provision, career posts have been cut and the focus is on shorter-term contracts open to competitive tendering. This is producing intensive activity for the achievement of short term goals, but it has largely destroyed the career structure for young doctors who would like to provide longer periods of service to developing countries. There is however, still scope for the most able in the new situation. (For example important contributions are being made by David Nabarro, David Morley, David Bradley and David Warrell.) However, it is certainly more difficult for physicians who have sincere commitment, but not necessarily the highest academic ability, to make long term contributions through overseas work. The ODA has focused on 'development issues', including the improvement of health care management and cost effectiveness in health services for developing countries. Idealistic young UK doctors still want to serve in tropical countries but the prospects are now more precarious and problematical. This is unfortunate since UK doctors have provided innovation and have identified the ways in which scientifically and socio-economically appropriate health services can be established and sustained. A classical example was *Medical Care in Developing Countries—a primer on the medicine of poverty* by Maurice King and colleagues, Oxford University Press, 1966. This both identified the basic problem and suggested a range of practical interventions.

The ODA needs to continue its battle to strengthen health infrastructures and managerial systems in developing countries, but it also needs to recognise that British medical personnel have played, and can still play, a vital role in giving such programmes both direction and credibility.

College contributions in the changing context of international medical service

There is still a great need for international service, accredited training for such work and professional interchange. These can be encouraged and supported by the Colleges. Young trainees need advice about how to use the opportunities, how to prepare themselves for overseas work and how to re-enter the UK medical market place. The Colleges and also the NHS need to give appropriate recognition to work done in developing countries, accepting a significant amount of the time and experience for accreditation. The Scottish Royal Colleges have always had international dimensions. I believe they must still take a lead, innovate, motivate and be supportive at this time of change when inequalities abound.

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Health Care Worldwide

HEALTH SERVICES IN SAUDI ARABIA

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BACKGROUND

With an area of 2,240,000 sq. km, the Kingdom of Saudi Arabia occupies the major part of the Arabian Peninsula. The estimated population of 16·9 million (1993) are scattered on the basis of topographic favourables concentrated mainly in the cities of Riyadh, Jeddah and Dammam, less than 5 per cent being semi-settled and nomadic. Accordingly, the population density varies from 1–30 persons per sq. km with an average of 7·5 persons/sq. km.

The rapid socio-economic development which has taken place in recent decades has made visible impact on the health status of the population, increasing life expectancy, decreasing mortality rates, changing the morbidity pattern and improving the quality of life in addition to achieving self sufficiency in food production as could be gathered from Table 1.

TABLE 1

Health indices improvement in Saudi Arabia

Indicator	*1960*	*1989*
Crude birth rate	49/1,000	42/1,000
Crude death rate	23/1,000	8/1,000
Growth rate	–	3·8%
Life expectancy	44	70
Infant mortality rate	170	30[1]
Under-five mortality	–	34[1]
Maternal mortality rate	–	16·7/100,000[2] (1993)
Male literacy	15%	70%
Female literacy	2%	38%
Potable water: urban	–	100%
: rural	–	68%

Saudi Arabia is a welfare state wherein the citizen's right to health is taken care of through the development of relevant socio-economic policies in general and health policies in particular. While the state is committed to provide free of cost services to all the citizens, increased involvement of private sector is actively promoted.

Thus, the health services in Saudi Arabia are provided by three distinct sources, viz: (i) Ministry of Health (MOH), (ii) other Government Sectors and (iii) Private Sector. Ninety-eight per cent of the population have access to health services delivered exclusively through the MOH.

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Other governmental sectors like Ministries of Defence, Education, Interior, Aviation and National Guard, take care of their respective employees and their families through an organized network of hospitals and health centres. The King Faisal Specialist Hospital and Research Centre, which is directly under the patronage of the cabinet, provides highly specialized medical care and conducts related research.

The health services provided by the private sector vary from basic medical care to highly organized specialist services. The employees of this sector are also covered by health insurance, the cost of services provided, whether by private sector hospitals or by insurance hospitals (GOSI) are re-embursed by the employer.

The national health strategies[5] relate to (i) increased coverage of the population through establishing the required number of hospitals and health centres for the care of the under-served population, (ii) institution of a package of comprehensive health services of highest possible quality through opting for appropriate technology, (iii) educating the population for health by promotion, (iv) inducing the community and the health related government sectors to participate in health development and (v) gradual Saudization of manpower through expansion of the establishment of Medical Schools and Health Institutions.

The improvements in health facilities and manpower development over the decades can be visualized from the following Table 2. In the last fifteen years the Kingdom has experienced a significant increase in health manpower and facilities at par with the stated government policy. This is to establish health facilities within the government sector including the MOH while simultaneously encouraging the private sector to participate which has lead to the establishment of hospitals, health centres and clinics even in the remote areas of the country.

TABLE 2

Distribution of health facilities[3]

	Hospital beds		*Physicians*		*Nurse/Midwife*	
Sector	*No.*	*%*	*No.*	*%*	*No.*	*%*
MOH	27,459	65·8	14,082	53·2	32,229	59·8
Other Gov't	7,285	17·5	4,721	17·8	11,422	21·2
Private	6,988	16·7	7,690	29·0	10,216	19·0
Total	38,848	100	21,144	100	43,963	100

Physician population ratio	1:1,185 (1981)	1:958 (1993)[4]
Nurse population ratio	1:597 (1981)	1:438 (1993)[4]
Bed per 1,000 population	2·1 (1981)	2·7 (1993)[4]

MOH: Services

The decentralized administration is effected through the central MOH headed by His Excellency the Minister of Health and a well-defined organizational structure and administrative compartments. There are 19 health regions lead by a Regional Director General of Health Services, each of whom is directly responsible to the Deputy Minister of Health for Executive Affairs. The central hierarchial pattern of providing curative, preventive, Primary Health Care (PHC) and supportive services is also reflected in the regional organizational and administrative structure.

TABLE 3

MOH budget[4]★

Year	*Total*	*Salaries*	*Development*
1987	8,333,431	3,905,000	1,428,500
1988	7,735,000	3,995,000	854,000
1989	7,591,590	4,221,700	695,250
1990	8,168,484	4,346,509	643,620
1991	9.708,000	4,722,000	773,000

★Amounts in Saudi Riyals 3·75 S.R.=1 U.S. dollar

The budgetary provision for the MOH is shown in Table 3, which registered a gradual increase over the last five years. Apart from the MOH budget, which is 5·2 per cent (1992–93) of the national budget, each of the other governmental sectors has its own individual annual allocation to meet health care committments. The health services cost incurred by the private sector hospitals and health centres are not available at present to include in a calculation of the total national health expenditure.

The health services are provided on the basis of a three tier system of health centres, general hospitals and specialist hospitals. Every region in the Kingdom has at least one General Hospital, one Maternity and Paediatric Hospital and the required number of health centres.

As can be seen in Table 4, between 1971 and 1993, the number of MOH hospitals increased from 49 to 177 and health centres from 521 to 1,702. In the same period, the hospital beds per 1,000 population increased from 0·75 to 2·7, health centres population ratio to 1:7,896, and the number of doctors and nurses per 1,000 population from 8,565 and 3,085 to 958 and 438, respectively. The same period has experienced an increase in Saudi manpower, the number of Saudi doctors from 103 to 1,081 and nurses from 596 to 2,474.

TABLE 4

MOH facilities[3]

Facility	*1970*	*1993*
No. of hospitals	49	177
Hospital beds	7,942	27,932
Health centres	521	1,702
Physicians	971	1,402
Nursing staff	2,268	32,229

Public Health Care Developments

To translate the expressed PHC goals and objectives into practice, appropriate strategies[5] were formulated. A system was developed based on the expressed aspirations of access equity, use of appropriate technology, coordination with the health related government sectors and active involvment of the community. This could only be achieved by defining priority health problems and needs, available and expected sectoral inputs and community expectations. Accordingly, innovative instruments were developed and introduced which are indicated below:

(i) The demarcation of areas of operation and survey, to understand community health problems, expectations and available and needed sectoral inputs.

This study was used to improve access and ensure equity by re-distribution of resources including the establishment of new health centres and by defining vulnerable groups and fixing targets accordingly.

(ii) Family health file to ensure continuous comprehensive health care, with built-in protocols for the additional care of the at-risk and vulnerable.

(iii) A written action plan with defined indicators so as to monitor performance and self-evaluation of progress in achievement in service targets.

(iv) Establishment of a committee called 'friends of health committee' consisting of members of the community, local health related sectors and the health centre to develop the impetus of working together and initiate community and sectoral involvement.

(v) Defining of registers and records related to different services ensuring uniformity in recording monitoring parameters.

(vi) Pre-designed protocols for common health problems and promotive/preventive service so as to ensure uniformity in content of care.

(vii) Development of manual of procedures related to all PHC services to ensure uniformity and adherence to standard procedures.

(viii) Development of training manuals and protocol to prepare the PHC personnel for revised tasks to be performed and to inculcate team approach.

(ix) Development and implementation of quality assurance programmes.

Today, every health centre is providing PHC services to all and to the needy by defining vulnerable groups, by providing target-based services and through organised out-reach services for preventive, promotive and disease control activities. Accordingly, the under-served and at-risk groups of the community are recognised, registered and followed through an established system.

As these activities represent an on-going process, innovative changes are to be introduced in the health delivery system to accommodate the changing health needs. The established health delivery system in Saudi Arabia is flexible and culturally acceptable and should stand the test of the time continuing to evolve with the pace of development of new medical technologies and knowledge.

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CHANGING CONCEPTS OF FEVER: BC TO THE PRESENT

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INTRODUCTION

Through the ages varying concepts of disease have reflected the contemporary culture as much as the available investigative technology. The same may well apply to present day medicine despite its enormous successes. It is likely that physicians who bled fevers for at least 1,400 years, sometimes with catastrophic results, were mostly learned and intelligent. The following account may therefore have lessons for contemporary medicine.

ANCIENT CONCEPTS OF FEVER

Fever is perhaps the most ancient hallmark of disease. It dates back as far as civilisation itself.

Egyptian medicine

The most valuable of the Egyptian medical tests are the *Edwin Smith surgical papyrus* and the *Ebers papyrus*, written about 1700 years BC.[1] These papyri, the oldest known medical texts, contain the first record of anatomy observations, experiments in surgery and pharmacy, the use of splints, bandages, compresses, and other appliances, and the first evidence that specialists existed even at that time, in the descriptions 'physician of the belly', 'physician of the eyes', 'guardian of the colon', and 'treater of the teeth'. Fevers, infections and eye diseases are mentioned. The ancient Egyptians recognised that local inflammation was responsible for fever and that the pulse underwent acceleration during physical exercise and fever.

The *Edwin Smith surgical papyrus*[2] lists 48 medical cases. Local inflammation was differentiated from general fever, the latter usually meaning high fever: 'A diseased wound in his breast inflamed (*nsr-y*), high fever (*smmt-t*) comes forth from it'.[3]

Palpation was used to compare high and mild fever; the word '*srf*' indicated a lesser degree of fever. Cold and warm compresses, were prescribed for local inflammation, as well as willow leaves, which is the earliest known example of external application of salicylic acid.

Mesopotamian medicine

Early Sumerians, about 2500 BC, used a flaming brazier as a pictogram symbol for both fever and inflammation. The only source of information about Mesopotamian medicine is cuneiform writing from about 500 BC.[4] This writing was found on the 30,000 or so tablets recovered from Nineveh in present day northern Iraq in 1845 from the ruins of the library of Assurbanipal (668–625 BC). Of these, about 1,000 were medical texts which contain lists of medicines,

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