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Positive Experience With Medical Savings Accounts In Singapore
by Thomas A. Massaro and Yu-Ning Wong

Medical savings accounts (MSAs) may, by introducing personal responsibility into individual decision making, reduce overall health care costs. This has attracted policymakers' attention in the United States and in other countries. In fact, a mandatory MSA program has financed personal health care expenditures in the Republic of Singapore since 1984. Here we outline the operational characteristics of MSAs in Singapore and highlight the issues to be considered in any attempt to replicate such a program in the United States.

The Savings Infrastructure

The Central Provident Fund (CPF) is the cornerstone of Singapore's social welfare program. This mandatory defined-contribution savings program deposits 40 percent of wages (split equally between employer and employee) into an interest-bearing account. Three components are health-related: Medisave, the compulsory national health care savings program begun in 1984; Medishield, the catastrophic insurance program covering extraordinary expenses for those under age seventy; and Medifund, the government-endowed trust that pays for care delivered to the poor.

CPF allocations to Medisave begin at 6 percent of wages (maximum S$360 per month), rising to 7 percent at age thirty-five (maximum S$420 per month) and to 8 percent at age forty-five (maximum S$480 per month) until the account balance reaches S$16,000. In 1992 the mean balance in the two million Medisave accounts was S$4,500. Contributions averaged S$695 and withdrawals, S$125. Medisave pays up to S$300 per day for hospital charges, S$50 for attending physicians fees, and between S$150 and S$5,000 based on complexity for surgical procedures. Medisave is used in 83 percent of inpatient stays but covers only a few relatively expensive outpatient treatments. Once account minimums are reached, accumulated Medisave funds can be transferred to other CPF accounts for other approved uses.

There are three Medishield options. Premiums are automatically deducted from Medisave accounts unless the employee declines coverage. Even though 88 percent of Medisavers participate, the very young and the aged may not have Medisave accounts. Thus, only slightly more than half of the population is enrolled in Medishield. Reimbursements are based on complexity of care and begin only after a hospital stay exceeds 150 percent of the average length-of-stay for a given procedure or illness. Between 20 percent and 25 percent of all inpatients receive some Medishield reimbursements. Payments are greater for the poor and for those who elect to receive their inpatient care in the more subsidized wards. Exhibit 1 shows benefit and premium schedules for the three Medishield plans.

Medifund was established in April 1993 with a grant of S$200 million. An additional S$100 million is deposited annually when there is a government surplus. Funds are distributed case by case; preference is given to low-wage Medisave/Medithield contributors and elderly persons whose accounts are not adequate to cover expenses.

Health Care Delivery System

In 1992 Singapore spent S$2 billion, or 3.1 percent of its gross domestic product (GDP), on health care. Eighty percent of hospital care is delivered in public facilities, and 75 percent of ambulatory service is provided by private practitioners. Twenty-six
government-subsidized clinics provide outpatient services at low cost.

**Physician practice.** The government controls licensing and specialization of doctors. In 1993 half of the approximately 4,000 physicians were in private practice. By 2000 the total number of physicians will rise to 5,200, with most of the growth coming in the private sector. The patient-to-physician ratio will drop from 800 to 650, but specialists will continue to account for 40 percent of the total. To control physician supply, each medical class at the National University is limited to 150 students. The list of foreign medical schools whose degrees are recognized has been reduced from 176 to 28; eleven of these are American.

Doctors are reasonably well compensated. Government physicians are paid as civil servants but with a “clinical faculty supplement” of 25 percent of their base wage. Those with heavy clinical loads may choose instead an incentive based on their clinical billings. Private fee-for-service physicians probably earn more than their public-sector counterparts.

**Hospital sector.** Thirteen of the twenty-three hospitals (8,640 of 10,469 beds) are controlled by the Ministry of Health (MOH). MOH hospitals have five classes of wards receiving varying degrees of subsidy based on the delivery environment and the associated amenities. Class A competes without subsidy with the private sector. The subsidy contributes 20 percent of the total in B1 and gradually increases up to 80 percent for class C. B1 wards have four beds to a room; B2 patients do not have choice of physicians; C wards are open and without air conditioning. There are no means tests associated with the different levels, nor are patients assigned to a certain class, although 17 percent of patients choosing Class A services earn less than $1,000 per month. The total subsidy in 1992 was approximately S$360 million, or 18 percent of total health care spending.

<table>
<thead>
<tr>
<th>Yearly premium</th>
<th>Medishield Plus Plan A</th>
<th>Plan B</th>
<th>Medishield Basic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 30 years</td>
<td>$ 60</td>
<td>$ 36</td>
<td>$ 12</td>
</tr>
<tr>
<td>31-40 years</td>
<td>90</td>
<td>54</td>
<td>18</td>
</tr>
<tr>
<td>41-50 years</td>
<td>180</td>
<td>108</td>
<td>36</td>
</tr>
<tr>
<td>51-60 years</td>
<td>300</td>
<td>180</td>
<td>60</td>
</tr>
<tr>
<td>61-65 years</td>
<td>480</td>
<td>288</td>
<td>96</td>
</tr>
<tr>
<td>65-70 years</td>
<td>660</td>
<td>396</td>
<td>132</td>
</tr>
</tbody>
</table>

Notes: Dollars are Singapore dollars. ICU is intensive care unit.

### Exhibit 1
Comparison Of Benefits And Premiums Of Medishield Plans In Singapore

<table>
<thead>
<tr>
<th></th>
<th>Medishield Plus Plan A</th>
<th>Plan B</th>
<th>Medishield Basic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deductible per policy year</td>
<td>$ 4,000</td>
<td>$ 2,500</td>
<td>$ 500-$1,000</td>
</tr>
<tr>
<td>Claim limits per policy year</td>
<td>70,000</td>
<td>15,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Claim limits per lifetime</td>
<td>200,000</td>
<td>150,000</td>
<td>70,000</td>
</tr>
<tr>
<td>Room and board per day</td>
<td>500</td>
<td>300</td>
<td>100</td>
</tr>
<tr>
<td>ICU per day</td>
<td>800</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>Procedures</td>
<td>400-5,500</td>
<td>300-4,500</td>
<td>100-600</td>
</tr>
<tr>
<td>Implants per policy year</td>
<td>3,500</td>
<td>2,500</td>
<td>1,000</td>
</tr>
<tr>
<td>Outpatient treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiotherapy per day</td>
<td>100</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>Chemotherapy per month</td>
<td>800</td>
<td>600</td>
<td>200</td>
</tr>
</tbody>
</table>

The government—subsidized clinics provide outpatient services at low cost.

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There are now revenue caps on MOH hospitals. Limits on average cost per patient day for different services and settings are
adjusted annually. Medical inflation targets are set at “CPI+x” where CPI is the Consumer Price Index and X allows for “medical progress” as determined regularly by the Ministries of Health and Finance. (For 1994-1995, X is 2 percent.) Hospitals exceeding this limit will have their government subsidies cut. Those with surpluses will be able to keep the profits.

The MOH is reducing the number of Class A beds. Those who opt for full amenities increasingly will be channeled to the private sector, which, by 2010, will contain 30 percent of total beds. Public institutions will concentrate on high-quality, subsidized health care with no frills. To the extent that consumers have been price-sensitive, the incremental cost between the unsubsidized MOH Class A and private services may have indirectly influenced rates in private hospitals in the past. Recently the government has begun direct cost containment in the private sector by limiting balance billing for Medisave patients. (Billing practices for patients who do not use Medisave will not be changed.)

Clinical resource use. In 1991 there were 336,905 acute care admissions. This hospital use rate of 1.2 admissions per year per thousand population corresponds to that found in the more aggressively managed American health maintenance organizations (HMOs). Average length-of-stay at MOH tertiary facilities is about 5.4 days, again consistent with U.S. managed care and much less than that seen in Organization for Economic Cooperation and Development (OECD) or other industrialized nations.

High-technology services are provided at what appear to be appropriate levels. In 1993, of the 1,051 coronary artery bypass graft (CABG) procedures, 676 were for Singapore residents, producing a domestic rate of twenty-four CABGs per 100,000 population. Only 6.2 percent of the Singapore population was above age sixty-five in 1990, compared with 12.6 percent in the United States and 15.4 percent in West Germany. Thus, the age-adjusted CABG rate, although lower than in the United States, probably exceeds that of Canada, Germany, and most western European nations.

These services are available at reasonable cost. The charge for CABGs is S$13,000 at Singapore General Hospital, including physician fees. A S$28,000 deposit is required for foreign residents, probably as a barrier to overuse of the public sector by non-Singaporeans. High-technology services are also available in a timely manner. Queues and long waiting times are not generally seen. MOH data indicate that the longest waiting times (slightly less than two months) are for cataract surgery in public-sector clinics, and the ministry is working to reduce these to more acceptable levels.

Discussion

The Singapore system is efficient and effective. The health status of the population has improved rapidly with a surprisingly small national investment. Hospitals are profitable, and physicians are well paid. From a policy perspective, it is important to know whether Medisave is the cause or the beneficiary of Singapore’s success. Would similar approaches produce similar results in other settings?

Singapore provides the optimum climate for an MSA program. Saving is a national preoccupation, with an average personal savings rate of 46 percent of wages. Although the economy has grown at more than 10 percent annually since 1984, growth in medical expenditures has exceeded growth in GDP. Because of withdrawals, caps on contributions, and more conservative return rates, Medisave balances did not keep up with medical inflation. Thus, as the population ages, pressures to raise the CPF contribution rate may increase. If the economy were to slow down and/or if medical expenses were to increase, the situation would become more precarious.

We believe that Medisave has been a positive force in controlling costs in the Singapore health system. As societies become wealthier, they rationally invest a greater fraction of new wealth in health care. Christopher Murray and colleagues calculated a GDP-health expenditure elasticity...
of 1.43; that is, for every 1 percent of GDP growth, health spending rises 1.43 percent. They also show that Singapore reached a predicted health status level (life expectancy at birth) with the lowest relative GDP investment out of fifty-eight developing economies. Health expenditures in the Asian nations are rising at 15 percent annually as they modernize their delivery systems. The former Eastern bloc countries are increasing health care investments at even higher rates as they move toward Western standards.

Hong Kong, another prosperous city-state with a strong Chinese heritage of personal savings but without an MSA program, provides an interesting comparison. For the period 1984-1990 Hong Kong increased real health spending 13.1 percent annually with a real GDP growth rate of 6.7 percent per year. At the same time Singapore, with Medisave, increased real medical expenses by 11 percent per year while real GDP increased at an 8.3 percent annual rate. A significantly smaller fraction of the newly created wealth went to new health care expenditures in Singapore than in Hong Kong. Our conclusion is that with Medisave as a key element of its strategy, Singapore has developed a very sophisticated health care system over the past decade at much less than the world market price. While this does not “prove” the cost-effectiveness of MSAs, it certainly makes it difficult for us to dismiss the concept.

In theory, MSAs force individuals to anticipate future needs and accumulate reserves for later use. The young “subsidize themselves” by prepaying anticipated expenses. The pressure to maintain an adequate balance encourages careful review of all spending decisions, presumably lowering marginal utilization and thereby lowering cost. Singapore began with a “pure” savings system and added an insurance option only to manage the most expensive outliers. However, this acknowledged that, even in a savings-prone society, some form of insurance (intergenerational risk sharing) is a necessary complement to an intragenerational savings scheme. If a “pure” savings system cannot stand alone in Singapore, it is unlikely to work anywhere. Medisave/Medishield together work well, however, and the success may be less culturally dependent. Local preferences can determine the relative mix of the savings and insurance components. Different ratios may be acceptable in different settings.

**Pauly/Goodman proposal.** Mark Pauly and John Goodman propose to link insurance and MSAs directly through tax credits. But they describe these components differently and ultimately reverse their relative importance. They suggest a “cumulative” catastrophic package activated when total annual expenses exceed a given threshold. This is similar to the high-deductible, high-copayment provision in many cost-sharing initiatives that have been tried. The maximum financial exposure for a patient is the out-of-pocket limit (the differential between the MSA account balance and the deductible floor of the insurance piece) plus whatever copayment feature is included in the plan. Catastrophic insurance becomes a major focus of decision making. Persons who use few services and are below the deductible are motivated to save. Heavier users who exceed the threshold have little incentive to make prudent decisions.

Medishield, on the other hand, is an “event-based” catastrophic plan activated only when a hospital admission extends beyond the normal average length-of-stay distribution. All costs from admissions that fall within normal average length-of-stay distributions must be covered by Medisave or out-of-pocket payments. This explains the low relative cost of the Medishield plan and the greater savings contribution (for all but the lowest wage earners) in Singapore. As a result, individuals have a much larger financial exposure under Medisave. Discretionary personal spending decisions are important regardless of historical use patterns.

Preventive care should be an important focus in any MSA design. It would be counterproductive if, to maximize savings balances, individuals neglected basic prevention. In Singapore strong public health education provides the motivation for wellness and preventive services. Virtually all infants are immunized. Childhood obesity dropped 2 percent in two years after a multilingual
teaching program was initiated." Smoking has been cut by 50 percent. Nonetheless, nominal out-of-pocket payments exist even in subsidized clinics as reminders that health care is never a free good. In the Pauly/Goodman model preventive care could be covered completely using MSA funds, but if a reluctance to draw down significantly on the MSA balance for all but acute and urgent care is created, a potential barrier to prevention could appear. Since it is unlikely that public health education would be as effective in the United States as it is in Singapore, important preventive services could be covered without deductibles and copayments in the insurance component to reduce this barrier.

The Pauly/Goodman proposal is probably a better introduction to the MSA concept for the United States than a complete adaptation of the Singapore system would be. Americans may not embrace savings as enthusiastically as their Singaporean counterparts do, but they do respond to financial incentives, especially tax-based ones.

As many as 1,000 American firms already offer some type of combined MSA/catastrophic coverage program. Most have shown reductions in corporate health expenditures with positive responses by participants even though MSA deposits are taxed as income. Bonuses paid from program savings reinforce the cost containment message. Obviously the programs would be even more attractive if tax credits were added.

Linking MSAs and tax credits with catastrophic coverage may soften the regressive character of many patient cost-sharing experiments while maintaining most of the benefits. Tom Rice and Kathleen Morrison recently summarized these gains: (1) Overall utilization is reduced; (2) the reduction in the use of less important services is greater than that for significant services; (3) the reductions are sustainable; and (4) the impact on the health status of low-risk participants will be minor. These represent reasonable criteria by which to assess any MSA initiative.

Pauly and Goodman state that MSAs will help encourage appropriate forms of managed care and discourage inappropriate forms, but they fail to define the difference. Medisave delineates services covered based on an assessment of social value and cost-effectiveness. Renal transplants are covered, but heart and liver procedures are not. Perinatal services are provided for the first three children but not for additional births. Unless there is some equivalent decision-making process in the United States, it is difficult to understand how an American MSA system will differentiate between appropriate and inappropriate managed care more effectively than the present structure does.

Financing mechanisms alone do not define a health care system. Singapore has a clearly delineated policy that works in its setting. The state actively participates in every aspect of the delivery system, from physician supply to price setting and the establishment of service criteria. This willingness to intervene aggressively in the market (at levels probably unacceptable to most Americans) may be as important as the individual savings mechanism to its success.

We hope that American health care reform will eventually introduce the right combination of market forces and government intervention. Singapore has achieved an appropriate balance for its population. Medisave and Medishield work well as part of that solution, and we should learn more about this approach. Whenever possible, pilot MSA programs should be encouraged and carefully evaluated, especially at the local and regional levels.

The authors gratefully acknowledge grant support from the Ellen Bayard Weedon East Asia Travel Fund of the University of Virginia. They also acknowledge the professionals in the Ministry of Health and Singapore General Hospital who gave generously of their time and provided very valuable insight into their national health care system.
NOTES


3. The average exchange rate in early 1994 when this study was completed was approximately $1.00 to approximately U.S. $0.65.


5. Ibid.


7. Affordable Health Care.


15. Pauly and Goodman, “Tax Credits for Health Insurance and Medical Savings Accounts.”


18. Tweed, “Medical Savings Accounts.”

19. Rice and Morrison, “Patient Cost Sharing for Medical Services.”