

## Brazil's Family Health Programme

A cost effective success that higher income countries could learn from



PAULO FRIDMAN/SYGMA/CORBIS

ANALYSIS, p 1198  
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Healthcare reforms in Brazil began in 1988 as part of a broader sociopolitical movement at the end of nearly 20 years of military rule. The new constitution was underpinned by principles of budgetary and political decentralisation, community participation in local budget setting, and the acknowledgment that health and access to healthcare is a universal human right. This laid the foundation for the *Sistema Único de Saúde*, or Unified Health System, and began a nationwide shift from tertiary centre based healthcare to comprehensive primary healthcare, free at the point of use, funded by the taxpayer, and inspired by the Alma-Ata Declaration of 1978.

Over the past 15 years progress in Brazilian public health has been remarkable. Infant mortality has dropped from 48 per 1000 to 17 per 1000. In just the past five years, hospital admissions due to diabetes or stroke have decreased by 25%, the proportion of children under 5 years old who are underweight has fallen by 67%, over 75% of women now receive seven or more antenatal consultations, and diphtheria, tetanus, and pertussis (DTP) vaccine coverage in children less than 1 year old is greater than 95% in most municipalities.<sup>1</sup> Even the United Nations Millennium Development Goals aspire to achieve less than this.<sup>2</sup>

Although these measures reflect improvements in the entire health system, evidence suggests that the lynchpin for the successes of the Unified Health System is the *Programa Saúde da Família*, or Family Health Programme, implemented a few years after the constitutional reforms.<sup>3,4</sup> This programme has expanded nationally and now provides comprehensive primary care services in 95% of all municipalities, covering over 55% of the population—more than 85 million people.

The Family Health Programme is based on a simple model—multidisciplinary teams, comprising a doctor, nurse, nurse auxiliary, and four to six community health workers, work in health units located in geographically defined areas, each covering no more than 5000 residents. A community health worker is responsible for up to 120 families in a defined area, and aims to provide home visits to every household at least once a month. Community health workers are fully integrated into the primary care team. They are multifunctional, and although child and maternal health forms the bulk of their work, they also provide curative care, triage and referral into the health unit, health promotion for chronic disease, and support and encouragement for community participation: community health workers must be from and live in the area where they work.

Budgetary and logistic responsibility for the health units has been devolved to the municipality level, which permits flexibility and autonomy in the delivery of this model of primary healthcare. However, healthcare expenditure is federally mandated, with contributions from the regional and national coffers. The scale of this healthcare reform is unprecedented, and it is expanding to reach universal coverage. In just 15 years, Brazil has recruited an army of 250 000 community health workers and 30 000 medical generalists.

Despite these remarkable achievements, the Family Health Programme is confronting challenges that can provide useful lessons for other countries. These challenges include difficulties in the recruitment and retention of doctors trained appropriately to deliver primary healthcare, large variations in the quality of local care, patchy integration of primary care services with existing secondary and tertiary care,<sup>5</sup> and the slow adoption of the Family Health Programme in large urban centres,<sup>6</sup> where the middle classes are more accustomed to private healthcare. Furthermore, although the Family Health Programme costs only \$31-50 (£20-32; €24-39) per capita per year,<sup>7</sup> the maintenance of adequate financing to support the expansion of primary care nationally has sometimes been problematic.<sup>8</sup>

Brazil's Family Health Programme is probably the most impressive example worldwide of a rapidly scaled up, cost effective, comprehensive primary care system. But its successes have not been given the international recognition they deserve. The potential of the healthcare reforms in Brazil and, specifically, of the Family Health Programme, to deliver affordable healthcare was noted 15 or more years ago in the *BMJ*.<sup>9,10</sup> In many ways that promise has been more than fulfilled, but Brazil's primary healthcare success story remains poorly understood and not yet widely disseminated, or translated into other contexts.

High income countries could also learn from how the programme has affected chronic disease, demand for tertiary care services, and health promotion. Through the Family Health Programme, community health workers proactively identify problems in chronic disease management and medication adherence; they support healthy lifestyle choices through home based health promotion and education; they provide continuously updated population registers and ensure disease surveillance is population based, not just based on those who interface with formal healthcare services; and, finally, they can also proactively identify simple acute health problems that can be dealt with in the home. These are all tasks that the UK NHS still struggles with. The lessons from Brazil may be particularly relevant in the current economic climate.

In many respects, Brazil has got it right: a cost effective, large scale primary healthcare programme that addresses the public health problems typical of low income countries and those undergoing the epidemiological transition, but one that is also relevant to high income countries. Brazil's growing global political and economic ascendancy<sup>11</sup> should encompass its leadership role in primary healthcare. We all have a lot to learn—get the system right, and the results will follow, even with limited resources.

Health policy makers in the UK have a history of looking to the United States for innovative examples of healthcare delivery, despite the relatively poor outcomes and high costs. They could learn a lot from looking to Brazil.

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## Referral from primary to secondary care

Older and more deprived patients remain at a disadvantage

### RESEARCH, p 1206

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Only a minority of people require hospital services, most people treat themselves or consult a generalist.<sup>1</sup> General practitioners, who are usually the first point of contact for patients, must decide which patients to refer to secondary care.<sup>2</sup> We do not know the extent to which people who are denied access to specialist services by the gatekeeper are disadvantaged. Some may be denied timely access to experts who are best placed to help. Alternatively, others may be harmed by unnecessary diagnostic tests and interventions. Therefore, the appropriate referral of cases to secondary care has economic, quality, and safety ramifications that resonate across the health sector and the globe. In light of this, the linked study by McBride and colleagues, presenting referral data for 130 000 British patients, is useful.<sup>3</sup>



A conceptual framework that could be used to analyse this study was published by Glasziou and Haynes.<sup>4</sup> It proposes that, for patients to receive evidence based care, their doctor must be aware of the latest research findings, accept the need to act on that evidence, and target the patients who might benefit from that research. Interventions should be practical and recalled by the practitioner at the time of the consultation.<sup>4</sup> Finally, the patient and the practitioner should agree on the necessary action, and the task must be completed. In practice, if each step were completed 80% of the time, then the appropriate management would occur in only one in five encounters with relevant patients.

According to McBride and colleagues a respectable but still unsatisfactory 61.4% of women with postmenopausal bleeding were referred despite ample evidence of benefit from referral.<sup>3</sup> Furthermore, the three conditions examined in the study—hip pain, postmenopausal bleeding, and gastric cancer—are more common in older people and in deprived communities. However, older patients (85 years or older) with postmenopausal bleeding or hip pain were significantly less likely to be referred than younger patients (55-64 year olds). Patients who were more deprived and had hip pain and dyspepsia (if under 55 years old) were also less likely to be referred.

The authors suggest several explanations. Setting aside the possibility that younger people and more affluent people may be over-referred, the reasons for under-referral include the possibility that specialist services are not as readily available in socially disadvantaged areas. The high prevalence of chronic and complex conditions in deprived communities or unrecognised factors related to general practitioners may result in atypical referral patterns. Perhaps the need for referral is not recognised or referral is not possible in some circumstances.

In primary care the decision to refer or offer further treatment is made during a brief medical consultation, in which the patient will usually present undifferentiated symptoms, sometimes among a host of unrelated problems.<sup>5</sup> The extent to which the patient's problem is appropriately dealt with is a function of how effectively the doctor and patient communicate. Sometimes treatment decisions follow a series of consultations after several objective tests. All of these factors—including consultation skills, continuity of care, and the correct interpretation of test results—introduce risk and may reduce the chances that the patient is referred.

The reasons for seeking an expert opinion have remained unchanged for decades and are not limited to diagnosis or treatment. In many cases patients are referred for reassurance as a response to perceived medicolegal risk, to avert a complaint, or to share the burden of caring for a patient whose problems are resistant to appropriate treatment.<sup>6</sup> It is unsafe to assume that the reasons for referral can be readily gleaned in any document or database. Neither do doctors always record the multiple reasons for referral in their records.<sup>7</sup>

Research using databases is attractive because it can use data from thousands of cases to explore several interesting associations. However, databases cannot provide information to help understand patterns that arise from

human interactions. McBride and colleagues suggest that patient preferences may explain some of the discordant patterns of referral.<sup>3</sup> Older people may be less willing to be referred for investigation, may be reticent because of social isolation, or may adopt a stoic attitude to symptoms. Whatever the reasons they are almost certainly best understood within the context in which they were observed.

Research is needed on the interaction between doctors and patients in the primary care consultation, which ultimately determines who is referred and who is not. Caution is needed in generalising the results to other primary care systems because the results will be context specific, even within national boundaries.

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## Improving access to treatment for HIV in sub-Saharan Africa

Additional funding is important, but using it more efficiently is key

### RESEARCH, doi:10.1136/bmj.c6218

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Between 2000 and 2007, funding for HIV and AIDS programmes increased from \$2.4bn (£1.5bn; €1.8bn) to \$10bn. Antiretroviral drugs are the costliest component of delivering antiretroviral treatment, making up at least half of total treatment costs (excluding programme level costs) in low, lower middle, and upper middle income countries, respectively.<sup>1</sup>

Previous analyses have noted that in developing countries as coverage of antiretroviral treatment increases the cost falls. Others have focused on factors that influence the cost of antiretrovirals: third party negotiations, volume commitment, the country's income, costs of active drug ingredients, and product type—generic or innovative.<sup>2 3</sup>

In the linked study (doi: 10.1136/bmj.c6218), Bendavid and colleagues looked at the dramatic fall in the cost of first line antiretroviral drugs that accompanied the equally dramatic rise in foreign assistance between 2003 and 2008 in 13 countries in sub-Saharan Africa.<sup>4</sup> Unsurprisingly, they found that both factors were significantly associated with increasing coverage. They also found that the country's own public health expenditure and a composite World Bank measure of government effectiveness were also positively associated with increases in coverage.

Undoubtedly, increases in funding and dramatic price reductions have been crucial determinants of the rapid

scaling up of antiretroviral treatment over the past seven years. However, two caveats should be considered when interpreting the results of the study. Firstly, the authors do not to use the word "causal" when describing the association between increases in coverage, changes in antiretroviral prices, and official development assistance; however, most of their discussion focuses on the degree to which the observed factors seem to have determined coverage and are likely to determine it in the future, thus implicitly suggesting causality. The authors do not consider, for example, that the increased worldwide demand for antiretroviral drugs might have contributed to the cost reductions. Just as falling drug prices might enable increases in coverage, increased demand for antiretroviral drugs might result in a drop in price.

Secondly, fig 1 in Bendavid and colleagues' study shows that the antiretroviral market has changed dramatically over time. In 2003, countries varied greatly in the price of first line treatment, with little variability in coverage. By 2008, the opposite was true. The analysis used to estimate the price-coverage association assumes that the structure of the market is constant over time, which could bias the estimated association between coverage and prices. The study may therefore have overestimated the importance of the cost of antiretrovirals in determining the coverage of antiretroviral treatment from 2003 to

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- ▶ HIV drugs halve infection rate in men who have sex with men, study finds  
(*BMJ* 2010;341:c6737)
- ▶ Pope's comment on condom use will help HIV prevention, say activists  
(*BMJ* 2010;341:c6734)
- ▶ New HIV infections fall by a sixth in a decade  
(*BMJ* 2010;341:c6739)

2008. More importantly, it may also have underestimated the effects of further reductions in the total cost of providing treatment (including reduced cost of antiretrovirals) on global efforts to expand treatment for HIV in these difficult economic times.

During the initial period of rapid expansion of antiretroviral treatment (2003-8), health systems lacked sufficient capacity to deliver treatment. Supply chains were weak, health workers were not trained, and laboratories were working at low capacity. Thus, as well as the affordability of drugs, logistic constraints restricted the expansion of treatment. Even when clinics were staffed and supplied with antiretrovirals, patient demand was often low because few people were aware of their HIV status. Over the past decade, large investments have been made in developing the infrastructure needed to test for HIV and treat it; this has occurred concurrently with increases in funding and a drop in antiretroviral prices.

Reducing the price of current lowest cost first line regimens will probably not increase coverage greatly, but such efforts are still warranted. Widespread dissatisfaction with the complexity and toxicity of the lowest cost regimen is prompting multiple efforts to improve it, as reflected in the UNAIDS/WHO "Treatment 2.0" initiative. These efforts include optimising the dose of current drugs to reduce cost and toxicity; reducing the production costs of better but more expensive first line drugs, such as tenofovir; and introducing new higher potency, lower cost first line drugs. In the future, an increasing proportion of patients will need second line drugs as the first generations of patients who had access to antiretroviral

treatment develop treatment failure. This will put severe cost pressure on antiretroviral treatment programmes, limiting their ability to enrol new patients in first line treatment or move patients on to second line treatment (or both). Strategies to lower the cost of second line antiretroviral treatment and to maximise the durability of first line treatment will be essential.

If 2003-8 was a time of rapidly increasing development aid for antiretroviral treatment and constrained supply and demand for services, 2010-5 is likely to be a time of austerity. If coverage over the next decade is more constrained by resources than by capacity, then reducing the total cost of providing treatment, including the drug component, may have an even greater effect on future coverage than did reductions in drug costs between 2003 and 2008. As Bendavid and colleagues argue, continued increases in the coverage of antiretroviral treatment will depend crucially on mobilising additional domestic and international resources. However, improving the efficiency of treatment programmes will be equally or more important.

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## Implantable cardioverter defibrillators after acute myocardial infarction

Evidence suggests no overall survival benefit if inserted within 40 days

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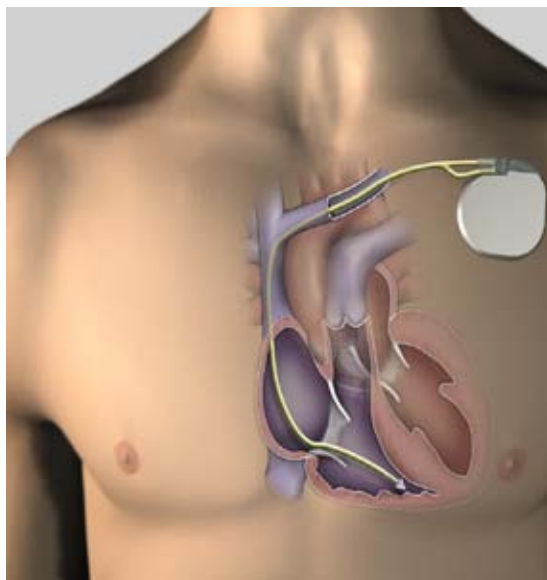
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Despite major advances during the past two decades in the management of patients with acute myocardial infarction, sudden cardiac death remains an important contributor to overall mortality.<sup>1</sup> Several randomised controlled trials have established the effectiveness of implantable cardioverter defibrillators in reducing overall mortality in patients with a history of myocardial infarction and reduced left ventricular ejection fraction.<sup>2</sup> Although the risk of sudden cardiac death is greatest in the first 30 days after acute myocardial infarction, especially in patients with left ventricular dysfunction or heart failure,<sup>3</sup> two trials found that the insertion of an implantable cardioverter defibrillator at this early stage did not reduce all cause mortality.<sup>4 5</sup> A possible reason is an increase in non-arrhythmic death in the early post-infarct period. The findings of many of the early trials of implantable cardioverter defibrillators are reflected in current national and international guidelines, which recommend that these devices should be considered in patients with a previous myocar-

dial infarction (after at least 40 days) and left ventricular ejection fraction below 30-35%.<sup>6 7</sup>

A recent study has shed further light on why early insertion of an implantable cardioverter defibrillator soon after acute myocardial infarction may not improve survival.<sup>8</sup> The investigators examined the available autopsy records of patients who had died in the VALsartan In Acute myocardial infarction Trial (VALIANT), which randomised 14 703 patients with clinical evidence of heart failure or left ventricular dysfunction after an acute myocardial infarction to valsartan, captopril, or both.<sup>9</sup> In the 95 patients with presumed sudden cardiac death, the contribution of recurrent myocardial infarction or cardiac rupture to death was highest in the first month after the index infarction and decreased with time. In contrast, the proportion of deaths attributable to arrhythmia (presumed in the absence of specific acute autopsy findings other than those of the index infarction) was higher than that for recurrent myocardial infarction



Defibrillators should be tailored towards patients at high risk of life threatening arrhythmias

or cardiac rupture after three months and increased significantly over time. Despite the usual limitations of studies involving retrospective analyses of autopsy findings, such as autopsies being performed only in a subset of patients (autopsy reports were available for 398 (13.8%) of the 2878 patients who died in the VALIANT study) and the potential variability in the quality of autopsies, this study provides important insights into the mode of sudden cardiac death in survivors of acute myocardial infarction. The findings lend further support to the notion that non-arrhythmic death may be a more important cause of death in the early stages after acute myocardial infarction, which would explain the overall lack of benefit on mortality when implantable cardioverter defibrillators are inserted within one month of the index event. This study strengthens the current recommendations that these devices should not be inserted within 40 days of an acute myocardial infarction.

However, several questions remain unresolved. Although the study found that in the first month sudden cardiac death had mainly non-arrhythmic causes (24/30 cases), a fifth of such deaths (6/30) had an arrhythmic cause, which might have been prevented by the early insertion of an implantable cardioverter defibrillator. A subset of patients at high risk of sudden arrhythmic death early after acute myocardial infarction would therefore not be considered for potentially life saving treatment if a blanket policy of not inserting these devices until at least 40 days after infarction is strictly adhered to.

The reasons why a patient may develop ventricular arrhythmias and die suddenly are complex.<sup>10</sup> This is reflected by the range of invasive and non-invasive tests that can help predict the risk of sudden cardiac death. A more pertinent question is how we can best identify which patients who have had an acute myocardial infarction are at greatest risk of developing life threatening ventricular arrhythmias and would benefit most from early insertion of a cardioverter defibrillator.

The answer may lie in the use of a combination of tests or algorithms designed to define the arrhythmogenic substrate in people who survive acute myocardial infarction, thereby providing a more tailored approach. This approach also allows implantable cardioverter defibrillators to be considered in patients with left ventricular ejection fraction above 30-35% who do not warrant such a device under current guidelines but may still be at risk for sudden cardiac death.<sup>11</sup> Until such algorithms have been designed and validated in large multicentre studies, clinicians will continue to practise evidence based medicine, which is reflected in current national and international guidelines on the selection of candidates for the insertion of implantable cardioverter defibrillators after acute myocardial infarction.

When is the optimal time to insert an implantable cardioverter defibrillator? The answer is still unresolved, although current evidence suggests no overall survival benefit for devices inserted within 40 days of infarction. From a health economic perspective, implantable cardioverter defibrillators become more cost effective the longer the patient survives after implantation.<sup>12</sup> It could therefore be argued that these devices should be considered only after patients have overcome the risks and complications of the initial acute myocardial infarction (such as recurrent infarction and cardiac rupture) and if their left ventricular ejection fraction remains below 30-35%, despite being on optimal medication to improve left ventricular function. Clearly, more work is needed in this area to refine the optimal clinical and cost effective approach.

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## Employee ownership in the NHS

Mutual models may help to deliver higher levels of performance



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Although the coalition government's plans to put general practices in charge of commissioning have attracted widespread interest and comment, its proposals for provider reform are equally radical. By 2013 it is expected that all NHS trusts will have become foundation trusts, and that providers from the independent sector will play a bigger part in delivering services to NHS patients. The government also wants to encourage employee owned healthcare providers, with the aim of creating "the largest and most vibrant social enterprise sector in the world."<sup>1</sup>

These plans are part of a broader programme of public service reform, at the heart of which is a concern to move away from state ownership to greater diversity in how public services are run in pursuit of the "big society."<sup>2</sup> Cabinet office minister Francis Maude announced recently that the government will take this programme forward by putting in place a right for public sector workers to take over the running of their services.<sup>3</sup> This builds on the previous government's interest in mutualism in the public sector, and it signals a renewed commitment to explore alternatives to state ownership and for profit private provision.<sup>4</sup>

Cross party support for public service mutuals derives in part from concern that state run services can be slow moving and unresponsive to the needs of users, and in part from evidence that employee ownership brings benefits in terms of increased productivity, reduced staff absenteeism and turnover, and higher levels of innovation. Experience has shown, however, that employee ownership in itself is not sufficient to deliver the advantages claimed for mutuality.<sup>5</sup> Equally important is staff involvement in decision making and the development of a culture of ownership that gives staff a real voice in the organisation.

Central Surrey Health is the longest standing example of an employee owned organisation created by staff previously employed directly by the NHS. Established in 2006 as a not for profit limited liability company owned by its employees, Central Surrey Health employs around 770 nurses, therapists, and support staff, who deliver care to NHS patients in the community under a contract with the primary care trust. As co-owners of the company, workers are involved in shaping the organisation's future as well as delivering patient services.

The pioneering work of Central Surrey Health is being taken forward in 61 other initiatives in the NHS in England under the "right to request" introduced in 2008, which has enabled staff providing community services to set up social enterprises. These initiatives vary in their scope and focus, ranging from small scale projects aimed at meeting the needs of specific groups of patients to schemes where all the community services previously managed by a primary care trust are taken into employee ownership. The Department of Health has estimated that services to the value of £900m (€1060m; \$1450m) that employ almost 25 000 staff will be affected.<sup>6</sup>

The future of employee ownership outside community services hinges on how the government takes forward its

commitment to allow foundation trusts to go down this route. The white paper on NHS reform published in July stated that, "As all NHS trusts become foundation trusts, staff will have the opportunity to transform their organisations into employee-led social enterprises that they themselves control, freeing them to use their front-line experience to structure services around what works best for patients."<sup>1</sup> The implication is that, in future, foundation trusts will take different forms, with some retaining the current governance model involving multiple stakeholders, while others become employee owned.

Several practical barriers may get in the way of the government realising its ambition. These barriers include maintaining access to NHS pensions for staff making the transition, and ensuring that employee owned organisations are not at a disadvantage in the application of tax rules. Also important is providing access to legal, financial, and other advice to organisations considering going down this route, as well as support from employee owned companies in other sectors able to offer mentoring and guidance.

In promoting mutuals, the government will also have to tackle concerns that employee ownership entails the privatisation of NHS services. The support given by the former Labour government to public service mutuals suggests that these concerns may not be insurmountable, even if trades unions need to be persuaded that their members will benefit. The history of workers' cooperatives in the labour movement may also make it easier to promote diversity in service provision through employee ownership than by giving investor owned companies a bigger role in healthcare.

Assuming that public service mutuals are here to stay, they need to be given time to evolve if they are to emulate the levels of customer service, quality, and innovation seen in organisations like the John Lewis Partnership. Giving staff a stake in the organisations they work for needs to be combined with much deeper staff engagement in decision making than has traditionally been the case in the NHS and real empowerment of front line teams. Changing cultures is much more difficult than altering structures, but it is essential if further improvements in performance are to be achieved. This has implications for workplace relationships and calls for leadership styles that foster collaborative approaches to problem solving.

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