insurance coverage	6 (27.3)
Requirement to stop taking medications	5 (22.7)
Cost	5 (22.7)

medication costs covered (27.3%) and benefit to self and others (22.7%). Barriers to participation included transportation difficulties (50%), frequency of visits (50%), insurance coverage concerns (27.3%), requirements to stop taking medications (22.7%) and cost (22.7%).

Out of the 22 patients interviewed, ten were aware of the NIH, two were somewhat familiar with the NINDS and only one patient had accessed the clinical trials database [102].

■ Caregiver focus group

All of the caregivers cited that their top two sources of healthcare information are local pharmacies and direct mail (data not shown). Whereas most patients indicated that the internet is a common information source, caregivers received health information most

commonly from social workers, family members, other caregivers, physicians and through relevant associations. Only one caregiver cited the internet as their primary source of health information. None of the caregivers had spoken with a physician about clinical trials, but if adequate compensation and added care or oversight for their patient were provided as part of research, all caregivers were willing to have their patients participate in research. All caregivers were willing to travel as part of research participation. Caregivers had very limited knowledge of the NIH (33.3% were aware of NIH) and none were familiar with NINDS (data not shown).

■ Physician interviews

Table 3 summarizes responses from the physician interviews. The physicians interviewed stated their patients learn about clinical research from their practice (78.6%), the internet (42.9%) and from referrals from other disease specialty organizations or support groups (42.9%). All of the physicians interviewed expressed similar support for clinical trials and their contribution to medical advancement in many areas, in particular, to neurology. A total of 12 of the 14 physicians (85.7%) have referred at least one patient to research, but only 35.7% have referred on at least a monthly basis. Ten of the 14 physicians (71.4%) have reservations about referring due to a variety of concerns, including perceived risk:benefit ratio, who the sponsor is, the availability of medical treatment and concerns over the potential to harm the doctor-patient relationship, depending on the risks.

All of the physicians interviewed use the internet as part of their medical practice, but only 35% access NIH or NINDS websites on at least an occasional basis.

Recommendations & discussion

Clinical trials are a key mechanism to bring new treatments to patients faster. One of the most significant challenges to clinical trials research is the ability to rapidly identify and enroll participants, which can be labor-intensive and costly. One study estimated a time cost of over 10 h per enrollee for recruitment, with community outreach being more time intensive than self-referral [4]. Another study estimated that the cost per enrolled participant could be as high as \$584 [5]. A Cochrane database systematic review of recruitment interventions was performed to identify and evaluate interventions researchers have used to improve recruitment. Unfortunately, the heterogeneity of trials and strategies resulted in no clear recommendations [6]. Our patient focus groups suggested that the personal physician played an important role in their decision to enroll in a clinical research study. Other important factors influencing clinical trials enrollment included providing adequate compensation for time and travel

and limiting the frequency of required visits. The key role of the personal physician in enrollment decision-making and limiting study-related visits were noted in a study of systemic lupus erythematosus [7].

Results from patient focus groups conducted within the setting of neurologic emergency treatment trials also found strong trust in physicians to be a major factor influencing the decision to participate in clinical research. In this study, if a family surrogate decision-maker could not be identified, having a trusted medical professional provide consent was deemed to be acceptable [8].

Mason *et al.* identified lack of skill and confidence in introducing research participation to the patient as a barrier to recruitment in a mental healthcare study [9]. Randomization was also reported as a barrier in a study recruiting breast cancer patients. Other barriers in this study included the extra time it takes to participate in research efforts and the increased costs associated with study participation [10]. Physician participants also expressed concerns regarding having adequate time and compensation for research participation. Williamson *et al.* listed interest in the study topic and time infringement as factors affecting participation of general practitioners in intervention studies [11]. Vickers *et al.* point to the increasing regulatory requirements and need to recruit and retain dedicated staff to address the paperwork requirements as overburdening for many physicians [12]. This observation of increasing complexity and requirements in clinical trials was the subject of a recent report in *Science* [13].

Similar to many other fields, the level of medical research in the area of neuroscience and neurology has expanded dramatically, giving rise to a significant increase in the need for clinical trials research. Our sample of physicians was heavily weighted toward physicians who had experience with the research enterprise through the NIH, either through direct research application or patient referral to studies. Additional research, with a

Table 3. Physician interview responses.

Response (n = 14)	n (%)
Sources patients use to find clinical research information	
Physicians	11 (78.6)
Internet	6 (42.9)
Referrals from other sources	6 (42.9)
Barriers to research participation	
Time and reimbursement	5 (35.7)
Unknown risks and potential for misinformation to their patients	5 (35.7)

focus on community-based neurologists who are not already connected to research, may be more informative.

The small number of patient focus group participants, the fact that the majority of the participants were female and the fact that only 14 structured interviews with physicians were conducted, limit the inferences one can draw from the information provided. However, the findings from our study are supported by findings from other studies of barriers and incentives to research participation across a variety of diseases.

Future perspective

Understanding the motivators and barriers to participation of patients and physicians in clinical research will be important in identifying ways to speed clinical trial enrollment and bring answers to clinical questions to the community more quickly and with less cost.

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Executive summary

Motivations for patients to participate in research

- Their physician.
- Compensation for their time and medications.
- Potential for a cure.

Barriers to patients participating in research

- Lack of transportation.
- Frequency of required visits.

Patient barriers to internet methods of seeking information

- Cost of internet service (especially in underserved communities).
- Lack of confidence in the information found.

Barriers to physicians participating in research

- Cost, in terms of time and money.
- Unknown risks to patients associated with participation.

References

Papers of special note have been highlighted as:

- of interest
- of considerable interest

- 1 Balas EA, Boren SA. Managing clinical knowledge for health care improvement. In: *Yearbook of Medical Informatics 2000: Patient-Centered Systems*. Stuttgart, Schattauer, 65–70 (2000).
- It is impressive that it takes so long to translate research findings into clinical practice. This article suggests an average of 17 years for only 14% of research.
- 2 Green LA, Fryer GE Jr, Yawn BP *et al.* The ecology of medical care revisited. *N. Engl. J. Med.* 334, 2021–2025 (2001).
- 3 Lindblad AS, Clemons T, Lindblad RW *et al.* Applicability of NINDS-sponsored studies to community-based physician involvement. *Neurology* 70(19), 1688–1690 (2008).
- This study shows a large percentage of National Institute of Neurological Disorders and Stroke-sponsored research could be undertaken by community physicians.
- 4 Rdesinski RE, Melnick AL, Creach ED, Cozzens J, Carney PA. The costs of recruitment and retention of women from community-based programs into a randomized

controlled contraceptive study. *J. Health Care Poor Underserved* 19(2), 639–651 (2008).

- 5 Chin Feman SP, Nguyen LT, Quilty MT *et al.* Effectiveness of recruitment in clinical trials: an analysis of methods used in a trial for irritable bowel syndrome patients. *Contemp. Clin. Trials* 29(2), 241–251 (2008).
- 6 Mapstone J, Elbourne D, Roberts I. Strategies to improve recruitment to research studies. *Cochrane Database Syst. Rev.* 18(2), MR000013 (2007).
- 7 Costenbader KH, Brome D, Blanch D *et al.* Factors determining participation in prevention trials among systemic lupus erythematosus patients: a qualitative study. *Arthritis Rheum.* 57, 49–55 (2007).
- 8 Kasner SE, Baren JM, LeRoux PD *et al.* Community views on neurologic emergency treatment trials. *Ann. Emerg. Med.* 57(40), 346–354 (2011).
- Patients in emergency settings also trust their doctors to enroll them in a study if they do not have the capacity to enroll themselves.
- 9 Mason VL, Shaw A, Wiles NJ *et al.* GPs' experiences of primary care mental health research: a qualitative study of the barriers to recruitment. *Fam. Pract.* 24(5), 518–525 (2007).
- 10 Melisko ME, Hassin F, Metzroth L *et al.* Patient and physician attitudes toward breast cancer clinical trials: developing interventions based on understanding barriers. *Clin. Breast Cancer* 6(1), 45–54 (2005).
- 11 Williamson MK, Pirkis J, Pfaff JJ *et al.* Recruiting and retaining GPs and patients in intervention studies: the DEPS–GP project as a case study. *BMC Med. Res. Meth.* 7, 42 (2007).
- GPs in Australia have difficulty participating in research due to time constraints.
- 12 Vickers AJ. Do we want more cancer patients on clinical trials? If so, what are the barriers to greater accrual? *Trials* 3(9), 31 (2008).
- 13 Malakoff D. Spiraling costs threaten gridlock. *Science* 322, 210–213 (2008).

Websites

- 101 National Institute of Neurological Disorders and Stroke.
www.ninds.nih.gov
- 102 Clinical Trials Database.
www.clinicaltrials.gov