Improving Adherence to Guidelines for Acute Stroke Management

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In recent years, many medical professional organizations such as the European Society of Cardiology, the American Heart Association, the American College of Cardiology, and the American Stroke Association have promoted guideline-based therapy for different groups of patients. These guidelines are based in part on large clinical trials and, when such are not available, on so-called expert opinion.

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Some argue that pursuing adherence to guidelines is a worthy effort by itself, just to bring order into diversity. For others, it seems obvious that use of guidelines leads to improved quality of medical care and improved health outcomes. Yet a few wonder whether the chain of evidence from guideline development and implementation, adherence to guidelines, and improved process of care through improved quality and functional outcomes is everywhere as solid as it should be.

It has become quite clear that in order to improve healthcare quality, merely introducing guidelines is not sufficient, not even after creating a solid framework of evidence-based recommendations. The guidelines should be incorporated in a quality-assurance cycle with education programs and feedback from registries or surveys of clinical practice (Figure 1), such as the Get with the Guidelines program (GWTG).

Several large surveys in Europe and the United States have indicated that adherence to guidelines for the clinical management of stroke and cardiovascular disease needs improvement. For example, treatment with oral anticoagulants to prevent recurrent stroke in patients with symptomatic atrial fibrillation has been recommended in clinical guidelines for more than a decade. Undertreatment is associated with an increased stroke rate. Treatment with anticoagulants should be tailored to estimated stroke risk, yet in the EuroHeartSurvey program several other factors were associated with whether or not anticoagulants were prescribed in clinical practice. Other surveys of stroke care, such as the Netherlands Stroke Survey, have similarly reported undertreatment: Only 40% to 70% of the patients who should receive this treatment actually do receive it. Similar figures were reported for treatment with antihypertensives.

Just as disturbing are the low rates of patients with acute ischemic stroke who receive treatment with intravenous recombinant tissue-type plasminogen activator. Rates of treatment typically vary between 2% and 10% of all admitted patients with acute stroke, whereas 20% to 25% would be more appropriate. In cardiology, a gradual increase in appropriate reperfusion therapy for myocardial infarction has been observed in patients with diabetes mellitus and in others. A similar trend may be expected for treatment of stroke when neurologists gradually become more acquainted with this therapy.

Guideline Adherence and Outcomes

A relationship between guideline adherence and improved health outcomes has been documented in several studies, yet it is often difficult to prove a direct relationship between the increased use of guidelines and improved health outcomes. Often, such analysis is retrospective, using suboptimal clinical records. Accordingly, it is particularly difficult to distinguish differences in distribution of health outcomes between hospitals that are due to differences in adherence to guidelines from those that are due to differences in patient characteristics. This can be explained by the relatively small effect on outcome of each procedure, by the observation that guideline adherence in one center may be low on one topic and high on another, and by the observational design of studies investigating this issue.

Nevertheless, clinical intervention studies suggest a strong relationship between guideline adherence and quality of care and improved outcome. For example, adherence to a protocol for detection and management of dysphagia led to a statistically significant reduction of the proportion of patients with pneumonia and a near-significant improvement in functional outcome compared with clinical management where management decisions were left to the discretion of the attending physician, without an explicit protocol.

Get With the Guidelines—Stroke

GWTG-Stroke is an ambitious quality improvement program to stimulate adherence to stroke guidelines. It is unique because of its size. The article by Schwamm et al in the current issue of Circulation describes the timely and careful evaluation of the effect of this program as it was executed throughout the United States after a 1-year pilot phase.

In brief, data are presented from 322 847 patients enrolled in 790 participating hospitals over a study period of >4 years. Seven performance measures and 1 safety measure were assessed. The authors defined their performance measure as

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the proportion of cases with a fulfilled opportunity for care. The denominator of the reported proportions consisted of the number of opportunities, for example patients arriving in time without contraindications for intravenous thrombolysis, and the numerator consisted of the number of patients in whom the care opportunity was realized. Other performance measures were (2) early treatment with antithrombotics, (3) deep-vein thrombosis prophylaxis during hospitalization, (4) antithrombotic therapy prescribed at discharge, (5) Anticoagulation in case of atrial fibrillation, (6) prescription of lipid-lowering agent when low-density lipoprotein was >100 mg/dL, and (7) smoking cessation service offered at discharge. The safety parameter was symptomatic intracranial hemorrhage within 36 hours after intravenous thrombolysis.

During the 4.5 years of the study, a steady increase in each performance level was noted. This effect remained present after adjustment for the cluster effect (ie, the point that observations on patients from one center may not be independent of each other), and for patient and center characteristics. Moreover, the effect could not be attributed to discontinuation of poorly performing centers.

Before we discuss the clinical implications of these important findings, we will have to address possible limitations of this study. Most of these have already been identified by the authors of the article.

First, the representativeness of the study could be debated. Centers volunteered for participation in GWTG–Stroke. This may imply selection toward better-performing centers. It is by no means certain that the effects observed in GWTG just received a contraindication noted in their file instead of the best treatment. In order to assess this effect, we would need to compare the absolute number of eligible patients with the appropriate opportunity for care.

Third, some of the performance measures have been defined quite broadly. Early treatment with antithrombotics apparently also included treatment with heparin or anticoagulants. Current guidelines are explicit in their advice not to administer these agents to patients with acute ischemic stroke because they may increase the risk of bleeding and their efficacy in preventing early recurrent stroke or ischemic stroke progression is not proven.

Fourth, the performance measures concern predominantly medical management of acute stroke, smoking cessation counseling being the exception. However, several care parameters have been proposed in the guidelines, such as early mobilization, assessment of swallowing dysfunction, and early hydration with intravenous fluids. Findings from multiple randomized trials suggest that efficient delivery of the combination of these treatments in a stroke unit yields better outcomes than does less-organized delivery of these therapies in general medical wards. Some of these measures could have been included in GWTG–Stroke.

Fifth, this was an uncontrolled study. This implies that an autonomous trend toward improvement could have been identified when centers would have been randomized to intervention according to the GWTG–Stroke program or to control. Now, trends and intervention effect cannot be disentangled, which implies that the effect of the GWTG–Stroke program may be overestimated.
Sixth, the evaluation of outcome was not part of the main program, for logistic and economic reasons. We are looking forward to the results of the Acute Ischemic Stroke Longitudinal (AVAIL) substudy, where postdischarge functional outcome will be related to performance measures in a subset of hospitals participating in the present study.

Clinical Implications

Despite these limitations, the message of the article by Schwamm et al is clear: A program to improve adherence to guidelines helps! In the Euro Heart Survey program, a marked improvement of secondary preventive therapy was documented over a 10-year period (Figure 2), a finding that is most likely due in part to the systematic application of a guidelines adherence program but also to the marketing activities of several vendors of preventive drugs. Indeed, the use of lipid-lowering therapy and angiotensin-converting enzyme inhibitors appropriately improved, but little effect was achieved with respect to lifestyle because the proportion of smokers after an acute coronary event did not diminish. The true effects of a guideline adherence program may be somewhat smaller than suggested here, but they will most likely be substantial, and the effect on functional outcome after stroke will certainly be worthwhile. Moreover, participating in a program such as GWTG–Stroke can be a stimulating and rewarding way to improve clinical practice.

Disclosures

None.

References


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