AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

MI

AER # 510

# Agricultural Economics Report

NO. 510 MARCH 1988

# INCREASING THE UTILIZATION OF HEALTH SERVICES IN RURAL AREAS OF THE UNITED STATES AND BRITAIN: IMPLICATIONS FOR MICHIGAN

By

Richard B. Francoeur
and
Robert D. Stevens

GIANNINI FOUNDATION OF AGRICULTURAL ECONOMICS LIBRARY
WITHDRAWN
JAN 14 1988

Department of
Agricultural Economics
MICHIGAN STATE
UNIVERSITY
East Lansing

# INCREASING THE UTILIZATION OF HEALTH SERVICES IN RURAL AREAS OF THE UNITED STATES AND GREAT BRITAIN: IMPLICATIONS FOR MICHIGAN

by Richard B. Francoeur and Robert D. Stevens

## ABSTRACT

This review of literature examines the causes of reduced health care utlization in rural areas of both the United States and Britain due to both supply and demand factors. Particular attention is paid to implications for Michigan. Primary focus was on the supply side, where many recent changes in health care delivery in the rural areas of both countries have involved more centralization. While these changes may have reduced health care provider costs, due to economies of scale and for other reasons, they have often increased rural consumer costs for health care services. Conclusions identify actions that would reduce the direct costs of obtaining health care for rural citizens, including greater availability of transportation and increased dispersal of health care services through such means as the greater use of ancillary health personnel and swing beds in rural hospitals.

**INCREASING THE UTILIZATION OF HEALTH SERVICES IN RURAL AREAS OF THE UNITED STATES AND GREAT BRITAIN: IMPLICATIONS FOR MICHIGAN**


I. INTRODUCTION

II. RURAL HEALTH ORGANIZATION AND FINANCIAL ARRANGEMENTS: IN THE UNITED STATES AND GREAT BRITAIN

III. THE PERFORMANCE OF THE HEALTH CARE SYSTEM IN RURAL AREAS

- A. Poorer Health Status and Lower Utilization of Health Services in Rural Areas
- B. Increasing Consumer Costs to Reach Health Care
- C. Hospital Centralization and Physician Services in Rural Areas
- D. Changing Supply of Physician Services
- E. Factors Causing Reduced Demand and Supply of Rural Health Services

IV. IMPROVING THE PERFORMANCE OF RURAL HEALTH SERVICES

- A. Increasing Physician Supply
- B. Augmenting Hospital Services: Shared Service and Swing Bed Arrangements
- C. Changes in Financial Arrangements to Increase the Supply and Demand For Health Care in Rural Areas
  - 1. Alternative Incentive Arrangements for Increasing Rural Health Care Performance in the United States and Great Britain
  - 2. Improving the British System
    - a. Possible Modifications of the British RAWP Formula
    - b. The Potential of Using Prepaid Care Arrangements, DRGs, and Specialty Costing
- D. Improving Transportation Arrangements to Reduce Consumer Costs of Reaching Health Care

V. CONCLUSIONS

# INCREASING THE UTILIZATION OF HEALTH SERVICES IN RURAL AREAS OF THE UNITED STATES AND GREAT BRITAIN: IMPLICATIONS FOR MICHIGAN*

by Richard B. Francoeur and Robert D. Stevens

## I. INTRODUCTION

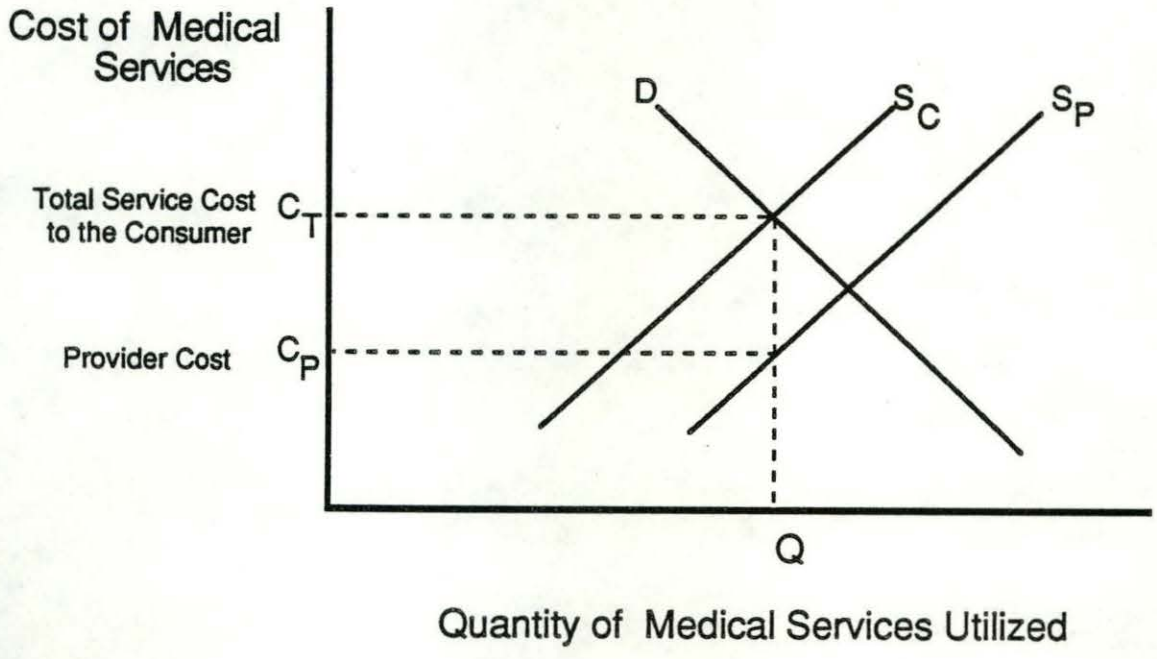
In the United States and Britain, several common factors impede increasing the supply of rural health services, in marked contrast to the growth spiral of urban health services in both countries. Urban based bureaucratic and professional institutional arrangements have often failed to recognize the special cost and other problems inherent in rural health care, which arise largely from transportation difficulties and the increasing concentration of health care services in urban areas.

This paper will briefly review the rural health organization and financial arrangements in the U.S. and Britain and briefly examine the performance of the rural health care systems in each nation. Then it will focus on strategies to increase the supply of rural health services (i.e. to shift the supply curve to the right). Some discussion of demand for health care will be included in the last sections of the paper. Our citations from the American literature have been chosen for their relevance to the Michigan rural health care environment.

A demand and supply framework aids understanding the problems associated with increasing the supply of health services in rural areas. The quantity of health services used, Q, and the cost of these services to consumers, $C_t$, is a function of demand and supply factors (Figure 1). The demand curve is established by income and the tastes for different health services. The supply curve facing the individual consumer, $S_c$, is determined by the sum of the costs incurred by providers in offering different health

* Michigan Agricultural Experiment Station Journal Article Number 12622.

Figure 1. The Costs Incurred by Consumers and Providers in the Medical Services Market.



services in their current locations, (Curve $S_p$) plus the costs borne by the consumer in obtaining those services. This cost is the difference on the cost axis between the locations of the two supply curves, $S_c$ and $S_p$. This difference is illustrated at Q by $C_t - C_p$, for example. Consumers in rural areas and in low income urban areas often face significant cost barriers arising from transportation difficulties and lost wages due to travel time to and from a health service and the length of daytime appointment. Hence, the costs incurred by consumers in obtaining health services is affected by provider decisions about such matters as location and whether evening hours are offered.

Because the total cost to the consumer of obtaining health and other services includes costs incurred of both consumers and providers, there may be a trade-off between the costs incurred by consumers and by providers. For example, consolidation of rural physicians' offices to obtain economies of scale and proximites to a hospital might move the providers' supply curve to the right. This, we might assume, would increase utilization by reducing costs. However, the additional transportation costs that consumers bear can cause the consumer supply curve to be further to the left than previously due to additional consumer costs. In such cases, providers' costs, Cp, are reduced, but the costs incurred by consumers will have increased more than the reductions in provider costs. This paper focuses on factors that affect both changes in providers supply curves and the costs incurred by consumers in obtaining health care.

## II. RURAL HEALTH ORGANIZATION AND FINANCIAL ARRANGEMENTS IN UNITED STATES AND GREAT BRITAIN

In both countries, a hierarchical organizational arrangement of medical care is provided from primary care (offered by general practitioners (GPs), dentists, and community nurses) through secondary care (offered in local and general hospitals) and, finally, to tertiary care (offered by general and specialist hospitals which may perform research).

In the United States, to cope with the uncertain incidence of high cost medical care, many Americans purchase private health insurance or enroll in prepaid health care organizations. Insurance policies fully or partially pay for the costs of hospital and specialized care. Prepaid health care arrangements such as Health Maintenance Organizations (HMOs) limit the health care costs of enrollees by creating prepaid contracts with specific providers who agree to offer specific sets of services for stated prices. These providers face incentives to avoid using high cost care whenever possible.

The U.S. Federal government subsidizes medical costs for the elderly through the Medicare program and for socially deprived groups (unable to afford private health insurance) through joint state and federally financed Medicaid programs. Medicare reimbursement to hospitals is now based on a prospective payment system comprised of 468 diagnostic related groups (DRGs). Regardless of actual costs, each DRG qualifies a hospital for a specific predetermined payment per patient based on the average cost of treating patients with the same medical problem.

Because of the difficulties in attracting primary health care to rural areas, U.S. federal government subsidization programs such as grant funding that aims to improve the efficiency and self-sufficiency of services provided by existing facilities (48 p. 2). Unfortunately, socially deprived rural areas which cannot feasibly transport patients to outside facilities for additional services may always require government hospital subsidies (4 p. 122).

The British socialized National Health Service (NHS), unlike the private market orientation of American medicine, provides free medical care for all citizens. It is financed from central government revenues. The central government utilizes the Resource Allocation Working Party (RAWP) formula, which employs age and sex based standard mortality ratios, to allocate health care resources among 14 regional health authorities (RHAs), each composed of several district health authorities. (DHAs). DHAs have the responsibility to allocate their funds in the best manner for optimal

improvements in the health of their populations. General practitioners operate under contract to the NHS as gatekeepers to the more specialized health services. Their annual salaries are based on the number of persons served. Specialists are directly employed by the NHS.

## III. THE PERFORMANCE OF THE HEALTH CARE SYSTEM IN RURAL AREAS

### A. Poorer Health Status and Lower Utilization of Health Services in Rural Areas

The evidence of reduced health care supply in rural areas is strong. In both the U.S. and Britain, the rural socially deprived include those who are unemployed; low wage earners; uneducated; elderly; women (especially with children); nonwhite; and those who do not have transportation (15 p. 104; 36 p. 87; 43 p. 82). In Britain, a Women's Institutes rural survey believes that the elderly and women in particular suffer a large "excess" of mortality and morbidity. The problem of morbidity is attributed to its neglect in the RAWP formula (to be discussed in more detail later). The survey determined that in an era of diminishing public transportation, 65 percent of elderly households did not own a car and that less than 30 percent always had access to a car (43 p. 82).

In the U.S., since patients are charged for health services, their access to health care is impeded by inadequate health insurance, copayments, and, for some of the poor, by failure to meet Medicaid criteria (36 p. 87). A 1981 survey revealled that a greater proportion of rural residents (13.5%) rated their health as fair or poor compared to urbanites (i.e. those living within SMSAs) (11.0%). A higher percentage of rural residents (14.6%) also reported "limitation of activity" than urbanites (13.2%) (15b p. 70). While many rural areas are characterized by lower family incomes and a higher proportion of elderly than urban areas (18 p. 2), it is important to note that this survey did not determine whether socially deprived groups within the rural population-- such as the elderly and women--experienced lower living costs or significantly more illness and disability as well as less doctor visits than urbanites.

Additional studies indicate a greater likelihood of undiagnosed illness among rural dwellers who visit their physician less often than the national average. Other data indicate that except for children, in rural areas farther removed from urban areas, the percentage of individuals who entail some activity limitation due to chronic illness increases (15 p. 128).

Despite the original ideal of equitable health care for all British citizens, regardless of residence or social class, the NHS does not succeed well in this mission. Consumer costs to reach care and the quality of health services tend to vary inversely with a population's "need" (as indicated by mortality, morbidity, and social deprivation levels) and distance to the GP office (17 p. 561; 10 p. 14). Studies in East Anglia and the Scottish Border Counties provide evidence that hospital utilization varies inversely with distance (17 p. 562). A national survey by the Office of Population Censuses and Surveys, while confirming the inverse relation of distance to rates of GP visits by consumers, found that the strongest correlations hold for the most vulnerable groups--the poor, elderly, and women at home with children-- who do not have access to cars (17 p. 561).

In the U.S., a variation of the inverse care law is evident since rural areas displaying the greatest medical need are least able to support viable health facilities due, until recently, largely to physician shortages (27 p. 1380).

B. Increasing Consumer Costs to Reach Health Care

In Britain, rural communities face increased costs to reach health services due to the recent deregulation of bus services, resulting in the cancellation of small, less profitable bus routes. Revealing typical travel access problems, a study conducted in rural South Cumbria DHA cited a lack of buses stopping near district hospitals (many located on the outskirts of towns) and near patients' homes (10 p. 12); long waits between connections; time-consuming journeys; difficulties coordinating bus schedules with appointment times; high fares; and unavailable service during certain hours (6 pp. 11-12). Some elderly patients face increasing difficulties in obtaining rides since many of their elderly friends no longer drive (6 p. 12).

Outpatient and visitor rates are highly dependent on car ownership in Britain (Haynes and Bentham, 1979 as referenced in 29 p. 5). However, a family car is often not available to a wife and her children when her husband is working (29 p. 5). Rural GPs are less likely to refer patients for secondary care than urban GPs, particularly where patients must travel long distances (17 p. 562). The above concerns are pertinent to the United States as well.

Although consumer costs to reach health services in Britain is often measured in terms of travel distance, in the U.S. travel time serves as a proxy for consumer costs to reach health services since geographical differences between regions causes travel distance to be an inadequate measure. A 1976 US national survey by Aday, Anderson, and Fleming (1980), using a 30 minute travel time for primary care, revealed that primary care is less accessible to rural dwellers than to urban residents (15% of farm and 14% of nonfarm residents compared to 5% of non-SMSA urban and 8% of central city populations) (48 p. 15). In both countries, time-consuming journeys and waits lasting up to a whole day discourage the rural ill from utilizing health care services (19 see "Chemists" section, unnumbered pages).

C. Hospital Centralization and Physician Services in Rural Areas

In determining optimal hospital location, perhaps the thorniest problem is the tradeoff of rural access and travel convenience versus the economic and technical efficiency of hospital concentration. Useful, comprehensive performance measures for vague notions such as "need" (unreflected by demand), "access," and "convenience" do not attract concensus. Support or rejection of contentions about hospital system performance depends upon the criteria used (32 p. 192). Usually, conflicting or inconsistent political decisions and professional interests supported by little apparent planning or analysis of the health system tend to determine hospital location in both the US and Britain.

In the U.S., the planning and construction of rural hospitals was spurred by federal subsidization through the Hill-Burton Act. It resulted in a geographically more

accessible rural/urban distribution of hospital facilities than physicians' services. However, many small rural hospitals face difficulties retaining health professionals and maintaining adequate inpatient censuses (14 pp. 21-22). Physician services are increasingly offered from group practices, increasing the population base required to support physician services as compared with a solo practitioner delivery system.

During the 1970s, the British central government decided to retain most of the important small community hospitals (between 50 and 150 beds). This was due to political concerns that the trend toward cost-effective, medically efficient hospital centralization increases the costs of reaching care and impedes convenience for rural patients (as reflected in decreased levels of outpatients, inpatients, and visitors in rural hospitals compared to urban hospitals (16 p. 186).

The issue still remains alive, however. A 1982 British Labour Party document bemoaned the closures of rural GP cottage hospitals (less than 50 beds). In response, the chairman of the British Medical Association Rural Practice Committee declared that their is no evidence of closures of "smaller" rural hospitals (5 p. 4). The health spokesman for the opposition party claimed, however, that in order to pay for the new district hospital, Leicestershire local hospitals originally planned to be retained are closing and plans for new small hospitals are delayed. He purported that while in theory the process of hospital concentration has slowed, RAWP cuts are accelerating the centralization of rural hospitals (10 p. 11) and, indirectly, encouraging the shortage of rural physician services.

D. Changing Supply of Physician Services

Indeed, the phenomenon of increasing demand has been accelerated by an increasing supply of health care professionals in affluent U.S. urban and suburban areas, increased levels of health insurance coverage, and increased specialization (8 p. 67).

Compared to urban areas, rural areas are typically characterized by a lower availability of physician services. Between 1961 and 1976, physician availability in southern Michigan and in all Michigan urban counties increased by about 35% (from about 120 physicians per 100,000 persons in 1961 to about 160 in 1975). However, the largely rural counties of upper and northern Michigan as well as all Michigan rural (non-SMSA) counties experienced lower physician availability (82 physicians per 100,000 persons in 1961 and, respectively, 91 and 100 in 1975). These data reflect significantly smaller increases in physician availability (20% and 12%, respectively) (45 p. 15).

Displaying rural deficiencies typical of England, a Scottish survey revealed provision below the national average for specialized medical services in dentistry and opthamology (32 p. 195). Yet, average measures like all utilization criteria can be undesirable since their values depend upon the base population selected (e.g. Michigan, the midwest); further, such process variables do not necessarily reflect the health status of a population and hence the need for additional (physician) services. Alternatively, outcome variables--such as mortality measures (used in RAWP) and morbidity indicators--are better in determining shortages since they directly assess a population's health status.

The trend toward group practice, which can provide a better quality of primary care and allows for the sharing of equipment and resource costs and leave time, nevertheless has increased the costs to reach care for vulnerable groups without transportation. In Britain, for example, more than half of all rural communities have no GP office due to the incentive for group practice (50 pp. 8, 14). The trend toward group practice is perceived favorably by at least some rural American residents who seek primary care located only in areas served by a nearby hospital (19 p. 38). These changes, however, increase the costs of physician services to rural residents.

As a general estimate, U.S. urban areas have about three times the number of GPs and specialized physicians per capita than rural areas (19 pp. 3-4). The increasing

concentration of U.S. urban medicine may reduce growth in the supply of primary medical care in poor rural areas (39 p. 7). In Michigan, despite a gain of 6802 physicians between 1961 and 1983, statewide distribution of physicians has worsened from the point of view of rural residents since the majority of this gain has occurred in well-provided urban areas (State of Michigan, Office of Health and Medical Affairs, Dept. of Management and Budget, November 1983 as cited in 8 p. 78 (July 1985).

Several factors limit the ability of rural communities to gain and retain physicians including lower income (an important factor in the US), inadequate facilities and resources, professional isolation, overwork, and urban lifestyle preferences (Davis and Marshall, 1977 as cited in 36 p. 87). An American rural practice can be a risky financial venture and may require years to develop sufficient patient demand due to population sparsity and patient loyalties to established providers (36 p. 142).

To conclude, rural populations in both countries, compared proportionately with urban populations, suffer more illness, utilize less health services, and incur greater total costs, Ct, and consumer costs (Ct - Cp), to reach health services (Figure 1).

E. Factors Causing Reduced Demand and Supply of Rural Health Services

In the United States, private health insurance programs provide low coverage for rural patients. Rural residents often are not covered by health insurance because they are poor, work seasonally, part-time, or in occupations and small firms that do not provide health insurance (19 p. 3; 48 p. 17). Rural individuals are more apt to endure a bout of chronic illness than their urban counterparts (15 p. 86). This attitude is enforced for poor Americans by the high cost of co-insurance (15 p. 95).

Because Medicaid eligibility is linked to state welfare categories favoring the urban aged poor, disabled, and single-parent families, members of two-parent families--constituting more than 70 percent of the rural poor--do not qualify (48 p. 19; 19 p. 3; 2

p. 10). Also excluded are rural (and urban) low wage and unemployed workers who cannot afford health insurance (21 p. 25; 19 p. 2).

However, while poor rural families lack adequate coverage and spend a greater proportion of their income on health care than do urban dwellers (1), evidence suggests that compared to urbanites, rural consumers are almost equally likely to purchase health insurance. In a 1976 nationwide survey, Aday, Anderson, and Fleming (1980) found that residents of rural nonfarm areas (20% of U.S. population; 22% of the uninsured) and rural farm areas (6% of US population; 8% of the uninsured) "...were almost exactly proportionally represented among those having group coverage as they are in the total U.S. population" (group policies represented 20% rural nonfarm and 5% rural farm enrollment) (48 p. 18).

Because private health insurance has provided greater coverage of secondary and tertiary care for life-threatening and incapacitating illness, Federal programs such as Medicare and Medicaid as well as the patient are left to pay for primary care (4 p. 110). Further, cost- inefficiencies as well as incomplete and inappropriate medical care are encouraged by some Medicare and Medicaid financing arrangements. These include: the practices of scheduling several brief office visits per patient since most are paid at the same rate without concern for thoroughness, necessity, or duration; replacing lengthy diagnostic evaluations which are inadequately reimbursed with simple laboratory and therapeutic procedures (Cowen et al., 1976 as cited in 14, pp. 141-142); and modifying patient diagnoses to qualify for reimbursements from higher paying DRGs, which are insensitive to the variety and complexity of medical circumstances (1 p. 224).

Operating with limited staff, U.S. rural health centers, unlike those in Britain, must determine coverage and fill out forms for patients presenting a variety of insurance plans (4 p. 112). Further costs incurred by providers participating in Medicare and Medicaid involve employing additional staff for bookkeeping functions and financing

costs that result from the time lapse between service provision and receipt of reimbursement (4 p. 111).

Unsurprisingly, rural primary health care providers and hospitals bear additional cost inefficiencies by participating in Medicare and Medicaid. Typically, rural hospitals, unlike many urban hospitals, experience low occupancy and very high shares of their income derived from Medicare and Medicaid reimbursements (13 p. 72). Due to their lower charges and less specialized care within each category, rural health facilities often qualify for lower Medicare and Medicaid reimbursements for services identical to those provided in urban areas (Kane et al. as cited in 4 p. 11; 48 p. 17); over time a transfer of funds from rural to urban areas has ensued (Ricketts et al., 1979 as cited in 4 p. 11).

Some health centers have elected not to participate in Medicaid due to inadequate reimbursement and the inability or unwillingness to subsidize Medicaid patients by increasing charges to other patients (4 p. 111).

Interestingly, cross-subsidization has not occurred in Britain where RAWP does not standardize for cost differences between regions. However, the future use of improved information systems such as DRGs and specialty costing (discussed above) could result in cross-subsidization to the detriment of rural areas.

## IV. IMPROVING THE PERFORMANCE OF RURAL HEALTH SERVICES

### A. Increasing Physician Supply

What approaches may be taken to increase physician supply in rural areas experiencing shortages? In Britain, physicians who locate in shortage areas receive greater compensation. By increasing licensure fees for physicians, Michigan is considering to pay the full costs of medical training for students who will serve "an appropriate period of time" in rural areas experiencing shortages; further, in certain cases, the State will subsidize the practice expenses of physicians in shortage areas (24 pp. 39-40).

Various other strategies can help decrease provider costs in rural areas with low per capita physician availability. Examples of different approaches follow. One approach is decentralized "functional" or dispersed group practices that require good communication and coordination between solo practitioners (19 p. 28; 38 p. 117). In Britain, branch medical care is conducted in suitable premises such as village halls converted into multipurpose health care centers (6 p. 10; 10 p. 1307), although these branches have sometimes proved unsatisfactory (32 p. 198). In the U.S., "associated group practices" in rural areas are supported by established urban group practices (8 p. 65) and itinerant surgeons operate on scheduled elective patients, assisted by rural GPs who supervise post-operative care (28 p. iv).

Remote rural areas in some U.S. states and British districts have found it useful to operate mobile units of physicians and other health professionals who either schedule periodic visits or provide advice by radio or telephone (15 p. 131). Rural 'care units' provide necessary, basic facilities used by mobile clinics for minor operations, coronary and intensive care, dentistry, chiropody, pharmacy, child and elderly health, and social work (33 p. 1; 32 p. 198; 10 p. 1307; 15 p. 88)

Low supply of rural physicians has at times created a demand for physician extenders such as nurse practitioners and physician assistants in some rural areas. In the rural areas of North Carolina, for example, primary care is provided by physician assistants, each under the supervision of a physician, in the clinics of community medical centers (42 p. 7). In England, district health authorities were prompted in 1986 to consider appointing nurse practitioners to rural health centers (9 p. 78). In a few states, nurse practitioners (and physician assistants in North Carolina) can prescribe and dispense drugs "within recognized parameters" to patients in areas experiencing physician shortages (42 pp. 6, 7).

In Britain, consumer costs to reach a pharmacy is problematic in many rural areas. A survey by the National Federation of Women's Institutes revealed that only 25

percent of the rural settlements had a pharmacist. Despite claims that doctors (who in Britain can dispense pharmacy products) threaten pharmaceutical business (38 p. 114), closure of retail pharmacies in small villages has largely been due to heightened competition from town supermarkets and pharmacists and to the trend toward group medical practices, resulting in centralized pharmaceutical facilities (48 p. 28). While rural pharmacists may more successfully compete by selling more profitable sideline products, an extended role for British pharmacists as health advocates is emerging. In addition to providing drug advice, pharmacists might provide counsel on health promotion and minor ailments as well as perform urine analysis, blood pressure checks, and diagnostic and pregnancy tests (47 p. 1).

Indeed, Kenneth Clarke, the British Minister for Health has stated that flexibility is required to provide the highest quality and availability of health services in rural areas, with some GPs dispensing medicine and pharmacists providing health advice (7 p. 3). British doctors may provide drugs and appliances if the patient either lives in a rural area more than one mile from a pharmacy or is unable to obtain them from a pharmacist (37 p. 2). However, problems in the "supply and security of medicines" prevent some GPs from dispensing medicine (32 p. 194). On the other hand, many rural GPs rely on dispensing to increase their income to the levels of suburban GPs (44 p. 70).

B. Augmenting Hospital Services: Shared Service and Swing Bed Arrangements

A recent and growing trend toward shared service arrangements with larger urban hospitals is fostering increased options and variety in rural hospital services and resulting in decreased need for long-distance travel to centralized facilities. Used by almost 25 percent of small rural hospitals in the United States during 1983, shared service arrangements have resulted in a variety of contracts for management, services, patient referral, and volume purchasing (23 p. 55; 28 p. x). British rural hospitals might consider

similar arrangements by entering cost-effective competitive tendering arrangements through district hospitals.

The use of "swing beds" is a highly successful arrangement internal to US rural hospitals that can strengthen their financial viability. Swing beds are hospital beds serving either acute or long-term patients. By operating at full patient capacity, hospitals in some areas can relieve high-occupancy rural nursing homes and local social services from attempting to satisfy unmet rural demand for long-term care provision (35, p 46). Convinced that quality assurance measures would permit rural hospitals to offer satisfactory long-term care, the U.S. government determined in the mid-1970's that the cost of swing bed chronic care could be less than the cost of comparable care in nursing homes. Subsequently, 1980 Federal legislation permitted rural hospitals with less than 50 beds to offer long-term care to Medicare and Medicaid patients if the hospitals can both demonstrate the need for such services and provide discharge planning and social services (28 pp. xii-xiii).

The swing bed concept might be feasible for British cottage and community hospitals, however, districts searching for efficiencies in public-sector health services to meet RAWP targets would face disincentives to offer long-term nursing care which is currently provided largely by the private market. By creating proper incentives to implement swing beds, central government might redirect a portion of supplementary benefit expenditures spent on private care to finance NHS long-term care.

## C. Changes in Financial Arrangements to Increase the Supply and Demand For Health Care in Rural Areas

### 1. Alternative Incentive Arrangements for Increasing Rural Health Care Performance in the United States and Britain

It is well known that the U.S. "cost-plus" health care system suffered from resource use inefficiencies. U.S. rural physicians, who derive a considerable portion of income from hospitalized patients, often lose income by the trend toward specialization

that results in fewer hospitalized patients for the rural physician as patients are referred to urban centers. Consequently, rural physicians, serving smaller populations than urban physicians, face increasing difficulties in operating practices that provide sufficient income (48 pp. 141, 142).

Several supply and demand factors (discussed above) have aggravated physician supply problems in American rural areas at a time when Medicare and Medicaid are encountering demand for new and additional health services by a growing elderly population (4 p. 11; 48 p. 21). Federal programs should consider raising rural reimbursement per case to at least urban levels. Since rural providers may incur greater average costs in operating rural practices (which may be too small to capture economies of scale and require excess capacity to account for daily fluctuations in patient use), they may necessitate higher reimbursement to continue supplying services. A "rural-area premium" might "...be adjusted according to population density, estimated patient demand, and the service mix of the practice" (48 p. 147).

The Medicaid program creates additional problems specific to rural areas. While Federal legislation allowing Medicare reimbursement of unsupervised physician extenders in underserved rural areas has been introduced (19 p. 6), Medicaid programs in many states do not pay for physician extender services. The rural Medicaid problem is exacerbated in heavily rural states which generally provide the lowest reimbursements (48 p. 19). Equitable Medicaid reimbursements among rural areas should be encouraged.

Current Medicare DRG arrangements encourage resource use efficiencies by discouraging excess hospitalization. Surviving rural practices may attempt to compensate for any income losses from hospital patients by provision of other outpatient services and by scheduling more visits per patient. Wallack and Kretz have proposed three different arrangements that could assure increased income for rural providers. Shared service contracts linking GPs either with hospitals or HMOs could provide payments to rural General and Family Practice physicians based on the hospital

expenditures of their patients. An alternative shared service contract could guarantee salaries of rural GPs routing their patients to the hospital. A third approach could employ rural General and Family Practice physicians in dispersed group practices forming an HMO (48 pp. 148-149).

Potential improvements may be realized for rural Medicare and Medicaid programs by linking with vertically-integrated HMOs in prepaid shared contracts. Predetermined monthly fees per enrollee requires cost- effective HMOs to assume the costs of providing care even if reimbursement is inadequate (4 p. 113). Some of the incentives of the British fixed RAWP budget would be captured in this way. Then health centers could engage in meaningful financial planning as a result of predictable reimbursements and charges that could be related to actual costs rather than to who pays the bill. Physicians would be encouraged to utilize medical resources efficiently, thus providing greater impetus to create regionally coordinated group practices. This could include formally integrated solo practices distributed throughout the countryside and/or group practices.

Compared with urban HMOs, rural operations are often infeasible because they face greater risks which are fueled by physician shortages, financially stressed hospitals, insufficient scope of health services, weak rural economies, and scattered, resistant populations (Health Care Finance Assoc., as cited in 36 p. 121). Approaches to improve the viability of rural HMOs include increasing the use of underutilized health resources; minimizing capital investment outlays during start-up stages; exploiting new markets once established; and expanding the geographic scope of stable urban "parent" HMOs into rural areas (36 p. 123; 28 p. xii; 4 p. 122).

Where rural General and Family Practice physicians or health centers cannot be linked to larger providers through shared service contracts, subsidization of physician services (such as direct guarantees of minimum physician income and physician subsidies for operating or overhead costs) may be necessary to increase supply. However, outside

funding usually does not encourage self-sufficiency and, in the case of some government grant programs, may serve as a disincentive to independent viability by specifying the creation of health programs that attract the most needy who are least able to pay for health services. Indeed, Federal grant programs favor rural health centers with poor support services serving populations most in need of health care over centers serving less needy populations which, nonetheless, show greater promise for self- sufficiency.

Subsidies are likely to become markedly altered or unavailable as political will changes (4 pp. 116-117). Further, Federal grant programs have often been biased toward the capabilities and needs of an urban medical system so that rural areas have often lacked expertise in grant writing, planning, and management (19 p. 23) and the sizeable populations with specific types of needs for success in obtaining categorical funding. Rural areas often must decide between mutually exclusive grants and grant categories and then may incur new problems resulting from duplicated and unintegrated services caused by categorical funding awards (19 pp. 62-63). From available research, it is clear that wherever rural fee-for-service systems survive, they will tend to be high cost systems.

Voucher subsidies could be granted to the rural poor to encourage increased consumer demand for rural health services by granting use of specific health services for free or at reduced cost. Alternatively, rural consumers could be granted a specific welfare allowance that could be used for a variety of health services. A voucher system could either replace the Medicaid program or serve as an addition.

However, a voucher system is not realistic in health care because consumers are not able to make optimization decisions regarding cost-effective health care options. Alternatives such as the HMO or pre-paid health insurance are better mechanisms because professionals (physicians and managers) are better qualified to make such optimization decisions (assuming good rapport with patients) than consumers. Subsidies

could be granted to rural HMOs or to pre-paid health insurance plans to cover the costs of appropriate cost-effective health care for the uninsured rural poor.

Although Britain is widely hailed as providing a quality, cost- effective, socialized health service consuming only 5.6 percent of the GNP, the National Health Service also suffers from inefficiencies, which, while less obvious, are due to rather ineffective district management and to the political and organizational goals of a bureaucracy. The 1983 Griffiths Report to the Secretary of State, NHS Management Inquiry charged that the absence of "direct and personal responsibility" to develop, implement, and monitor management plans results in a very slow process for distributing responsibility to the local units and in extraordinary impediments to change (30 p. 776). A management strategy to incite shifts in loyalties from hospitals and occupational groups to the districts and regions would favor horizontal change (guest speaker John Pushkin, North East Thames RHA, 24 July 1986).

Regarding bureaucratic inefficiencies, Lindsay et. al. insightfully remark: The chief problem with government organization is that it shifts the attention of decision makers...away from satisfying patient needs toward achieving some political objectives (25 p. 4). Lacking the useful information provided by profit and loss statements of proprietary firms, those charged with assessing the performance of bureaucrats and their agencies must rely on direct observation. This form of monitoring can be expected to introduce a bias into the allocation of resources as those individuals and agencies monitored load resources into those aspects of their operations expected to be observed. Such a response on the part of bureaucrats gives rise to a familiar aspect of government agency output: attention to quantity at the expense of quality (25 p. 3). They cite the continuing decline in physician income and the replacement of British-educated doctors by immigrant doctors with inferior training as evidence of the decline in quality (25 p. 3). However, joint care planning and financing between local health authorities and social service agencies are gradually eliminating duplication and gaps in

could be granted to rural HMOs or to pre-paid health insurance plans to cover the costs of appropriate cost-effective health care for the uninsured rural poor.

Although Britain is widely hailed as providing a quality, cost- effective, socialized health service consuming only 5.6 percent of the GNP, the National Health Service also suffers from inefficiencies, which, while less obvious, are due to rather ineffective district management and to the political and organizational goals of a bureaucracy. The 1983 Griffiths Report to the Secretary of State, NHS Management Inquiry charged that the absence of "direct and personal responsibility" to develop, implement, and monitor management plans results in a very slow process for distributing responsibility to the local units and in extraordinary impediments to change (30 p. 776). A management strategy to incite shifts in loyalties from hospitals and occupational groups to the districts and regions would favor horizontal change (guest speaker John Pushkin, North East Thames RHA, 24 July 1986).

Regarding bureaucratic inefficiencies, Lindsay et. al. insightfully remark: The chief problem with government organization is that it shifts the attention of decision makers...away from satisfying patient needs toward achieving some political objectives (25 p. 4). Lacking the useful information provided by profit and loss statements of proprietary firms, those charged with assessing the performance of bureaucrats and their agencies must rely on direct observation. This form of monitoring can be expected to introduce a bias into the allocation of resources as those individuals and agencies monitored load resources into those aspects of their operations expected to be observed. Such a response on the part of bureaucrats gives rise to a familiar aspect of government agency output: attention to quantity at the expense of quality (25 p. 3). They cite the continuing decline in physician income and the replacement of British-educated doctors by immigrant doctors with inferior training as evidence of the decline in quality (25 p. 3). However, joint care planning and financing between local health authorities and social service agencies are gradually eliminating duplication and gaps in

provision (3 Para. #14). A rural North East Essex DHA, for example, has begun coordinating hospital and social services for the elderly (pers. conv. with Dr. Ed Jessup, District Medical Officer, North East Essex DHA, 31 July 1986).

2. Improving the British System

a. Possible Modifications of the British RAWP Formula

Interestingly, Lindsay et. al. charge that planned variations from the RAWP formula are used to influence approaching elections. A statistical model of the budgetary process was formulated to explain variation in NHS spending across regions on the basis of the anticipated "closeness" of individual races in the forthcoming election. Results of this statistical analysis confirmed beyond any reasonable doubt that politics play a role in the budgetary decisions of the NHS (25 p. 4). Curiously, unrealistic changes in estimated service populations by NHS have caused districts of the North East Thames RHA to go from under to over-target in one year (i.e. 1984 measurements based on a major 1981 census were extrapolated for 1986 predictions) despite the lack of actual significant population changes. However, evidence of planned variation by Central government has not been cited (pers. conv. with Keith Wallace, Treasurer, North East Thames RHA, 29 July 1986).

However, the main political criticism of RAWP concerns its neglect of both social deprivation and morbidity measures as well as cross-boundary flows of patients to reflect the need for health resources to treat an increasing amount of nonfatal, chronic illness (e.g. arthritis) due to rising life expectancy. Social deprivation is reflected (but not assessed) in the standard mortality ratios comprising RAWP and extra subsidies are available due to joint health service financing schemes. Thus, RAWP may be justified to some extent in neglecting social deprivation. Yet, subsidy mechanisms, as in the US, are not usually permanent and therefore modifications of health authority funding from the

RAWP budget will probably be needed eventually (North East Essex DHA Review of the RAWP Formula, Agenda Item 7, 17 June 1986, p. 2).

Although accounting for in-patient flows across regional boundaries, RAWP does not consider the increasing number of out-, day-, and home- patients from other RHAs who command a sizeable amount of health care resources (personal conversation with Keith Wallace, 29 July 1986; 7 p. 3). The lack of compensation for these cost-effective forms of health care may be hindering further expansion of health services for rural patients.

The RAWP formula does not consider the levels of contracted Family Practitioner Services (including GPs, dentists, chirodopists etc.) nor supporting social services. Both currently exhibit low provision rates and higher accessibility problems for rural areas (45 p. 16). Further, RAWP does not reflect the higher transport costs of patients, providers, and ambulatory services in rural areas (3 p. 4; 34 p. 1).

b. The Potential of Using Prepaid Care Arrangements, DRGs, and Specialty Costing

An HMO-type system for Britain where DHAs, permitted only a RAWP target budget, may purchase lower cost services, even outside the district, has been recommended (12 p. 1255; 20 p. 1067-1068; 26 p. 1). Surprisingly, cost-effectiveness, accessibility, and efficiency might all be improved. In rural areas, residents near district boundaries would have more access to health care if they could utilize services in the adjacent district (22, see "Introduction", unnumbered pages). RAWP funds from two or more districts might be pooled to exploit significant economies of scale from resource concentrations where rural accessibility can at least be maintained.

Although less successful than RAWP in achieving equity of access among socioeconomic groups, the Medicare DRG system also captures British interest since strong constraints on DHA planning/management/evaluation manifest from the lack of a

uniform, nationally available cost analysis for different kinds of patient care by patient group characteristics. The need for British DRGs is stated convincingly:

> In comparing District A with District B, or this year with last year, it is clearly crucial to know whether the same kinds of patients are being treated, and, if not, to make an adjustment to allow for this. The current set of DHSS performance indicators including specialty costing attempts to do this by using diagnosis to standardise the length of stay. However, this can be criticised on the grounds that no account of procedures performed or modification for severity is possible. DRGs make some allowance for this, and would be a much more satisfactory basis for standardisation (40 p. 16).

However, the use of DRGs in Britain might parallel an ongoing dilemma in U.S. rural areas caused by lower Medicare and Medicaid reimbursements for services identical to those provided in urban areas (discussed below). Two district health authorities in Britain could have identical population numbers and characteristics, however, the DHA with a more concentrated population, able to enjoy a greater supply of health services due to enhanced opportunities for cost efficiencies, would be able to provide a greater quantity of health services for the same budget allocation. British rural districts may potentially "cross-subsidize" urban districts supporting large health centers, which may be more able to capture cost efficiencies such as those related to economies of scale, scope, and agglomeration. However, a British rural dilemma resulting from the use of DRGs will not occur in the near future. The Steering Group on Health Services Information has refrained from recommending DRGs as a national standard minimum data set due to high development costs (31 p. 19).

Instead, the Group has recommended the moderate cost method of specialty costing which reveals the average patient cost in treating patients within an entire specialty or even a group of specialties. Compared to the DRG approach, specialty

costing inadequately assesses the conditions, complexity, and severity of "case-mix," however, it provides "...significantly greater account of it than existing cost information" (31 pp. 18, 19). Thus, it appears that specialty costing may provide some basis for reducing urban cross-subsidization by rural areas.

### D. Improving Transportation Arrangements to Reduce Consumer Costs of Reaching Health Care

Transportation problems can be eased through innovative approaches to improve medical service accessibility, especially given the increasing trend toward centralized group practice. In Britain, the closure of nine branch surgeries led a group practice in Oxfordshire to operate a "highly successful" bus service for patients (44 p. 70). In the U.S., school and minibuses are used to transport patients for health care (11 p. 141).

Strong media efforts could support transportation subsidy programs. Eighty-three percent of the patients in the local program conducted by the British rural health district of South Cumbria were unaware of similar central government programs (6 pp. 11, 12). In both countries, rural communities could encourage convenient bus times and routes and consider community car and hospital car schemes fostered by voluntary and local government support (32 p. 198; 3 p. 36; 29 p. 30).

## V. CONCLUSIONS

This paper has covered a wide scope of influences that impact the supply and demand for rural health services and has focussed on how to increase the supply of rural health services. Utilization of health services is influenced by provider costs and consumer costs to reach care. There is an evident need to compromise with an urban-biased health system--through tradeoffs such as those between centralization and decentralization and self-sufficiency and efficiency.

Increases in the quantity of medical services supplied can be obtained through various changes including monetary incentives for physicians; dispersed group practices and mobile units; creating posts for physician assistants; and extending the health roles of rural pharmacists.

Innovations such as shared service and swing bed arrangements can augment hospital services. In both countries, the trends toward shared services and group practices reflect a similar vertical and horizontal integration of physician services that is likely to continue.

Improvements in transportation arrangements can reduce consumer costs and increase physical accessibility to health care.

Changes in financial arrangements may provide incentives to increase the supply of health care in rural areas. These include shared-service contracts and, in the U.S., Federal grant programs that enhance self- sufficiency and efficiency of primary care physicians and hospitals.

Vouchers granted to the rural poor are not judged as effective incentives for appropriate cost-effective increases in consumer demand for rural health services. Instead, similar subsidies could be granted to intermediary mechanisms such as rural HMOs or pre-paid health insurance plans which are better qualified than consumers to make such optimization decisions.

In both countries, management strategies that incite shifts in loyalties from hospitals and occupational groups to the rural community could facilitate change. In Britain, the efficiency and effectiveness of rural health care may be improved by better accounting for social deprivation; out-, day-, and home-patients; the level of Family Practitioner Services (such as GPs and dentists) and supporting social services; and higher rural transportation costs. HMO-type arrangements could also permit a district to purchase lower cost services even outside its boundaries. Potential effects from the uses of DRGs and specialty costing were noted.

In the United States, Medicare and Medicaid financing arrangements, often creating excessive paperwork burdens for understaffed rural health organizations, can discourage the provision of complete and appropriate medical care and impose additional cost inefficiencies on rural hospitals. The lower reimbursement of rural hospitals for services identical to those provided in urban areas is controversial, often resulting in the cross- subsidization of urban health care by rural areas. These factors have aggravated physician and health service accessibility problems in rural areas during a period of increasing demand by rural elderly for health services.

Medicare and Medicaid programs in rural areas might be improved by raising rural reimbursement and through linkages with vertically-integrated HMOs in prepaid contracts.

It is crucial that policymakers in both health systems understand the underlying evolutionary political and economic forces, such as those explained here, that affect the interrelated rural health subsystems so that they may be modified and directed to achieve increased performance of the rural health system.

## BIBLIOGRAPHY


1. Ahearn, Mary C., Health Care in Rural America. Washington, D.C.: Economic Development Division; Economics, Statistics & Cooperatives Service; U.S. Department of Agriculture. Agriculture Information Bulletin No. 428.

2. "American Healthcare: Lessons from over the Atlantic," Health and Social Service Journal, 13 February 1986.

3. Association of County Councils (London), "Rural Deprivation," 1979.

4. Bisbee, Gerald E., Jr. (ed.), Management of Rural Primary Care--Concepts and Cases. Chicago: The Hospital Research and Educational Trust, 1982.

5. "BMA Chief Hits at Labour Plan for Rural Areas," Doctor, Vol. 12, No. 41, 14, October 1982.

6. Clayton, Susan, "Hospital Visiting at 150 (pounds) a week," Rural Viewpoint, Issue 8-9, London: National Council for Voluntary Organizations, October 1984.

7. "Comment," Primary Health Care, Vol. 1, No. 7, June 1983.

8. Cordes, Sam M., "Research Reviews: Selected Annotations," The Journal of Rural Health, Vol. 1, No. 1, January 1985.

9. Derbyshire Rural Community Council, "Rural Health Services in Derbyshire," 1986.

10. Fearn, Richard, "Branch Surgeries Meeting Essential Needs," Rural Viewpoint, Issue 18, London: National Council for Voluntary Organizations, Summer 1986.

11. Ford, Thomas R. (ed.), Rural USA: Persistence and Change. Ames, Iowa: Iowa State University Press, 1978.

12. Halpern, Stephen, "News Focus: Reflections of an Outsider," Health and Social Service Journal, Vol. XCV, No. 4969, 10 October 1985.

13. Hanson, Ivan. Book Review of Bibliography No. 31, The Journal of Rural Health, Vol. 1, No. 2, July 1985.

14. Hassinger, Edward W., Rural Health Organization: Social Networks and Regionalization. Ames, Iowa: Iowa State University Press, 1982.

15. Hassinger, Edward W. and Larry R. Whiting (eds.), Rural Health Services: Organization, Delivery, and Use. Ames, Iowa: Iowa State University Press, 1976.

16. Haynes, R.M. and Bentham, C.G., "Accessibility and the Use of Hospitals in Rural Areas," Area, Vol. 11, No. 3.

17. Haynes, R.M. and Bentham, C.G., "The Effects of Accessibility on General Practitioner Consultations, Out-Patient Attendances and In-Patient Admissions in Norfolk, England," Social Science and Medicine, Vol. 16, No. 5, 1982.

18. Health, United States 1985. Washington, D.C.: U.S. Department of Health & Human Services, 1985.

19. Hearing Before the Subcommittee on Health and Scientific Research of the Committee on Human Resources, United States Senate, Ninety-Fifth Congress, Rural Health Care--Problems and Prospects, 1977, Washington D.C.: U.S. Government Printing Office, 1978.

20. "Incentives to Efficiency in NHS Management: An American View," British Medical Journal, Vol. 291, No. 6501, 12 October 1985.

21. Kirkman-Liff, Bradford L., "Competition in Health Care and the Rural Poor: An Assessment from Arizona's Competitive Medicaid Experiment," The Journal of Rural Health, Vol. 2, No. 1, January 1986.

22. Lancaster Community Health Council, Report of a Survey into Accessibility of Health Services in Rural Areas of Lancaster Health District, Lancaster, England: Lancaster Community Health Council, July 1985.

23. Lewis, Bonnie L. and Parent, F. Dale, "Acquisition of Small Rural Hospitals by Multihospital Systems," The Journal of Rural Health, Vol. 2, No. 2, July 1986.

24. Michigan State Health Plan 1983-1987: Volume III - Health Personnel Resources, (approved by Statewide Health Coordinating Council, State of Michigan), September 1983.

25. Lindsay, Cotton M. et al., National Health Issues: The British Experience, New York: Health Issues, 1980.

26. Ludbrook, Anne and McGuire, Alistair (eds.). "Editdorial: Roll Over Enthoven," Health Economics Bulletin, (Health Economics Research Unit, Aberdeen, Scotland), issue 5, October 1985.

27. Moscovice, Ira S. and Rosenblatt, Robert A., "Rural Health Care Delivery Amidst Federal Retrenchment: Lessons from the Robert Wood Johnson Foundation's Rural Practice Project," American Journal of Public Health, Vol. 72, No. 12, 1982.

28. National Center for Health Services Research, The Viability of the Rural Hospital: A Synthesis of Findings from Health Services Research, Springfield, Virginia: National Technical Information Service, October 1982.

29. National Federation of Women's Institutes (Leschinski, Dorothy), Health Services in Rural Areas: A Survey of the Views of a Selected Sample of Women's Institute Members, London: National Federation of Women's Institutes, 1 March 1977.

30. NHS/DHSS Steering Group on Health Services Information, The Korner Report: First Report of the Steering Group on Health Services Information, (as summarized in Chaplin, N.W. (ed.), The Hospitals and Health Services Yearbook 1986, London: The Institute of Health Services Management, 1986).

31. NHS/DHSS Steering Group on Health Services Information, Sixth Report of the Steering Group on Health Services Information, (chaired by E. Korner), London: Her Majesty's Stationery Office, 1984.

32. Phillips, David and Williams, Allan, Rural Britain: A Social Geography, Oxford: Basil Blackwell Publisher Ltd., 1984.

33. "The Problems & Pleasures of Country Doctoring," BMA News Review, Vol. 2, No. 4, September 1976.

34. Reid, Sue, "Where It Isn't So Healthy to Live in the Country," The Guardian, 15 July 1986.

35. Richardson, Hila and Kovner, Anthony R., "Implementing Swing-Bed Services in Small Rural Hospitals," The Journal of Rural Health, Vol. 2, No. 1, January 1986.

36. Rosenblatt, Roger A. and Moscovice, Ira S., Rural Health Care. New York: John Wiley & Sons, 1982.

37. "Rural Dispensing," Press Release: Department of Health and Social Security, London: Department of Health and Social Security, 11 March 1983.

38. "Rural Medicine," BMA News Review, Vol. 2, No. 4, September 1976.

39. Ryan, Rebecca et al., "Education of Health Care Providers for the Rural Setting: A Family Nurse Practitioner Demonstration Program," The Journal of Rural Health, Vol. 2, No. 1, January 1986.

40. Sanderson, Hugh, "Diagnostic Related Groups," Senior Nurse, Vol. 4, No. 3, March 1986.

41. Sargent, Charles A., Nurse Practicitioners and Physician Assistants in the North Central Region: Their Status and Role in Rural Primary Health Care, A North Central Regional Publication, Purdue University, West Lafayette: IN, 47907, 1986.

42. Seymour, Scott, "Rural Health Services: A Sample of State Efforts," Innovations, August 1980.

43. Shaw, J. Martin (ed.), Rural Deprivation and Planning, (as excerpted from Geo Abstracts, Norwich, England: University of East Anglia, 1979).

44. Smith, Howard, "Nine into one goes down well in Oxfordshire," Medeconomics, January 1985.

45. Stevens, R. D. and Chapman, J. Changes in the Distribution and Availability of Medical Services in Michigan Counties and Regions, 1961-1977, East Lansing, MI: Michigan State Univiversity, Agricultural Experiment Station, Research Report 373, February 1979.

46. Taylor, David, Understanding the NHS in the 1980's. London: Office of Health Economics, May 1984.

47. Thomas, Joyce, "Secret Plan to Let Pharmacists Ease GP Load," Doctor, Vol. 15, No. 44, 14 November 1985.

48. Wallack, Stanley S. and Kretz, Sandra E., Rural Medicine: Obstacles and Solutions for Self-Sufficiency, Lexington, Massachusetts: D.C. Heath and Co., 1979.

49. Woollett, Stephen, Alternative Rural Services: A Community Initiatives Manual, London: Bedford Square Press, 1981.

50. Woollett, Stephen, "A Countryside Survival Kit," CHC News, August/ September 1981.