Local decision makers must be free to create their own solutions. Secondly, services should be delivered as close to home as is compatible with not compromising quality or generating unreasonable costs.

Thirdly, those planning services should think about the entire system not just one part of it—and the system ranges from services delivered to people in their homes (particularly NHS Direct, the telephone advice line) through community, primary, secondary, and tertiary care. If a locality has many small practices with lists under 10 000 then having only one large hospital designed to cope for 450 000 may create gross inefficiencies. In contrast, a locality that has practices with list sizes of 50 000 doesn't need a hospital designed to cope with 150 000.

Fourthly, no consultant should be singlehanded, which relates to the fifth principle—that it doesn't make sense for hospitals serving only 150 000 to try to provide all acute services. The surgeons are keen on hospitals that serve 500 000 because it allows the "dream set up" of 15 consultant surgeons, 15 consultant orthopaedic surgeons, 30 anaesthetists, 24 hour operating, an intensive care unit, and 24 hour pathology and imaging services. But such hospitals cannot make sense everywhere, and the sixth principle must be to think differently.

NHS Direct will become NHS Direct Gold when it will be available in multimedia and linked to individual patient records. "Hub and spoke" hospital systems might be the answer in some places, while telemedicine might remove the need for radiology departments in others. Pathology services and casualty departments might be concentrated enormously, reducing their number dramatically. All of these ideas raise hackles because they go against the way things have been done traditionally, and they threaten jobs. But the aim of the NHS cannot be simply to employ staff in the usual way: it has to be to provide optimum services to the population.

The seventh principle must be to encourage research and evaluation. If a knowledge based health service is to mean anything then we need much better data and evidence on the best way to deliver acute services. No change should be made without being evaluated. The eighth principle must be to consult the public on the unavoidable trade offs. As the going gets tougher in the NHS we need much more innovative ways of consulting the public (see this week's *Career focus*: Classified supplement (classified.bmj.com/careerfocus)).

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website *e*xtra

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Screening for gestational diabetes mellitus

A simple test may make it easier to study whether screening is worthwhile

Gestational diabetes mellitus is a concept that arouses considerable controversy. It is defined as "carbohydrate intolerance of varying degrees of severity with onset or first recognition during pregnancy."[1] Rather than predicting the development of diabetes later in life, as proposed originally,[2] the main purpose of identifying gestational diabetes is to detect women at risk of adverse perinatal outcomes, such as macrosomia, neonatal metabolic abnormalities, birth trauma, and caesarean section.[1 3 4] Evidence of the effectiveness of universal screening for gestational diabetes on these outcomes is still lacking.[5] However, recent randomised studies indicate that women who are intensively managed can achieve near normal rates of macrosomia and neonatal hypoglycaemia.[5-7]

Those who do not favour screening for gestational diabetes claim, among other things, that the current screening and diagnostic strategies are cumbersome. In this issue of the *BMJ* Perucchini et al propose a protocol which could counter this argument: they suggest using a fasting glucose value as a screen for gestational diabetes (p 812).[8] This protocol differs from the two currently recommended procedures. The first, mostly used in North America, is a two step scheme: a screening test consisting of a one hour 50 g glucose challenge test at 24-28 weeks of pregnancy followed, if positive, by a diagnostic three hour 100 g or two hour 75 g oral glucose tolerance test.[1 3] Recent guidelines do not recommend the screening test in women under 25 years, with normal weight, with no personal or family history of diabetes, with no history of poor obstetric outcomes, and who do not belong to an ethnic group predisposed to diabetes.[1 3] The second strategy, a one step procedure using a two hour 75 g tolerance test as proposed by the World Health Organisation,[9] is mostly used in Europe.[1]

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Perucchini et al performed a one hour 50 g glucose challenge test followed, whatever the result, by a tolerance test.[8] The challenge test result and the tolerance test fasting glucose value were analysed for their ability to predict gestational diabetes, which was diagnosed on a three hour 100 g glucose tolerance test using Carpenter and Coustan criteria. The authors calculated the sensitivity and specificity of the two tests and determined the thresholds with the best sensitivity-specificity association by the receiver operating characteristic (ROC) curves. For the challenge test this cut off was determined to be 7.0 mmol/l, with a sensitivity of 68% and a specificity of 82%. For the fasting glucose value the best threshold was 4.8 mmol/l (sensitivity 81%, specificity of 76%). Sensitivity is the probability of a positive test result if gestational diabetes is present and specificity the probability of screening negative if it is absent. A high sensitivity decreases the number of women with gestational diabetes who are missed by the screening test. As specificity increases the number of women without gestational diabetes who are incorrectly classified as positive decreases.

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The results of Perucchini et al imply that if a fasting glucose threshold of 4.8 mmol/l is used as a screening test 70% of women do not need a diagnostic tolerance test and 19% of cases of gestational diabetes are undetected (1.9% of their population). For a challenge test threshold of 7.0 mmol/l 77% of women do not require a fasting tolerance test and 32% of cases are missed (3.3% of their population). Should a two step strategy be used then the fasting glucose value is preferable to the challenge test as the slight increase in the number of diagnostic tolerance tests needed overcomes the high number of undetected cases of gestational diabetes. In a one step procedure, performing a diagnostic tolerance test only in women with a fasting glucose value higher or equal to 4.8 mmol/l appears to consume fewer resources, human and financial, than submitting all subjects to a tolerance test. However, 19% of the women with gestational diabetes would be missed compared with none with the tolerance test. We do not know the clinical impact of not detecting these cases. Pre-existing but undiagnosed diabetes is unlikely to be missed with a fasting glucose value of 4.8 mmol/l cut off. Anyhow, data on pregnancy outcomes in the undetected cases of gestational diabetes are needed.

A fasting glucose value offers many advantages: it is easy to administer, well tolerated, inexpensive, reliable, and reproducible.[10] However, more studies are required before endorsing the fasting glucose value as the screening test for gestational diabetes. Its validity has to be established with the World Health Organisation and Sacks criteria. Its has to be compared with the 50 g selective screening strategy. The glucose fasting value has to be validated in different populations, especially those with a lower prevalence of gestational diabetes. The threshold of 4.8 mmol/l may need to be revised if screening is done in an office or surgery setting with glucose meters. Meters are generally accurate, but their precision varies. They may not be subject to the same quality control as laboratory assays.[11]

In conclusion, screening for gestational diabetes mellitus with a fasting glucose value is an attractive strategy. What we need now is an assessment of its effectiveness in decreasing the adverse perinatal outcomes associated with gestational diabetes as part of an intervention programme.

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Treatment options for chronic hepatitis

Antivirals look promising

Over two billion people alive today have been infected with the hepatitis B virus and over 350 million of them are chronically infected carriers, of whom more than 75% are from South East Asia and the Western Pacific region. Although not all carriers are infectious, they represent an important reservoir of infection. Persistent carriers are at high risk of long term complications of infection, including chronic hepatitis, cirrhosis, and hepatocellular carcinoma. Hepatitis B infection claims the lives of 1-2 million people every year and thus represents an important public health challenge. The recent licensing of a new class of drugs may offer much help to the infected populations of South East Asia, but it also poses a set of problems.

Hepatitis B vaccines, introduced in 1982 and incorporated into universal infant immunisation programmes, have proved successful in preventing infection and have reduced significantly the pool of carriers in several countries. Nevertheless, there remains a need for a treatment for persistent carriers to prevent them developing progressive liver disease. Cirrhosis and hepatocellular carcinoma are caused by active replication of hepatitis B virus in the hepatocytes. Hence, the primary goal of treatment is to eliminate the virus or stop its replication and suppress inflammatory processes in the liver.

Interferon alfa is currently licensed for treating chronic hepatitis B, but its use is limited because over half of all patients do not respond to treatment. Overall only 30-40% of white adults have a sustained response to interferon therapy.[1] Similar response rates can be achieved in Asian patients, but only if the patients are carefully selected on evidence of continuing viral replication and liver damage.[2-4] Antiviral agents are therefore being investigated as possible alternative treatment options. To date, the most promising results have been seen with second generation nucleoside analogues,[5] such as lamivudine and famciclovir. Other antiviral agents under evaluation include BMS200, 475, ganciclovir, and adefovir dipivoxil. Combination therapy will probably be required in the longer term.

Though clinical trial results are promising, there is a long way to travel to reach practical regimens that will be useful in routine clinical settings in the countries of

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