been fortunate enough to practice with psychiatrists know
the advantages of a joint practice. The mere presence of
psychiatric colleagues increases our vigilance for psy-
chiatric disorders. Psychiatric referrals are simpler and
less embarrassing for the patient. And having psychi-
atrists at weekly team meetings increases our
competence and confidence in managing simple ill-
nesses. But such joint practices often are not feasible,
and we are left with the need to determine how best to
care for our depressed patients when there is no psy-
chiatrist in the room next door.

The authors suggest that their study be viewed as
"a cautionary note about the application of specialty
standards to primary care practice," a warning that rings
true for many of the illnesses we treat. The study pro-
vides another important lesson. Because patients' needs
differ, primary care settings must be structured to allow
providers to recognize and meet all of those needs. Some
patients require only the simplest of interventions, less
intensive, and perchance less toxic than the standard.
Some patients require more aggressive therapy—the
recommended regimen. Still others, the most complex
patients, require ready access to specialty consultation.
It's not exactly a new idea, but one that needs some
reemphasis in this era of practice guidelines and man-
aged care.—EUGENIA L. SIEGLER, MD, Brooklyn Hos-
pital Center, New York University School of Medicine,
Brooklyn, NY 11201

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Choosing Antihypertensive Therapy

How should we choose first-line antihypertension
therapy in 1996? When there were only a handful
of choices, it was rather simple. Today there are five
classes of antihypertensives with more than 80 medi-
cations approved by the Food and Drug Administration.
In addition, the clinician increasingly faces aggressive
pharmaceutical marketing, vocal and informed patients,
and economic limitations in prescribing.

The foremost criterion that should guide selection
is the effectiveness of the medication in preventing compi-
cations and prolonging life. Many trials have demon-
strated such a benefit with antihypertensive therapy.
The Hypertension Detection and Follow-up Program and
the Swedish Trial in Old Patients with Hypertension both
showed statistically significant reductions in overall
mortality and strokes with antihypertension treat-
ment. 1-3 The VA Cooperative Group, the Medical Re-
search Council Working Party, the Oslo Study, and the
Systolic Hypertension in the Elderly Program all dem-
onstrated reductions in fatal and nonfatal strokes with

treatment. 4-7 Meta-analysis also shows improved sur-
vival and fewer strokes with antihypertensive ther-
apy.2, 7

These trials primarily relied on thiazide diuretics,
reserpine, or beta-blockers as first-line therapy for hy-
pertension. It is widely believed that it is the hypotensive
effects of these medications that spare end-organ dam-
age and lead to improved outcomes. Although other anti-
hypertensives are available, clinicians who rely on direct
data to establish a link between treatment and outcome
will restrict their choice to one of these agents.

The newer and more expensive classes of antihy-
pertensives such as calcium-channel blockers and an-
giotensin-converting enzyme (ACE) inhibitors have not
been shown to improve survival or reduce strokes. Re-
cent reports suggest that some of them may even be
harmful. 6, 9 However, it is clear that they are effective as
hypotensive agents. 10-11 An added benefit to these newer
antihypertensive medications is that they may favorably
influence the course of other diseases that are common
to hypertensives. For example, ACE inhibitors prolong
survival in patients with left ventricular dysfunction. 12
They also can slow the progression of diabetic nephe-
rophy. 13 Calcium-channel blockers are useful in the man-
agement of angina, atrial fibrillation, and diastolic dys-
function. 14-16 Of course, older drugs also can treat other
diseases. Beta-blockers are effective for coronary artery
disease and migraines. 14, 17 Thiazides can treat hyper-
calcuria or edematous states. 18

The clinician should attempt to tailor the medical
regimen to fit the particular patient. If there are concomitant illnesses amenable to a specific antihypertensive, then that medication should be selected. Two (or more) illnesses will be treated with a single medication, which likely will improve compliance, lower costs, and reduce the possibility of side effects and drug interactions. If one of the newer antihypertensives is chosen, one might worry that the treatment of the patient’s hypertension may not improve long-term outcome. However, we feel that the benefits to such an approach, given the efficacy of these drugs as hypotensives, outweigh the risks.

How should the clinician choose the appropriate antihypertensive if there is no cotreatable illness? This decision should be based on the relative costs of the medications, preference for a once-daily dosing schedule, and the anticipation of adverse effects.

The direct medication costs of treating hypertension currently exceed $10 billion per year in the United States. Some analyses suggest that only a fraction of the costs of treating hypertension is recovered from disease prevention, and that the cost-effectiveness ratio for the treatment of mild hypertension is high. In this issue of the Journal, Odell and Gregory implicate medications as the primary cost factor in the treatment of hypertension. They retrospectively analyze the costs of office visits, laboratory tests, and medications for 244 patients in a University of Utah internal medicine clinic. Their primary finding is that medications account for 80% of hypertension treatment costs after the first year of treatment. While medications made up 36% of total treatment costs in a study from 1980, they comprise 70% of the total treatment costs in this study. Odell and Gregory find that the yearly cost for treating hypertension is $950 in the first year of treatment, $575 in the second, and $435 and $411 in the third and fourth years, respectively. Assuming the achievement of equal outcomes, the selection of less expensive antihypertensive medications would significantly lessen the personal and societal costs of treatment, and improve the cost-effectiveness of treatment.

Another benefit of less expensive treatment centers on compliance. Nearly one-fourth of hypertensives report that medication costs are a problem “all” or “most of the time,” and 36% of severe hypertensives are unable to refill prescriptions at times because of cost.

The clinician also should select a medication with once-daily dosing. Compliance rates improve from 30–40% with four-times-per-day dosing to 40–50% with tid, 70–80% with bid, and nearly 90% with once-daily dosing.

Finally, the clinician should choose a medication with a minimum of side effects. Many of the newer antihypertensives have been trumpeted as having a “more favorable” side-effect profile. However, in head-to-head trials, adverse effects, withdrawals from treatment, and quality of life indices have been similar among the major classes of medications. Some individuals will have a predilection for certain adverse effects based on current medical conditions or past history, and the physician should avoid the medications associated with these effects.

So what medication should we choose? If there are no concomitant illnesses requiring treatment, we favor thiazide diuretics, once-a-day beta-blockers, or reserpine. These are all very inexpensive, once-daily medications that are effective in lowering blood pressure and have been shown to improve long-term outcome. The choice among these medications should be refined in view of patient demographics and anticipated side effects.

We filled six once-daily antihypertension prescriptions at a local branch of a large national retail pharmacy chain. Table 1 lists the monthly costs of these medications, the average total yearly costs to treat hypertension, and the percentage of total yearly costs accounted for by medications. The selection of a traditional first-line agent will reduce the cost of hypertension treatment by well over 50%. When more expensive medications are used, most of the treatment costs result from the medications themselves. Odell and Gregory found that most of hypertension treatment costs are due to medications, perhaps reflecting the widespread use of the newer agents.

### Table 1: Monthly Costs and Total Yearly Maintenance Costs for Various Antihypertensive Agents

<table>
<thead>
<tr>
<th>Medication</th>
<th>Monthly Cost*</th>
<th>Total Treatment Cost per Year†</th>
<th>Drug Cost As Percentage of Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochlorothiazide, 25 mg</td>
<td>$2.83</td>
<td>$128.52</td>
<td>26%</td>
</tr>
<tr>
<td>Reserpine, 0.25 mg</td>
<td>$4.06</td>
<td>$143.28</td>
<td>34%</td>
</tr>
<tr>
<td>Hydrochlorothiazide, 25 mg</td>
<td>$7.93</td>
<td>$188.56</td>
<td>50%</td>
</tr>
<tr>
<td>Potassium chloride, 20 mEq</td>
<td>$7.99</td>
<td>$190.94</td>
<td>50%</td>
</tr>
<tr>
<td>Triamterene, 75 mg</td>
<td>$8.59</td>
<td>$197.64</td>
<td>52%</td>
</tr>
<tr>
<td>Atenolol, 50 mg</td>
<td>$8.49</td>
<td>$436.44</td>
<td>78%</td>
</tr>
<tr>
<td>Lisinopril, 10 mg</td>
<td>$28.49</td>
<td>$436.44</td>
<td>78%</td>
</tr>
<tr>
<td>Amlodipine, 5 mg</td>
<td>$37.99</td>
<td>$550.56</td>
<td>83%</td>
</tr>
</tbody>
</table>

*Assume each medication is dispensed as “#30, Take one by mouth each day.”
†Yearly cost of medication plus the average yearly costs of office visits and laboratory tests after the first year of treatment (see Odell and Gregory).