

probably been transmission through breast milk. Prospective evaluations to determine the risk of congenital West Nile virus infection are under way. Screening of the U.S. blood supply was initiated in 2003, and it has substantially reduced the risk of transmission through transfusion. To date, 1006 viremic donors have been identified through such screening and reported to ArboNet (818 in 2003 and 188 in 2004). However, blood donors with very low levels of viremia may still escape detection, and vigilance for West Nile virus infections due to transfusion and organ transplantation must continue.

In 2004, only 741 cases of neuroinvasive disease due to West Nile virus infection had been reported through October 15, as compared with 2866 in all of 2003 and 2946 in 2002. Although one third of the cases of neuroinvasive disease reported in 2004 occurred in Arizona and California, the risk of West Nile virus disease remains sporadically distributed throughout the country. The annual recurrence of West Nile virus activity suggests that transmission will continue during the coming years.

Future patterns of transmission are hard to predict. The epidemiology of St. Louis encephalitis virus, a closely related arbovirus, might lend some insight. Each year since 1932, between 0 and 1967 cases of St. Louis encephalitis (median, 26), occurring either sporadically or in focal or regional epidemics, have been reported in the United States. However, West Nile virus produces higher levels of viremia in birds than St. Louis encephalitis virus,

infects more mosquito species, and is more likely to cause symptoms, making a higher incidence of disease likely. Herd immunity in humans will have a minimal effect on the incidence of disease, because even in areas of the United States that have had epidemics of West Nile virus, studies have shown that less than 5 percent of the population has been exposed to the virus and developed protective antibody. For reasons that are unclear, the spread of West Nile virus into Latin America and the Caribbean has resulted in surprisingly scarce reports of human disease, despite conditions that should favor the transmission of mosquito-borne arboviruses.

The risk of neuroinvasive disease due to West Nile virus is relatively low, and the foci of highest incidence are likely to shift with ecologic variations. This variability complicates prospective clinical studies and could encumber vaccine efficacy trials. Research efforts to identify new treatment strategies for West Nile virus may need to seek enrollment of patients in smaller community-based hospitals and ambulatory care centers and should be flexible enough to adapt to emerging outbreaks. Over the coming years, mosquito-control and other prevention programs should be designed and funded to prevent sporadic outbreaks, with the understanding that the risk of West Nile virus disease is likely to vary considerably over time and place.

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Health Care Reform in France — The Birth of State-Led Managed Care

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The World Health Organization recently ranked the French health care system the best in the world.¹ Although the methods and data on which this assessment was based have been criticized, there are good grounds for being impressed by the French system. Yet in August 2004, with the national health insurance (NHI) system facing a severe financial crisis, France enacted Minister of Health Philippe Douste-Blazy's reform plan. Like previous efforts at health care reform, this one seeks to preserve a sys-

tem of comprehensive benefits, which is supported by the major stakeholders.

French policymakers typically view their NHI system as a realistic compromise between Britain's National Health Service, which they believe requires too much rationing and offers insufficient choice, and the mosaic of subsystems in the United States, which they consider socially irresponsible because 15 percent of the population younger than 65 years of age has no health insurance. Whether reform



Hôtel Dieu Hospital, Paris, Early 19th Century.



Pompidou Hospital, Paris, 2004.

measures in France have come from the political left or right, French politicians have defended their health care system as an ideal synthesis of solidarity, liberalism, and pluralism.

Beyond a range of tax increases to finance health care, the recent law seeks to implement what the French call *la maîtrise médicalisée* — a kind of state-led managed care. Like the 1996 reform enacted by then Prime Minister Alain Juppé, it proposes to apply techniques that were designed for managed care organizations in the United States (e.g., computerized medical records, practice guidelines, and incentives to encourage the use of primary care physicians as gatekeepers) to a unitary state system.

The idea of state-led managed care in France has gained momentum over the past decade, but its implementation poses enormous challenges. The idea is compelling for two reasons: it seeks to modern-

ize the health care sector and increase the quality of care, and it promises to control costs by increasing the efficiency of resource allocation within targeted expenditure limits. In these respects, the reform will reinforce the powerful role of the central state, which will oversee vast institutional renovation, apply administrative and information technology to health care, and design incentives and regulations to improve quality. The limitations of state-led managed care, however, are rooted in the centralization of policymaking in France and the successful resistance of the medical profession to all efforts at micromanaging medical practice and second-guessing physicians' authority.²

In contrast to many European nations — such as Britain, the Netherlands, and Germany — France has eschewed two popular ideas in health care reform: consumer choice and price competition among local health insurance funds and selective contracting between these funds and health care providers. The avoidance of these approaches reflects France's commitment to the freedom of beneficiaries to choose among all willing providers, as well as the belief that competition would lead to privatization — an unacceptable departure from the “solidarity” principle, which requires mutual aid and cooperation among the sick and the well, the inactive and the active, and the poor and the wealthy and insists on financing health insurance on the basis of ability to pay, not actuarial risk.

But like the U.S. health care system, the French system is also structured according to principles of liberalism and pluralism, as a market-based economic system with extensive organizational diversity and individual choice. Most physicians in private practice tenaciously support the present arrangements, embracing the principles enshrined in “*la médecine libérale*”: selection of physicians by patients, freedom for physicians to practice wherever they choose, clinical autonomy, doctor–patient confidentiality, and direct payment to physicians by patients who are reimbursed a good share of their expenditures. With limited and experimental exceptions, France does not use primary care physicians as gatekeepers in the way managed-care organizations do in the United States. Although the hospital system is dominated by public hospitals managed by the Ministry of Health and its regional agencies, private practice remains largely unmanaged.³

The NHI system is financed by a mix of mandatory payroll taxes, government general-revenue funds, and a small share of consumer coinsurance.

Top image: Wellcome Library, London; Bottom image: Claude Le Pen.

Basic Indicators, France and the United States, 2002.*		
Indicator	France	United States
Demographic and economic characteristics		
Total population	59,486,000	288,369,000
Population >65 yr of age — %	16.3	12.3
GDP per capita — \$	28,094	36,006
Health care system		
Health care expenditures — % of GDP	9.7	14.6
Per capita health expenditures — \$	2736	5267
Public expenditures on health — % of GDP	7.4	6.6
No. of practicing physicians per 10,000 population	33	30
No. of physician consultations per capita	7.9 (1999)	4.2 (1999)
No. of acute care bed-days per 1000 population	1100 (2001)	700 (2001)
No. of acute care beds per 1000 population	4.0 (2001)	2.9
Population satisfied with health system — %	65.0 (1998)	40.0 (2000)
Health status		
No. of infant deaths per 1000 live births	4.2	6.8 (2001)
Life expectancy at birth — yr	79.3	77.1 (2001)
Life expectancy at 65 yr of age — yr	19.1 (2001)	17.9 (2001)
Life expectancy at 80 yr of age — yr	8.7 (2001)	8.6 (2001)
Disability-adjusted life expectancy at birth — yr	73.1 (1999)	70.0 (1999)
Years of life lost per 100,000 population due to death before 70 yr of age	4182 (1999)	5120 (2000)

* Data on physician consultations in the United States are from the Department of Health and Human Services, National Center for Health Statistics, National Ambulatory Medical Care Survey. Data on the number of physicians in the United States are from the American Medical Association. Data on patient satisfaction are from Eurobarometer Survey Series no. 49 (1998) and the Harvard School of Public Health (2000). Data on disability-adjusted life expectancy at birth are from the World Health Report 2000. All other data are from the Organization for Economic Cooperation and Development (OECD) Health Data, 2004. When data were not available for 2002, the year of the latest available data is indicated in parentheses. GDP denotes gross domestic product; per capita expenditure values are U.S. dollars, adjusted for OECD purchasing-power parities.

In contrast to Medicare, French NHI coverage increases when a patient's costs increase; there are no deductibles; and pharmaceutical benefits are extensive. Patients with debilitating or chronic illness are exempted from paying coinsurance if they consult physicians who accept NHI reimbursement as payment in full. When patients consult any of the 26.5 percent of physicians who do not do so, a portion of their coinsurance is reimbursed by complemen-

tary health insurers, through a system that resembles Medigap coverage for U.S. Medicare beneficiaries. Thus, despite widespread use of coinsurance, patients remain well covered under NHI and enjoy a broad array of choices by European and American standards.

Although French policymakers claim to have a health care system that reconciles solidarity, liberalism, and pluralism, the system has changed decisively. One change is unique to France. The Juppé reform increased fiscal taxes (on income, capital, cigarettes, and alcohol), reducing the share of employer-based payroll-tax financing from 95 percent of total health care expenditures to roughly one half. Since the health system is more heavily dependent on central-government financing, the central state's legitimacy in implementing health care reform has been strengthened. The second change has been driven by the global evolution of medical technology, proliferation of medical specialties, and explosion of medical knowledge — which make most principles of *la médecine libérale* seem anachronistic and render solo private practice quaint at best.⁴

There is emerging consensus on some of the conclusions of a recent task force.⁵ First, the secular growth of health care expenditures will continue. Second, health policy should aim to achieve value for money in the allocation of health care resources and equity in the distribution of services. Third, when expenditures meet these goals, they must be financed collectively. The first and third propositions do not provoke controversy in France. The second proposition, however, forces recognition of two problems that threaten the sustainability of the health care system.

First, it is difficult to control expenditures in a system deeply committed to liberalism and pluralism. Although the French health care system is not expensive compared with that of the United States (see table), France is one of the biggest spenders in Europe. Second, access to care is no longer a sufficient objective, given that the quality of health services is unevenly distributed among both geographic regions and social classes. This problem is exacerbated by patients' freedom of navigation within the system and the increasing consciousness of possibilities offered by state-of-the-art treatments.

The French health care system has reached a turning point that should interest clinicians and policymakers in the United States, for the current reform represents the French response to a fundamental question: Can the balance among solidar-

ity, liberalism, and pluralism be maintained while health care costs are kept under control and the cherished features of the present system are sustained? The birth of state-led managed care in France has clarified the challenge ahead: Can France adapt the NHI system to the exigencies of technological and economic change without provoking insurmountable opposition from the medical profession? In other words, can the Douste-Blazy reform actually be implemented, or will it provide support for that well-worn aphorism — *plus ça change, plus c'est la même chose?*

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Prolonging Patency — Choosing Coronary Bypass Grafts

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The benefits of coronary bypass surgery last only as long as the grafts continue to function. Aorta-to-coronary saphenous-vein grafts (see diagram), the most widely used type of bypass graft, have historically had an occlusion rate of 10 to 15 percent within a year after surgery. Beyond 5 years after surgery, graft atherosclerosis develops in substantial numbers of saphenous-vein grafts, and progressive graft failure occurs so that by 10 years after placement, 60 to 70 percent of grafts are patent and half of those have angiographic evidence of atherosclerosis. By 20 years after placement, the rate of graft patency appears to be only 20 to 25 percent. Late attrition is influenced by coronary risk factors, and it is now clear that treatment with platelet inhibitors and statins has improved outcomes, although long-term data regarding these strategies are not yet available. Because the saphenous veins are long, bilateral, and easy to prepare and have characteristics that make them favorable to handling, saphenous-vein grafts continue to be widely used despite their imperfect patency.

The most common use of internal thoracic (mammary) artery grafts is as a left internal thoracic-artery (LITA) in situ graft to the left anterior descending coronary artery (LAD) (see diagram). The patency rate of LITA–LAD grafts is greater than 90 percent at one year after surgery, and because late atherosclerosis is rare, there is little late graft attrition. At 20 years after surgery, more than 90 percent

of such grafts are still functioning. The LITA–LAD graft is the most reliable anatomical treatment for coronary disease that is yet known, and the standard bypass operation now involves this type of graft combined with vein grafts to the other coronary vessels. For years, surgeons have been trying to find other grafts that act more like LITA grafts and less like saphenous-vein grafts. The prime candidates are the right internal thoracic artery (RITA) and the radial artery, and there is still disagreement concerning their relative merits.

Prospective studies of the patency of bypass grafts are difficult to fund and perform. No one manufactures these bypass grafts, and therefore industry rarely funds investigations of bypass grafting. The important differences among these grafts become apparent after long follow-up, and long-term angiographic follow-up studies are expensive and difficult to conduct because asymptomatic patients rarely wish to undergo repeated angiography. Therefore, most of the data regarding the rates of late patency of bypass grafts come from imperfect sources — retrospective, nonrandomized studies involving patients with grafts in whom angiography was performed for clinical indications.

RITA grafts have been used in a few centers for many years, either as in situ grafts or as free grafts originating from the aorta or the LITA (see diagram). Most often the RITA is used as a graft to the circumflex or right coronary-artery system. There