

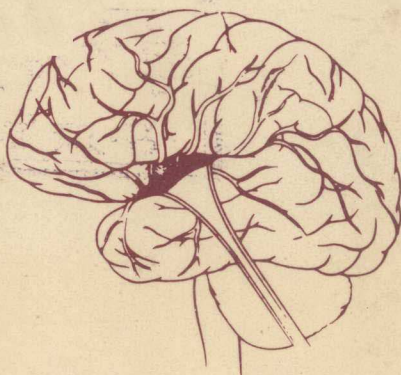
STROKE

Cause, Prevention, Treatment and Rehabilitation

A. L. Sahs

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Foreword

Guidelines for Stroke Care represents a distillate of the information appearing in its companion volume, *Fundamentals of Stroke Care*, and is intended for use as a handbook of ready reference. The *Fundamentals* is derived mainly from a series of articles that appeared in the Journal *STROKE* beginning with the May-June, 1972, issue and continuing intermittently into 1975.

The editors are indebted to many individual chairmen, committees, study groups, and consultants who actively participated in preparation of these publications. A comprehensive listing of responsible persons and organizations can be found in the *Fundamentals* and in the first article of the series (Stroke 2:351-356 [May-June] 1973).

Impetus for organizing the *Joint Committee for Stroke Facilities* was provided by the Regional Medical Programs Service. In implementing Section 907 of PL-89-239 (Heart Disease, Cancer and Stroke Amendments) in the area of stroke, the groundwork for formulating stroke care guidelines was laid with preliminary discussion between representatives of the Regional Medical Programs Service and leaders of professional and government groups involved in stroke diagnosis, treatment, and research. Representatives of 17 national professional and voluntary health associations and organizations met in July, 1968, and selected the American Neurological Association as the appropriate society to coordinate the efforts of all interested organizations. The American Neurological Association established the *Joint Committee for Stroke Facilities* to formulate and publish the material. Committee members included leaders in the field of stroke and representatives of national professional organizations working in this area. Since it was recognized that a large part of stroke treatment lay in the rehabilitation field, heavy emphasis was directed to that aspect of patient care.

Drs. Nemat O. Borhani and John S. Meyer, editors of *Medical Basis for Comprehensive Community Stroke Programs*, have kindly allowed us the use of pertinent excerpts from their publication.

The editors are grateful to the National Institute of Neurological and Communicative Disorders and Stroke, National Institutes of Health, for the support provided for completing the editing of this and other publications in addition to helpful professional and scientific advice.

The editors have prepared this syllabus for wide distribution to fill the needs of a large and varied group of professionals intimately engaged in meeting the needs of stroke patients as well as those members of the population at risk.

A. L. Sahs, M.D.
National Chairman

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Introduction

During the past few years a remarkable change in attitude toward the stroke patient gradually has been taking place. More accurate methods of diagnosis and treatment have aided in diminishing the previous nihilism regarding cerebrovascular disease. Yet a curious contemporary attitude still sets stroke aside from its companions as leading causes of death—heart disease and cancer. There still exists on the part of the healthy an embarrassment in the presence of the afflicted patient whose mark of cerebrovascular disease is usually obvious: a sagging face, a dangling arm, a wobbly gait, and all too frequently a speech impediment which interferes with useful communication. The individuals so afflicted are often condemned to live in relative isolation, neglected by all but those most devoted to them. The sufferer from other equally serious diseases is usually not the object of such ostracism. This unfortunate prejudice lingers in varying degrees even among otherwise sophisticated medical professionals at some levels and adds yet another obstacle to the provision of adequate care to those stricken people.

We presently possess the understanding as well as the tools to prevent the development of stroke in a number of individuals for whom such measures would not have been available ten years ago. Although we have the ability and technology to diagnose and treat a variety of disorders that produce stroke, we have not yet been able to bring these benefits to large numbers of patients subject to these ills. Expansion of medical facilities, a seemingly laudable goal, has been unorganized and undisciplined, resulting in excessive fragmentation and increased costs, but providing less than optimal medical care for a considerable number of stroke victims. This volume documents the available facts, lists guidelines, and notes the facilities and personnel necessary for effective delivery of health service in the area of cerebrovascular disease.

As late as the 1950s the emergency room physicians of some hospitals determined whether or not a stroke patient could swallow adequately. If he *could* swallow, he was discharged with the statement that there was nothing that could be done for the stroke. If he *could not* swallow, a nasogastric tube was inserted and he was discharged with the same advice. Receiving room physicians were almost uniformly disinterested; the flow of stroke patients seemed unending and filled the hospital's ward with sick persons in whom physicians had no diagnostic interest, for whom they did nothing (on the assumption that there was nothing to be done), and who prevented their admission of "really interesting cases."

It is unfortunate that this attitude was shared by some neurologists as well, but continuing education is diminishing this negative attitude toward cerebrovascular disorders.

The provision of health care to the stroke patient requires a surprisingly detailed fund of information. Education in neurological diseases, including stroke, has often failed to provide the necessary background for the physician during medical school and postgraduate training. Attempts are underway to correct this deficit, but it would be a mistake to assume that present efforts will solve the problem quickly. Medical schools are shortening curricula and at the same time the internship year is being eliminated. These changes are occurring at a time when the body of medical information is doubling every few years. Pressure from the public to make these condensations is great—the nation demands an increased supply of doctors without realizing fully the importance of experience under skilled supervision in the training of an informed and responsible physician. Moreover, the present-day student sometimes is less willing to spend the long period in training acknowledged in prior years to be essential.

We have broad information about stroke: patterns, mechanisms, manifestations, diagnosis, therapy, and prevention. Experts in the field are constantly reviewing data, adding to our knowledge, and attempting to resolve differences of opinion. While recognizing the legitimacy of certain controversies, we should not forget that information *not* in serious contention is not now being applied because some medical practitioners are either unfamiliar with the available knowledge or lack interest in its utilization.

What today are considered the best therapeutic or diagnostic principles, however, may be obsolete tomorrow—not necessarily because they are wrong at this time, but because they will have been superseded by better methods. For example, the arteriogram of 30 years ago carried a relatively high morbidity and significant mortality. The carcinogenic properties of a commonly injected contrast agent were not recognized until many years later. The technical capacity of the films to yield information was as primitive as was the experience of the neurological or radiological interpreter. With that state of the art, no rational expert would have advocated the use of arteriography with the freedom and frequency with which it is being utilized today. If, 30 years ago, a panel of experts had assessed the role of arteriography in the diagnosis of stroke, it is likely that a reserved, highly cautionary, even bluntly negative, recommendation would have emerged. Possibly the great practical value of this procedure could have been delayed for years. However, progress in arteriography was made—not through its indiscriminate utilization by every journeyman practitioner—but through systematic study by a few thorough and painstaking neuroradiologists who devoted their efforts to this technique. Perhaps this example will serve to remind us that the labors of experts in diverse fields will inevitably result in more productive

modifications in the future. It is therefore imperative that we should expect and strive for change. What is the best practice today may not be so tomorrow and as the results from new and controversial ideas emerge we must insist in the interests of the patients' welfare that the reports be accurate and that application of the results be expedited.

The many experts who have contributed to this publication are aware that their opinions and recommendations are subject to change. Many of them have expressed concern that their currently expressed views might be taken as "official rules" which would limit progress by discouraging the development of different ideas or approaches. This is not the intent of the Guidelines. Nonetheless, this material represents the best judgment of many well-qualified individuals who have accepted their responsibilities with dedication. Used properly, the information should represent a significant advance in the delivery of health care to those who need it most—the stroke patient and the person at risk of stroke.

Recent information which has come to the editors' attention might indicate an encouraging trend. Dr. John Kurtzke,* an experienced epidemiologist in the stroke field, has commented for us as follows:

"According to the Provisional Statistics for 1975 provided by the Health Resources Administration, National Center for Health Statistics (Monthly Vital Statistics Report 24, No. 13, June 30, 1976), the crude death rate for cerebrovascular disease dropped in only one year by 6.4 percent 'from 98.1 deaths per 100,000 to an estimated 91.8 for 1975 . . . greater than the 5.7 percent decrease between 1950 and 1974, for which period the rate dropped from 104.0 to 98.1 deaths per 100,000. Adjusting for age (to 1940 population) results in a change in this pattern, between 1950 and 1974 the age-adjusted death rate dropped 32.5 percent (from 88.8 to 59.9 deaths per 100,000); and between 1974 and 1975 . . . 8.7 percent—from 59.9 to 54.7 deaths per 100,000.'

"These data refer to strokes listed as the underlying cause of death as recorded on death certificates. Differences of opinion remain unresolved as to whether the decline from 1950 (which could be seen as early as 1920) reflects fewer deaths caused by stroke, or is an artifact of coding practices indicating a closer approximation to reality in recent years. In this same interval, 'residual' deaths ('all other diseases') have risen from 49.8 to 55.9 per 100,000 as have also deaths coded to 'symptoms and ill-defined conditions' at 12.7 per 100,000 in 1970 and 15.3 in 1975.

"It seems premature to accept a 'true' decline in deaths due to stroke even though there is a real and marked decline in *death certificates* coded to stroke as underlying cause.

"If the decline in stroke deaths were actual, one would next question whether strokes were fewer or survival ratios better. One might then wish to attribute the improvement to treatment for the latter or prevention for the former. At the moment, however, it is too soon to rely heavily on

*Professor of Neurology and of Community Medicine, Georgetown University School of Medicine, and Chief, Neurology Service, Veterans Administration Hospital, Washington, D.C.

these changes in death rates as indicating that either stroke deaths or strokes themselves are declining.”

Classification

Cerebrovascular disease is a broad term which includes all types of occlusive or stenosing disease of the cerebral blood vessels (thrombosis and embolism) as well as hemorrhagic diseases of the brain (hypertensive cerebral hemorrhage, subarachnoid or parenchymal hemorrhage from rupture of an aneurysm or arteriovenous malformation).

The various types of cerebrovascular disease may be classified according to: (1) pathophysiologic mechanisms, (2) pathology, (3) clinical course and neurological manifestations; others might add: (4) assumed anatomical localization or name of the vessel involved (fig. I-1), (5) associated diseases liable to render an individual prone to cerebrovascular disease.

The term "stroke" is generally applied to a sudden attack of ischemic or hemorrhagic disorder of the brain, often resulting in a focal neurological deficit, most often paralysis.

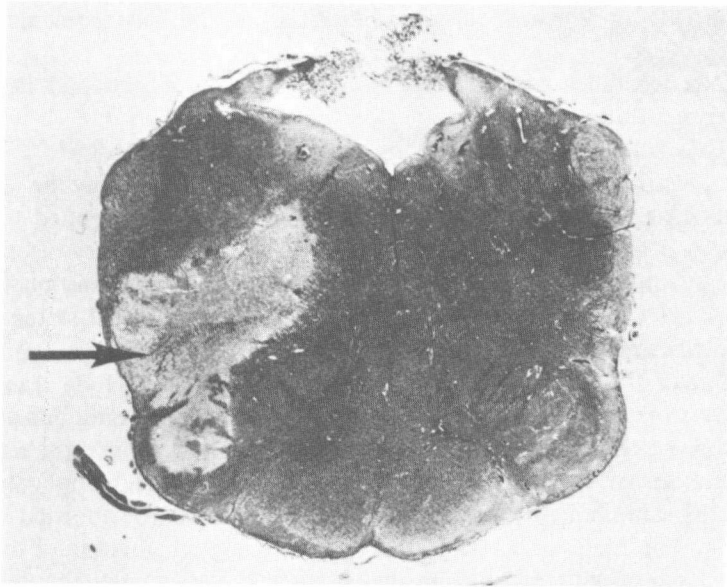


Fig. I-1 Area of softening in lateral medullary zone (arrow) producing the Wallenberg's syndrome as a result of thrombosis of the posterior inferior cerebellar artery