

# A Community Neurologist's Personal Viewpoint on Neurological Training

CHARLES A. SIMPSON

**SUMMARY:** *A study of 200 patients referred to a community neurologist showed that 87.5% of the patients were seen in the office and only 12.5% in hospital. Neurological signs were present in 52% and 28.5% had neurological signs which materially affected the diagnosis. A questionnaire sent to several teaching centers showed that only one center sent students and residents to community neurologists' offices at all and in most centers the resident spent just 10 to 20% of his time seeing out-patients. It was felt that the balance of in-patient/out-patient teaching for students and residents was wrong, and that more emphasis should be placed on the neurological history than on the examination. Proposals are made to involve the community neurologist as well as the academic neurologist in the training of students and residents which would benefit all four groups.*

**RÉSUMÉ:** *Une étude de 200 patients référés à un neurologue communautaire a montré que 87.5% de ces patients furent examinés au bureau et seulement 12.5% à l'hôpital. Il existait des signes neurologiques chez 52%; de plus chez 28.5% des patients examinés les signes neurologiques observés eurent une incidence sur le diagnostic. Nous avons envoyé un questionnaire à plusieurs centres d'enseignement universitaires. Seulement un de ces centres envoyait des étudiants et résidents en stage dans les bureaux de neurologues communautaires. Dans la plupart des centres le résident ne passait que de 10% à 20% de son temps à la clinique externe. Nous concluons que cette répartition est mauvaise et également qu'il faudrait passer relativement plus de temps à enseigner comment questionner que comment examiner. L'auteur propose certains moyens de remédier à cette situation afin d'améliorer l'entraînement des étudiants et des résidents.*

Reprint requests to: Dr. C. A. Simpson, 330-1900 Richmond Avenue, Victoria, British Columbia V8R 4R2, Canada.

## INTRODUCTION

A few years ago Canada was short of neurologists. Very few of them practised outside teaching hospitals and consequently neurological training was exclusively in hospital. The neurologist in training seldom emerged from the comfort of his teaching hospital chrysalis and flew out into the dangerous world of commercial community neurology. Perhaps it was this emphasis on academic neurology, plus the detail with which seemingly inappropriate neuroanatomy was taught, that resulted in few physicians either understanding basic neurology or choosing it as a specialty career. Many students were over-awed by the elaborate neurological examination and complex neuroanatomy most of which was only of practical value to neurosurgeons.

The patterns of practice are changing and an increasing number of smaller communities are demanding neurological expertise. The neurologists in training are ill-suited to non-academic community neurology. Furthermore, many family practitioners have larger amnesic areas for neurology than for most of the other major specialties such as cardiology, gastroenterology or pulmonary diseases. This is borne out by Murray's (1977) report published while this article was being prepared. Murray's survey of 25 family practitioners showed that 64% had difficulty developing a positive attitude to neurological disease in general; 44% had difficulty doing the neurological examination; 72% had difficulty determining whether investigative procedures should be done for neurological problems; 76% considered they had too little factual information about neurological dis-

eases. Only 32% thought their neurological training was adequate and 52% felt they were inadequately prepared to handle neurological problems on graduating.

Meditating on my own opinions and Murray's findings led me to question the reasons for the above statistics and to analyse them from the standpoint of someone who has been practicing community and non-teaching hospital neurology for ten years. Naturally, I had some preconceived ideas and the exercise was useful to point out that such ideas are sometimes wrong.

I believed that neurological training, particularly at the undergraduate level, placed too little emphasis on the history and was too involved with the neurological examination. This detailed, ritualistic and (if performed compulsively) very time consuming examination has great mystique, but by comparison with the neurological history has much less practical value. Students spend much more time eliciting signs from in-patients who often have signs, than listening to histories from out-patients who often do not have physical signs. Secondly, it was my impression that only 10% to 15% of neurological patients seen by a neurologist have any neurological signs at all. With the rest, diagnosis is by history.

The purpose of this study was to discover how many patients had neurological signs and to find out approximately how much time Canadian undergraduates and residents spent in seeing neurological out-patients, both in the hospital and in the community.

## Survey One

It was decided to survey prospec-

tively two blocks of 100 consecutive patients, none of whom had been seen before, and who were referred as out-patients or hospital consultations. Between the two blocks there was a gap of two months. The history was taken and the most likely diagnosis decided. Then the neurological examination was carried out and any neurological signs recorded. It was then noted whether the signs found had:

- a. Helped in diagnosis or management.
- b. Added anything not known from the history.
- c. Were not relevant to the main complaint.
- d. Confused me or made me question my diagnosis.

RESULTS

The results are set out in tables I and II. From table I it will be seen that:

(1) Most of the work was done out of hospital — 87.5% office, 12.5% hospital. In a survey of one year's work, one of my partners did 16% of his work in hospital, showing my figures to be fairly representative.

(2) 56% had neurological signs, which destroyed one pre-conceived notion that only about 10% or 15% had signs. However,

(3) in 23.5% of the patients the signs added nothing not already known from the history. In only 18.5% were they helpful and in 10% they were confusing. Therefore, in only 28.5% did the signs materially affect the diagnostic process one way or the other.

(4) Further analysis showed that of the 36 patients classified as having "helpful" signs, 22 had signs which simply confirmed a suspicion, gave an anatomical level, or helped in management; leaving 14 in whom the signs were really valuable in establishing a diagnosis. In seven of the 22 the "signs" were functional. Nevertheless, the nature of the findings on examination helped to confirm the suspicion that the problem was functional. Of the 20 patients with confusing signs, further investigation solved the problem in seven, but the diagnosis or the reason for the signs remained unresolved in 13, despite investigation.

(5) 21 of the 25 hospital patients had neurological signs, but only 91 of the 175 office patients had them. Of the

hospital patients, 15 had signs which helped or confused the diagnosis and six had signs which made no difference. Of the 91 office patients with signs, 41 had signs which helped or confused and 50 had signs which made no difference.

(6) There was no significant difference between the two blocks of 100 patients.

The diagnoses are tabulated in table II. There is one unusual feature — the high incidence of peripheral nerve lesions, even higher than headache. This is because it is known in our community that I have a special interest in peripheral disorders and perform electromyography. One of my two partners is known to have a special interest in headache and epilepsy and therefore more of these patients are referred to him.

Survey Two

A questionnaire was sent to selected university centers from Vancouver to Halifax, all of which had full programs for neurological training under the Royal College of Physicians of Canada. Replies were obtained from B.C., Manitoba, Saskatchewan, Nova Scotia and Ontario, but it may be of significance

TABLE I  
Patients with no neurological signs

	Block 1	Block 2	Total
Office	45	39	84
Hospital	3	1	4
			88

Patients with neurological signs

	Block 1	Block 2	Total
Office	42	49	91
Hospital	10	11	21
			112
(a) Signs helpful	14	22	36
(b) Added nothing	24	22*	46
(c) Not relevant	4	7*	11
(d) Confusing	10	10	20
			113*

\*One patient had signs which added nothing to the history and also signs which were not relevant.

Table 1—An analysis of the neurological signs found in 200 new patients referred to a community neurologist.

TABLE II  
DIAGNOSES

Peripheral nerve (carpal tunnel 23, other 13, ulnar 6)	42
All headache	37
"Functional"	20
Cerebrovascular (subarachnoid hemorrhage 3)	17
Uncertain	13
Epilepsy	9
Cervical spondylosis	8
Positional vertigo	6
Dementia	6
Skeletal (e.g. tennis elbow)	5
Lumbar spondylosis	5
Learning disability	5
Facial pain	4
Syncope	4
Others	24
	205*

\*Five patients had dual diagnoses.

Table 2—The diagnoses made on 200 new patients referred to a community neurologist.

that replies were not received from Toronto or Montreal. This may indicate the attitude of the major academic centers to non-academic neurology taking place in cities like Victoria Beyond Canada!

Because of the variation in neurological teaching between undergraduate and residency training and between the different centers, the questionnaire was not easy to answer. However, a great deal of detailed, if varied, information was forthcoming. The purpose of the questionnaire was to discover how much of the undergraduate's and resident's neurological training was spent in the out-patient department or in a neurologist's offices in the community.

Only one of the centers sent graduates or undergraduates to neurological offices in the community and in that center about 3% of the resident's time was spent in this way. Because of almost universal prepaid health care, the bulk of out-patients in the community is seen in the private neurological offices and the "staff" patient's out-patient clinic has diminished and is not representative of the population as a whole. The hospital based, teaching, neurologists see some out-patients, but because of their teaching, research, and administrative commitments, the numbers of patients seen are smaller than in the private neurological office. The hospital out-patient department is the next best place to the private office to hear common histories and it is important to know how much time students and residents spend there. It was difficult to assess this from the questionnaires, but undergraduate students spend woefully little time doing neurology at all. For residents, out-patient teaching or experience varied from 10% to 20% of the resident's time, whereas in-patient teaching was 60% to 80% of his time.

#### DISCUSSION

The results of survey one emphasize the preponderance of out-patient neurology rather than hospital neurology in community neurological practice. The results show that physical signs affected the

diagnosis in only 28.5% of cases, the diagnosis being clear from the history in the remainder. The further analysis of the results showed that the neurological signs were only of practical value in giving a diagnosis (14) or leading to a diagnosis after investigation (7), in 21 or 10.5% of the patients. This is very close to the pre-survey estimate of the occurrence of neurological signs, even though signs did occur in 56%. The history, however, was of practical value in 166 patients i.e. 83%.

The conclusion is that the neurological examination is of lesser importance than the history. Murray (1977) suggested it was not that simple and indicated that 68% of his family practitioners wanted short courses in the neurological examination and diagnostic methods. However, the disagreement may not be as profound as it appears. I think the neurological examination is usually taught to undergraduates at a time far removed from a too detailed and seemingly irrelevant course of neuroanatomy and physiology. A truly *complete* neurological examination is very time consuming, boring, and exhausting for both patient and physician. What needs to be taught is a selective examination with certain screening tests. For example, in the majority of patients detailed sensory examination is worthless and usually produces a plethora of misleading hypalgesias. "Just do that again, doctor, I think it may be a little less on the left" should be a signal to consider abandoning the sensory examination altogether. However, selectively performed according to the history or other findings, it can be of great value. Undergraduates need to be taught a highly simplified and practical neuroanatomy and neurophysiology *in conjunction* with a condensed practical neurological examination geared to the common disorders.

Of greater importance is the history, for it was the history which was the *only* means of diagnosis in 44% of the present patients and in 83% the history was of practical value. Good neurological history taking can only be learned by expos-

ure and this is insufficient in the teaching hospitals and is obtained on the wrong patients, a point confirmed by Murray. Conditions in which signs are seldom found and the history is all important such as headache, epilepsy, syncope, dizziness, vertigo, functional disorders and pain, comprised 40% of the present study and 52% of Murray's. Headache, for example, is a symptom present in 80% to 90% of the population or a presenting symptom in 38% of consultations in a general practice (Philips, 1977). History then is vital.

Where is the history heard and taught? Where can a selected *relevant* neurological examination be learned? Obviously the best place is in the community neurologist's office and the next best place the hospital out-patient's department. Yet, none of the centers in Canada replying to the questionnaire sent undergraduates to the community neurologist's office and only one sent residents for 3% of their time. The patient in the teaching hospital bed is likely to have neurological signs (e.g. 84% of non-teaching hospital patients) and their stories and findings must be seen by students and residents. Surely this should not constitute 60% to 80% of the resident's time in training while they spend only 10% to 20% of their time seeing out-patients and virtually no time in the community neurologist's office? We have seen that 87.5% of the community neurologist's work is out-patient work. The ratios are reversed; the emphasis is clearly wrong.

It is essential both for good patient care and the increasingly important economics of medicine that neurologists and even family practitioners should be able to sort out common disorders such as headache. They should know when it is important to listen and reassure that there is no brain tumor rather than to order a CT scan, know how to disentangle the spirals of a history of dizziness, discover that epilepsy is usually poorly controlled because the medication is forgotten or abandoned, and learn to decide which

problems are emotional and which need the full, extremely expensive gamut of neurological investigation. These skills are acquired best on out-patients where decisions have to be made, and not on in-patients where the decision to investigate has already been taken. Murray states that one answer to the student's poor attitude to neurology is to have them see neurological problems in an ambulatory setting.

What proposals are suggested for correcting this situation? First, put a resident, a non-academic neurologist, and perhaps a family practitioner on the education committee of the Canadian Neurological Society. Secondly, consider the following somewhat Utopian proposals:

(A) For Undergraduates:

(1) They should be given a thorough grounding in neurological history taking, with plenty of exposure to histories in the out-patients and also in the community office if possible.

(2) They should be taught selective, simplified, and highly practical applied neuroanatomy and physiology, at the same time as clinical neurology.

(3) They should be taught, at the same time as the neuroanatomy and physiology, a simplified neurological examination with a more selective slant and emphasis on the practical rather than the "complete".

(4) Neurology should be made fun and interesting rather than a chore of confusing details.

(B) For Residents:

(1) There should be more exposure to out-patients and their histories, particularly in the community neurologist's office (even up to 50% of their time).

(2) They should be taught more detailed neuroanatomy, neurophysiology and neuropharmacology than undergraduates.

(3) They should be taught the "complete" neurological examination, but with a great emphasis on selectivity e.g. not wasting time tickling the entire

body with cotton wool if the history clearly suggests tension headaches, but definitely not omitting ophthalmoscopy and cranial auscultation in such cases; knowing which muscles to test to sort out what sounds like an ulnar neuropathy from a thoracic outlet syndrome. This selective examination would also be seen in the community office.

(4) They should be exposed to the accumulated wisdom and experience and that aspect of medicine, often forgotten in the research oriented teaching hospital, the sympathetic human handling of patients by someone who has been in daily contact with large numbers of different sick people for some years.

(C) For Academic Neurologists:

(1) Their exotic ruminations should be tempered with practicality by exposing them to the community neurologists. This would make the teaching of neurology more relevant and meaningful.

(2) They should understand the difficulties under which the community neurologist works; high pressure, long hours, the fact that teaching time, research, and vacations all mean money lost with expenses rolling along unchanged.

(D) Community Neurologists:

(1) Those who show a willingness to teach should be employed part time by the University on a sessional basis to teach residents and possibly undergraduates in their offices. They should be allowed to keep their earnings and get extra from the university to compensate them for their losses on the reduced number of patients they could see while teaching.

(2) All community neurologists who work within reach of a medical school should be paid by the government to attend the neurology unit one half day or one full day per two weeks. This would expose them to the

academics with their new ideas and knowledge of rare conditions, and to the latest research. This is not to say that the exotic and rare does not occur in community practice e.g. the 200 cases in this survey included a Charcot-Marie-Tooth, dystrophia myotonica, and two Sturge-Weber syndromes, one of which also had a glioma. Those community neurologists who live out of reach of a medical school should be paid for spending two or three weeks a year in a teaching hospital.

(3) The two proposals above would also expose the community neurologist to the keen, inquiring minds of residents and students who often ask penetrating questions and illuminate some of the dark or empty recesses of the neurologist's brain.

Adoption of these proposals would constitute an important continuing educational experience and could benefit the undergraduate, resident, academic, and the community neurologist. Money might be saved by the improvement in the quality and relevance of teaching and possibly the quality of patient care in the teaching hospital and the community would also improve. I shall wait patiently to see whether our educators and governments have the foresight to adopt these ideas, but in the words of the cliché, without holding my breath.

ACKNOWLEDGEMENTS

I thank those program directors who replied to my questionnaire, often giving me more information than was asked for; and also Mrs. Heather Campbell for her patient secretarial assistance.

REFERENCES

- MURRAY, T. J., (1977). Relevance in Undergraduate Neurological Teaching. *Canadian Journal of Neurological Sciences* 4:131-137.
- PHILIPS, C., (1977). Headache in General Practice. *Headache* 16:322-329.