

Prevention is better than Cure - Healthcare Systems in United Kingdom and Pakistan

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Benchmarking identifies a system with superior performance, breaking down what makes such performance, and then comparing those processes to other system. Healthcare operates on a business model where performance metrics need to be compared to the industry best performers. This helps implement changes with superior outcomes. This editorial is a benchmarking exercise between two healthcare systems. The idea is to measure the outcome of investment in healthcare in United Kingdom (UK) and Pakistan.

The Coronavirus disease occurred in Wuhan in December 2019, which spread all over the world within two months.¹ Other dangerous viruses are Ebola, Rabies, HIV, Dengue, Hanta Virus, Rota virus, Influenza, smallpox, and hepatitis viruses. Infections have a global impact due to ease with transportation of humans and animals, adding a growing list of global health issues.

In the UK, by the end of World War II, the concept of state-funded hospital service was established. In 1948, national health service (NHS) was created which provided preventive and curative services.² The founding principle is free service at the point of use independent of color, creed, race, gender, religion, and based on need rather than the ability to pay. The NHS budget was £14 Billion at today's price. This has increased to £277.6 Billion/year which is more than 10% of UK's GDP. The US-based Commonwealth fund ranked NHS as the best of 11 advanced nations.³ Data on healthcare standards is published by OECD, the organisation which brings together 35 rich nations. Life expectancy for males in UK has increased from 66 to 79.2 years and for females from 70 to 82.9 years in last 70 years. Doctors/dentists regulated by GMC and GDC are 110,000 and 285,097 nurses are working for the NHS. Health board took control of 2751 of UK's 3000 hospitals. By the day of its launch, 94% of the public was enrolled in NHS. In 1951, the founder leader Bevan resigned in protest for voting to bring charges for dental care, prescriptions, and spectacles.

NHS increased life expectancy and liberated people from debt trap. Innovations made in UK with the second highest number of Nobel prize winners in the world.⁴ Discovery of DNA (Watson and Crick), linking smoking and cancer (Richard Doll), invention of MRI in Nottingham,⁴ first test tube baby (Cambridge University), vaccination programmes (Polio, TB, Diptheria, meningitis, HPV, hepatitis B, flu vaccine), screening for cancers, organ transplantation, emergency care pathway, transfusion service, robotic surgery, ultrasound, joint replacements, keyhole surgery, gene therapy, bionic organs, primary health care, genetic testing for cancers/rare disease, compensation for occupational diseases are to name a few. NHS has centres like the National Heart and Lung Institute, Great Ormond Street, Royal Marsden Hospital, National Orthopaedic Centre, Watson and Crick Institute and many centres of excellence. New trials as proven by a recent trial of dexamethasone on COVID-19 patients is possible in an integrated NHS. Office of national statistics (ONS) has data on causes of death. NHS database is key to health policy formulation and allocation of budget. Universities attached to NHS hospitals have benefited patients in the discovery of new drugs, equipment, and tests. Next 10 year NHS plan will focus on digital and artificial intelligence, prevention of smoking, obesity, alcohol, air pollution, antimicrobial resistance and health inequalities.

An ageing population is driving the demand within NHS predicting a financial hole of more than £30 Billion. There is a private sector creeping into the delivery of healthcare in UK.

There are several screening programmes in UK. Five national adult programmes in the UK save 10,000 lives/year. Fifteen million people are invited and ten million people take up the invitation. This costs £660 million/each year.⁵ Screening programmes include breast screening where 3 million women are invited for screening by regional centres. Only 2% will require a biopsy to confirm or rule out cancer. This is saving 1300 lives/year. Lung health checks involve computed tomography scans for heavy smokers to detect lung cancer in its early stages. NHS cervical screening programme invites women between the ages of 24.5 and 49 years every 3 years and ages 50 to 64 every 5 years. HPV-positive cases have colposcopy and biopsy. In 2018, a total of 4.46 million women were invited to reduce cervical cancers in UK.

The bowel cancer screening is offered every 2 years to men and women aged 60-74 years. Faecal immunochemical test (FIT) kit is sent with a letter. The programme offers individuals with an abnormal result a colonoscopy and biopsy.

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*Received: November 11, 2022; Revised: December 17, 2022;
Accepted: December 20, 2022
DOI: <https://doi.org/10.29271/jcpsp.2023.01.2>*

The newborn and infant physical examination screens for congenital heart disease, hip dysplasia, cataract, and undescended testis.

Fetal abnormality screens for Down's Syndrome, Edwards Syndrome and Patau's Syndrome.

The infectious diseases in pregnancy screens for HIV, Hepatitis B and Syphilis. NHS sickle cell and thalassemia is a genetic screening to identify people who are carriers for sickle cell, thalassemia and other haemoglobin disorders. Newborn blood spot screening is to identify, refer and treat 9 inborn errors of metabolism and genetic disorders in babies. Early identification of hearing impairment in newborn babies gives children a better chance of developing speech and language skills.

Diabetic eye screening helps identify and treat eye disease. Abdominal aortic aneurysm screening with early surgery can prevent death. There was screening for COVID-19 infection with up to 283, 000 PCR tests/day at the peak of the pandemic with free vaccination.

The UK National screening committee (NSC) meets 3 times/year to make new recommendations. The latest review included more than 100 conditions with recommendations to screen for 30 conditions.⁶ There is an annual report published online. Between 2017 -2018, the national screening programme screened 3.2 million females for cervical cancers, 2.6 million people for bowel cancers, 2.2 million people for diabetic eye diseases, 660,000 pregnant women for fetal abnormality, 640,000 babies for 15 conditions such as sickle cell disease and cystic fibrosis.⁷ All blood products are screened for hepatitis B and C, malaria and yellow fever.

It is likely that screening for various cancers will be replaced by circulating tumour DNA- based methylation studies in blood. These signatures in liquid biopsies help in the early detection of colorectal, breast, and prostate cancers.⁸

There is a lack of data related to health outcomes in Pakistan. There is little information on the quality of care, reach of healthcare to all communities and governance around healthcare spending. The average age in Pakistan for males is 65.7 and for females 67.4 years with a mean age of 66.5 years. Life expectancy ranking is 133 in the world. Delivery of healthcare is a hodgepodge of public and private programmes that results in the provision of good healthcare facilities to a few and below-average facilities to most. Vaccination programmes are helpful. Individual charitable organisations are doing a great job with meagre resources. These are mostly based in cities and less articulate people living in rural centres have limited access. Public-private partnership is a hybrid system which is helping a number of centres. Family support network forms the backbone of health and social care. This is helping individuals with health issues both physically and financially. The elderly population is small as the majority of these people die early. In Pakistan, 5 and 10 million people are infected with hepatitis B and C respectively.⁹ Pakistan is carrying the second largest global burden of Hepatitis C, is projected to increase to 12.6 million by 2030. The country is among the only two polio-endemic countries in the world.¹⁰

Pakistan has an ethnically diverse population comprising 6 groups. There is variation in the incidence of cancers. Common cancers are breast, oral cavity, prostate, upper GI, colorectal, and liver cancers.¹¹

TB, HIV, water and vector-borne infections like malaria, dengue, and typhoid are killing people prematurely. The current floods are going to increase the disease burden related to water-borne diseases. The death rate due to preventable diseases such as diabetes and smoking is more than that following earthquakes, floods, terrorism, and wars. There are no organised structured screening programmes in Pakistan. This is a missed opportunity in the early detection of infections, cancers, and congenital diseases.

Pakistan needs a funded NHS. Charity organisations and the private sector have no capacity to tackle pandemics or carry out screening programmes. WHO recommends member states to spend at least 5% of GDP on health. Developed OECD countries spend more than 8 % on health. Pakistan is spending 2.69% of GDP on healthcare. Total spending on education, health care, water and sanitation is 3.5% of GDP. Health spending has to increase to a level comparable to developed nations, up to or over 8% of GDP. United Kingdom spends over half of its national budget (£403 billion out of £987 Billion) on social security, healthcare and education for 66.44 million population. Pakistan has a smaller economy but a larger population with a bigger disease burden. Pakistan spends less than \$45/capita on health in comparison to UK spending \$4313/capita. The country is in the bottom 5% per capita spending on health. Investment in the provision of clean drinking water and a better sewerage system can prevent up to half of the communicable diseases. Population needs screening for liver, oral, breast, GI cancers along with, hepatitis B and C, tuberculosis and thalassemia. Hospitals and care homes in Pakistan are in need of more intensive units, ventilators, dialysis facilities and accredited laboratories. Another issue worth considering is consanguinity which is known to breed inherited diseases and this is reflected in the immigrant population from Pakistan to United Kingdom in published studies.¹² This requires education of the Pakistani population in UK and Pakistan.

Communities in United Kingdom need to look at preservation and expansion of family support networks as reduced social care is putting huge pressure on NHS and is not sustainable. Pressure is mounting on governments to move towards private/insurance based healthcare systems working in other developed countries. UK needs to train more doctors and paramedical staff to cater to the health needs of its population.

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