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Health System Strengthening in Papua New Guinea: Exploring the Role of Demand-responsive Mechanisms

Challenges facing the health system result not just from low expenditure; performance is also constrained by its structure and by cultural factors. If expectations for improved health outcomes, heightened by the bounty of resource development, are to be achieved without substantial wasting of additional investment, policy makers and program implementers need to consider all potentially viable options. Lessons can be drawn from countries facing similar challenges where the policy mix was broadened to include both supply-side strategies and 'demand-responsive' mechanisms (voucher schemes, micro-health insurance, social businesses and social franchises). In Papua New Guinea, these mechanisms could usefully complement existing and emerging policy instruments, including public private partnerships, as part of a more effective overall system of health service delivery. Trialing demand-responsive mechanisms alongside traditional supply-side strategies has the potential to reshape key elements of Papua New Guinea's health system, redressing structural weaknesses and reducing inconsistencies with cultural realities.

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EXECUTIVE SUMMARY

Health services in Papua New Guinea (PNG) need substantial strengthening. Outcomes are poor across many indicators and there are worsening trends on key indicators such as maternal health. Over the past ten years maternal mortality rates have doubled, making maternal health one of the country's main health concerns. Rates per 100,000 live births went up from 360 in 1996 to 733 in 2006, while the Millennium Development Goals' target for 2015 aims at a decrease to 274. The maternal mortality rate in PNG is now the highest in the Pacific region and one of the worst in the world. Equally devastating are communicable diseases such as malaria and pneumonia, which, while preventable, continue to be the main cause of morbidity and mortality in PNG.[1]

At the same time, growth in the resources sector is feeding expectations of significant new investment in health and improved outcomes. Resource developments do offer heightened opportunities to address constraints – through increased government revenues, opportunities created by individual projects for public private collaboration in delivering better services in some regions and, in some cases, growing capacity for health service users to contribute to costs.

However, low historical expenditure has been only part of the problem. There are serious structural, cultural and geographical dimensions to health sector problems. Securing the benefits from the emerging opportunities to increase health sector resourcing will require more than scaling-up existing systems.

This paper is designed to contribute to health policy dialogue in PNG by exploring the role and value of demand-responsive mechanisms, alongside supply-side instruments, for improving both the provision and utilisation of health care services.

We begin by examining some of the structural problems that are resulting in resource wastage, in addition to unnecessarily high levels of unsatisfied demand, even within current resource constraints. We focus on evidence of poor alignment between the supply of services and the pattern of underlying demands, and on the constraints on providers adapting services to better meet users' needs and requirements. In turn, these problems are linked to constraints on service coordination across multiple providers and to poor flows of information between potential users and service providers.

This assessment highlights the potential value for PNG in increasing the emphasis in the health service mix on mechanisms that could encourage service provision that is better informed about, and more responsive to, underlying demands. A growing body of experience from other developing countries, with broadly analogous challenges, points to the value of such demand-responsive mechanisms in complementing and adding to the effectiveness of overall health system strengthening. Utilisation of these measures is starting to emerge in PNG but is very low.

Against this background, we look at four classes of demand-responsive instruments with complementary attributes – voucher schemes,

micro-health insurance, social franchises and social businesses – and consider their application to PNG, drawing on lessons learned from elsewhere, coupled with a composite picture of interactions between public and private health providers in PNG obtained through broad-based consultations and visits to settings with significant private sector contributions to health service delivery. In particular, we look at the scope for these mechanisms to complement established and emerging services, and ways in which they might be introduced that are responsive to and, in some cases, actively engage cultural resources as well as leverage existing community investment. This suggests low-cost and low-risk ways of testing the feasibility and value of these mechanisms in different PNG settings: rural, urban and resource enclaves.

We conclude that there is a high likelihood that substantially greater use of demand-responsive mechanisms could support more effective – and more cost-effective – health system strengthening, even within existing budgets and without requiring substantial 'aid displacement'. We see particular scope for combining instruments to deliver better overall health and equity outcomes and to limit abuse. The potential appears high. As a minimum, early investment in trialling demand-responsive mechanisms as part of the evolution of the system offers a valuable opportunity to redress continued waste and unsatisfied demand. More likely, such trialling could justify the integration of these mechanisms into service delivery and lead to a more effective and robust health system.

Textbox 1: Defining supply-side and demand-responsive mechanisms

Supply-side: refers to the provision of service delivery inputs such as infrastructure (hospitals, health centres, equipment), staff, and medicines and medical supplies. These inputs can be prescribed by 'minimum requirements' set for the delivery of health services in accordance with National Health Plans.

Demand-responsive mechanisms: draw on social and cultural factors to deliver health services that more closely reflect users' needs and requirements—creating greater incentives both for suppliers to provide compatible infrastructure and resources and for users to reveal their preferences and access appropriate prevention, treatment and care services. Include vouchers and micro-health insurance which transfer purchasing power to specified groups for defined goods and services as well as social businesses and social franchises which are sensitive to demand.

Vouchers: entitle holders to specified treatment and care from accredited providers. Providers are trained and supported and must meet specified quality standards. Cost to patient subsidised or free. Providers reimbursed at the negotiated rate after verification of contractually delivered services. Can be operated by government or development partners. Most effective if the operator of the voucher scheme is independent from the facilities that provide the services. (See Chart 1)

Micro-health insurance: provides protection against some financial consequences of medical treatment. Members pay small annual premiums in exchange for entitlement to a

defined package of services from nominated providers. Can cover out-of-pocket expenses and lost income. Can operate informally at the community level or through micro-insurance agencies (public or private), using accredited providers reimbursed at negotiated rates. Viability depends on a large proportion of the community joining (pooling risk to limit financial exposure), good governance and quality management, and increased satisfaction with service quality by members who have paid in advance for the care they may need.

Social business: delivers simple, proven health products through local outlets at affordable prices. Centralised purchasing; products delivered directly to business operator. Operators trained and supported. Profits reinvested and can be used to expand reach and product range. Can start through partnership with commercial enterprise, donor seed capital or micro finance. Large scale social businesses employ commercial marketing techniques and subsidised prices to increase use of essential products.

Social franchise: can be created by networking and branding existing public or private health centres; adding 'franchised' services to existing public or private facilities; extending the reach of social businesses. Franchisor provides training and ongoing support, supplies and equipment, branding and marketing, and monitors service delivery. Franchisees (health centres) deliver specified products and services, meet quality standards and pricing protocols designed to encourage and facilitate access by target groups.

Health system strengthening in Papua New Guinea: exploring the role of demand-responsive mechanisms

The need for health system strengthening in Papua New Guinea (PNG) is uncontentious. Deteriorating availability and performance of many public and some private health facilities, persistently poor health outcomes across the population, and worsening trends on some key indicators such as maternal health are well documented.[2] Over the next few years, as government revenues are bolstered by continuing resource development, particularly from the liquefied natural gas project (LNG), PNG will have the opportunity to reshape investment in health care consistent with the aspirations reflected in the Millennium Development Goals[3] and the vision and goals articulated in the new *National Health Plan 2011-2020*.[4]

Expectations are high that there will be greater commitment to health and that this will lead to improved quality of care, increased utilisation of services, and better health outcomes. However, the challenges facing PNG's health system result not just from a low level of expenditure; performance is also constrained by the structure of the system and by geographical and cultural factors.[5] If expectations for improvement are to be achieved without substantial wasting of the additional investment, policy-makers and program implementers will need to reshape key elements of the system by drawing on policy instruments which are better suited to redressing the structural weaknesses and more compatible with contextual realities.

Health system strengthening in other developing countries facing similar challenges to PNG has included broadening the mix of health policy instruments. Malaria, tuberculosis, maternal and infant mortality and HIV – all major health problems faced by the people of PNG – are being addressed through medically efficacious interventions delivered via traditional supply-side instruments increasingly used alongside instruments more attuned to the realities of users' needs and requirements.[6] These more 'demand-responsive' mechanisms include voucher schemes and micro-health insurance, which directly influence expressed demand, and social businesses and social franchises, which are sensitive to demand.[7] Experience shows strong synergies between these mechanisms and strong benefits when collectively used to complement more traditional supply-side measures.[8] Evidence suggests that this complementary mix of policy instruments helps to address gaps in service provision and misaligned incentives between providers and users, and to prompt better coordination between public and private providers, allowing greater value to be drawn from health sector resources.[9]

The types of concerns motivating the use of demand-responsive mechanisms elsewhere, such as high rates of maternal and infant mortality, are highly relevant in PNG and raise the possibility of real improvement in health outcomes from adding these mechanisms to the policy mix, if practical implementation can be achieved. The time is right to probe the potential value of demand-responsive mechanisms for health system strengthening in PNG, particularly in light of the following factors:

1. The scale of public health challenges heightens the need to improve management capacity of the health system and ensure value for money from public and private investment;[10]

2. The opportunity to create a lasting legacy from the bounty of resource development – including plans to create a sovereign wealth fund from LNG revenues to finance increased investment in the health sector, proposals to leverage public private partnerships with resource companies to contribute to health system strengthening,[11] and consideration of broader social policy instruments to alleviate income poverty such as social cash transfers[12] – underlines the importance of considering all potentially viable options, especially now in the lead-up to decision-making, when planning flexibility is greatest;

3. Proposed changes to the financing of health facilities, including the forthcoming trial of direct to facility financing, and plans by the National Department of Health (NDOH) to replace the current system for providing essential medicines and medical supplies,[13] open up possibilities for the wider use of delivery mechanisms that previously may have been difficult to operationalise.

Evidence of gaps and misaligned incentives in PNG's health system

The limited capacity to provide cost-effective and user-friendly quality health care services in PNG reflects many factors, including low morale and high absenteeism among health workers, poor maintenance of infrastructure and equipment, and unreliable drug supply. These factors limit incentives (affecting readiness, willingness and ability) for people to access services and, at times, actually discourage potential users from seeking treatment or care.[14] In general, whether involving public or private investment, current strategies for health system strengthening reflect two assumptions: one, that providing infrastructure and resources, based on a national definition of minimum standards,[15] will improve the delivery of services required by users; and two, that users, whether targeted or untargeted, can and will access these services.

However, even if the minimum standards were met, it is highly unlikely that this would either lead to the delivery of required services or that people could and would use these services. Experience in PNG indicates serious misalignment between supply and demand in the following ways:

- *Supply sometimes in excess of expressed demand*. Recent reports analysing a broad cross-section of public and private health facilities indicate varying degrees of 'excess capacity' where there are more staff on the payroll than required to perform the number and type of services recorded as delivered at the facility.[16] Whether this is real or ghost, or simply indicative of misused capacity and poor allocation of existing resources, the result is waste of financial and/or skilled resources in a country where key health outcomes are worsening.

- *Some demand commonly unmet*. For example, in the critical area of maternal health, where only 40% of births are

supervised or assisted by a trained health worker,[17] records indicate that 60% of deliveries at Mt Hagen General Hospital involve women who have received no antenatal care, suggesting that women seek supervised deliveries even though they have not been covered by antenatal outreach services.

- *Poor implementation of supply-side targeting through fee exemptions designed to provide access to services by poor and vulnerable groups*. At public health facilities, fees and fee exemptions are unregulated and unaudited. Even if well implemented, for many people fees are only a small part of perceived and actual access costs.

- *Poor coordination across service providers*. This leads to wasteful duplication and overlap of services in some areas and failure to utilise opportunities for cost sharing while health problems elsewhere are underserviced.

- *Inadequate provision of health information*. Efficient utilisation of health services requires that people are knowledgeable about symptoms that can be treated through allopathic medicine and are aware of and ready, willing and able to access treatment services. Health promotion material and activities alone do not provide a bridge to treatment. For example, STI prevalence remains high despite extensive health promotion over many years and the availability of highly efficacious (and cost-effective) treatment.[18]

- *Forms of health care delivery that do not effectively draw on cultural resources and can conflict with cultural realities*. For example, reciprocal exchange practices are integral to social relationships and at times influence how people access and engage with services. Health care options are understood and utilised by people in relation to other priorities in their lives, particularly given issues surrounding quality of care and trust in health services.[19]

Potential for value in broadening policy mix

Given the poor alignment of health service supply with underlying demands in PNG, experience elsewhere suggests that there is significant value in augmenting existing policy instruments with mechanisms to both increase expressed demand and give stronger incentives to providers to respond to demand. This experience includes voucher schemes to reduce maternal and infant mortality in Bangladesh; social marketing to limit malaria transmission in Tanzania; social franchises to improve reproductive health in Vietnam; and micro-health insurance to improve health-seeking behaviour among poor families, including informal sector workers, in India.[20]

Designing the appropriate mix of instruments will require selective testing and some evolution of different combinations of measures as well as different degrees of reach across communities. The potential benefits to flow from expanded synergies would strengthen the health system and make it more cost-effective. Developing these opportunities as part of the planned overall system strengthening is likely to

result in reduced waste of scarce resources within existing budgets through incentives to redirect resources in more productive ways. Further likely outcomes include the possibility for accessing additional funds based on stronger evidence of cost-effectiveness; scope for better sharing of costs across public and private providers, as well as users, as services become more valued and as users better appreciate their power to influence supply patterns; and less unsatisfied and more informed and timely demand.

Demand-responsive mechanisms could usefully complement existing and emerging instruments, including public private partnerships, as part of a more effective overall system of health service delivery. They are not proposed as replacements for traditional supply-side measures – or as the basis of a revolution in health service delivery. Supply-side strategies will remain central to redressing the resource and institutional constraints on service delivery and in allowing size and scope economies to be tapped in the further development of health and associated infrastructure.

However, it is clear that cost-effective strengthening of the health system will require more than just scaling-up the existing model. There is a need for better tailoring of infrastructure and service scope, quality and delivery to real demand patterns (that is, to services people would use if available, culturally appropriate and known), and for greater coordination between providers in delivering services. Both would help in plugging existing gaps in the health care system as well as what might otherwise be gaps in the evolving system, and support faster and more reliable system strengthening in areas where demand and value is greatest. Indeed, selective trialling of demand-responsive mechanisms and carefully assessing outcomes could play a key role in better informing the planning and evolution of supply-side strategies.

Improving health-seeking behaviour

Experience elsewhere has shown that demand-responsive mechanisms have the capacity, through differing means, to improve health-seeking behaviour by:

- Prompting improvements in health service delivery by simultaneously giving information and power to users to increase demand, and direct financial incentives to health workers, linked to service provision and quality, to improve supply;[21]
- Leveraging existing health (and other) infrastructure and resources (public and private) to achieve greater utilisation and more cost-effective service delivery;[22]
- Encouraging innovative, cost-effective and sustainable public private partnerships in health service delivery by linking funding to service quality and services provided;[23]
- Contributing to longer-term health system strengthening by extending the state's capacity for contracting, regulating and monitoring public and private sector health providers;[24]
- Lowering, over time, the risks of future sustained misalignment between services and service standards and user demands as a result of the built-in checks created by contracting, regulating and monitoring;[25]
- Allowing for community- or district-specific interventions, designed to reflect contextual differences in user requirements or needs or

logistical constraints on the supply of services.[26]

There is further potential for demand-responsive instruments, as part of a package of measures, to complement each other, as well as other policy instruments, in delivering better overall health and social outcomes. Voucher schemes and micro-health insurance can help protect households from catastrophic household expenditure associated with high-cost interventions, such as emergency obstetric care. Vouchers can also be used to address equity issues associated with access to micro-health insurance, social franchises or even social businesses. Similarly, micro-health insurance can facilitate access to health care through social franchises.

Demand-responsive mechanisms provide information about the existence of services and guide potential users to where services can be obtained, contributing to the capacity of these instruments to reach underserved and/or vulnerable groups or target specific segments of the population. For example, voucher schemes can be used to encourage pregnant women to access antenatal care and supervised delivery or facilitate regular treatment of sexually transmitted infections. Social businesses can target debilitating community health problems such as malaria and diarrheal diseases with low-cost, simple, proven treatments. Social franchises attached to existing health facilities can be used to reach tuberculosis patients whose conditions have been undetected or whose under-supervised treatment results in poor outcomes. By removing financial barriers, micro-health insurance can encourage people to seek preventive health care.

Voucher schemes and social businesses can be important delivery mechanisms in areas where the health system is in a state of transition from current models of investment in public and church-run facilities to new models reliant on fundamentally different financing and support structures, most notably in resource-rich areas where landowner groups are seeking greater influence over health service delivery. For example, vouchers can be used to maintain demand for targeted services by encouraging users to seek treatment or care, and encourage health workers through direct financial incentives to provide high-quality services while waiting for physical infrastructure to be upgraded. Social businesses can provide ongoing community-level access to treatment even though the local health facility remains underresourced.

In Uganda, Marie Stopes International-Uganda (MSI-U) manages a voucher scheme together with a local private health insurance company. MSI-U is responsible for voucher distribution, identification and supervision of providers, and financial management, while the insurance company processes claims. The same principle can apply to the other mechanisms and packages of mechanisms. Such partnering can be of particular value in establishing early community trust; in avoiding the need for much of the up-front capital costs (and associated risks) in establishing new, standalone facilities; and, where relevant, in tapping into established community credit mechanisms.

In effect, demand-responsive mechanisms seek to leverage and tailor traditional ‘one size fits all’ supply-side strategies, increasing returns on capital investment and recurrent expenditure by shifting, and better aligning, patterns of both

supply and expressed demand. The capacity of demand-responsive mechanisms to draw out unexpressed demand is strengthened by their ability to reduce or even eliminate informal payments by users to health workers, and to efficiently cover out-of-pocket costs associated with accessing health care, including drug, transport, accommodation, and food costs as well as loss of cash income from informal sector activities.

The broad characteristics of demand-responsive mechanisms, and the scope to package mechanisms, are outlined in Table 1.

Table 1: Broad types and basic characteristics of demand responsive mechanisms

	Direct transfer of funds to users	*Scope to cover out-of-pockets*	*Improve service quality^*	*Financial incentive to health workers*	*Public sector funded*	*Private sector funded*	*Scope for user contribution*
Directly influence expressed demand and willingness of providers to supply quality services							
Voucher schemes	✓	✓	✓	✓	✓	✓	Part and capped
Social cash transfers*	✓	✓	X #	X #	✓	?	Part but uncapped
Micro- health insurance	Possible via voucher scheme	✓	Through accredited providers	Through accredited providers	✓	✓	Part or full and capped
Willingness to supply reflects understanding of users' needs and requirements							
Social franchise	Possible via voucher scheme	Possible via voucher scheme	✓	✓	✓	✓	Part or full; can be covered by insurance
Social business	na	na	✓	✓	✓	✓	Full

^ Through setting minimal requirements generally relating to technical quality, but can also include health worker performance. In addition, can result from increased demand for quality services if demand is large enough to create the incentive.

* Social cash transfers are non-contributory, regular payments by government. Can be made conditional on the use of a specified service—in effect, a form of voucher. Conditional social cash transfers can also be used *in addition to* vouchers creating a direct cash incentive to change health seeking behaviour.

Possible if conditional cash transfers are linked to accredited providers.

Addressing gaps and misaligned incentives in PNG's health system using demand-responsive mechanisms

Drawing on lessons from elsewhere, coupled with a composite picture of interactions between public and private health providers in PNG obtained through broad-based consultations and visits to settings with significant private sector contributions to health service delivery (see Annex 1), the following discussion explores the potential contribution of demand-responsive mechanisms to strengthening health systems in PNG.

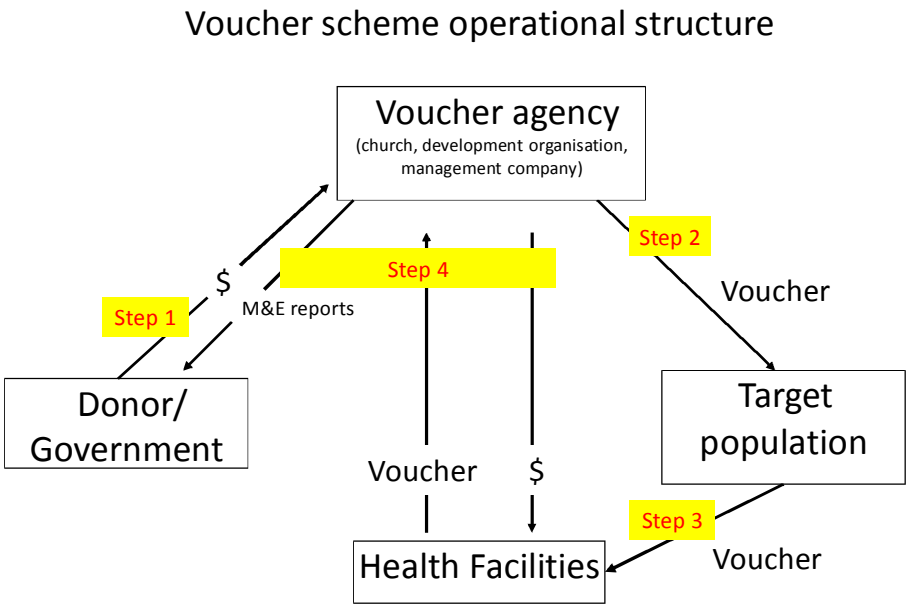
Voucher schemes

The urgent need to address rising rates of maternal mortality in PNG has focused attention on the potential contribution of voucher schemes. The operational structure of voucher schemes is detailed in Chart 1.

Voucher schemes are widely used elsewhere to remove access barriers to antenatal care and offer lessons for the design and implementation of schemes in PNG. For example, in Cambodia a voucher scheme operated in conjunction with a government-run Health Equity Fund (HEF), which covered user fees, transport and other costs of eligible patients, saw an increase of health facility deliveries from 16% of the expected number of births in 2006 to 45% in 2008, significantly greater than in comparable districts without specific measures to address maternal health.[27] Overall improvement in provider performance was attributed to a combination of measures that specifically addressed low pay among health workers, including performance-based contracting (PBC) of facilities, increased staff support, improved medical supplies and a delivery-based incentive scheme where midwives and other health workers received an incentive payment for each live birth attended in a referral hospital or health centre. Comparing outcomes across project areas, the combination of PBC and the delivery incentive scheme achieved good results, but better results were achieved in the district where the delivery incentive scheme was complemented by the voucher and HEF schemes because they also addressed important financial access barriers (user fees and, more importantly, transport costs).

Experience in Bangladesh with a voucher scheme designed to increase access by poor women to antenatal care illustrates the need to incorporate direct financial incentives for health workers in the absence of traditional market competition to prompt improvement in service availability and quality.[28] The incentives created competition between health workers and traditional birth attendants (TBAs), encouraging health workers to provide a higher quality of service than that provided by TBAs. Where health workers shared the incentive payment with TBAs benefits were twofold – improved health facility service and TBAs assisting pregnant women to attend antenatal care. The impact of the overall scheme on antenatal care has been impressive. It began in 2007 and by 2009, 55% of pregnant women receiving vouchers attended at least three antenatal care sessions, compared with 34% in a control area, and 38% of deliveries were in health facilities, and only 19% in the control area. The rate of postnatal care was also higher in the sub-districts where the scheme operated, with health facilities holding a greater proportion of recommended supplies than facilities in the control areas.[29]

Chart 1: Voucher scheme operational structure



Step 1: Voucher agency (for example, church, development organisation or management company) receives funding from either a donor or government. Contracts health facilities: contract defines package of health services to be delivered and the fees to be paid to the facility for each voucher redeemed. Voucher agency trains health facility staff and monitors service quality.

Step 2. Voucher agency organises distribution of vouchers to target population, for example, through community health workers, village health volunteers and/or local church councils, or by contracting field staff.

Step 3: Beneficiaries, for example, pregnant women, take the voucher to the health facility and obtain the contracted services, in this example, safe motherhood services.

Step 4: Health facility returns redeemed vouchers to voucher agency and receives payment according to the number of voucher patients treated. Monitoring and evaluation (M&E) reports provided by voucher agency to donor/government.

Source: P. Sandiford, A. Gorter, Z. Rojas and M. Salvetto. *A guide to competitive vouchers in health*. Private Sector Advisory Unit, The World Bank Group, Washington, D.C., 2005.

However, using financial incentives to create competition between different groups of health workers is not directly relevant in the PNG context because there is no tradition of specialist birth attendants whose services are sought; rather, in the majority of cultural groups, women in labour are attended by close female relatives.[30] Village birth attendant (VBA) programs have been established in some areas to improve access to facility-based services and VBAs are encouraged to take pregnant women to health facilities for delivery.[31] Incentives for this context would be relevant to reinforce the referral system and linkages with health facility workers. Setting up incentive schemes requires considerable care to avoid reducing the capacity and willingness of health workers to provide other services and creating disincentives for collaboration between health workers, midwives, and VBAs.

In the context of PNG, voucher transactions have the potential to draw on the cultural value of reciprocal obligation, which underlies social relations and activates the use of resources.[32] The implied exchange relationship between user and provider likely would engender more user-centered service delivery, and reinforce the social relations that underpin health outcomes as people activate links between needs and services by creating awareness about treatment and care options and supporting each other to access available services. It is likely that transacting and redistributing vouchers through established social networks would generate increased utilisation of services through reinforcement of social support without limiting personal access to health services. This could ease the cultural sensitivity of being seen as favouring one's own health needs over others' and making choices based on individual over collective need, which contribute to collective under-utilisation of services.[33]

Vouchers also have the capacity to activate social support networks for the most vulnerable populations when the terms of the scheme are specifically defined and agreed to by members of participating communities. For example, a voucher scheme financed by a private sector company or landowner group might be designed to ensure safe transport of pregnant women and their guardians to a designated health facility for supervised delivery, with used vouchers redeemed by the vehicle drivers, based on the provision of service. Further possibilities might include a voucher scheme for STI services designed to work within an established social distribution network for condoms. The financial costs of travelling to treatment facilities for people on antiretroviral therapy, as well as issues related to food security, have been identified as serious barriers to HIV treatment adherence.[34] The use of voucher schemes to address issues such as facilitating safe transportation and ensuring adequate food supplies for people living with HIV would help to alleviate these constraints and possibly engender a greater sense of inclusion and support stemming from the cultural values of reciprocal exchange and mutual obligation.

Concern about the possibility for vouchers to have a stigmatising effect requires careful thought regarding the design and protocols of the instruments.[35] Likewise, the potential for misuse and fraud has to be addressed. Evidence from elsewhere suggests that while the person redeeming the voucher may not be the original recipient, in general vouchers find their way to where need is greatest.[36] This in-built corrective element of voucher schemes is consonant with

the principles of reciprocal exchange in PNG, where 'sharing and caring' is the expected social norm in the mobilisation and use of resources, and behaviour that benefits individuals at the expense of the community is not condoned.[37] Community acceptance and appropriate utilisation of vouchers is likely to be reinforced if introduced initially through church networks and church health facilities, where trust and reliability of service provision are well established.[38]

Voucher schemes offer considerable flexibility for integration with other demand-responsive mechanisms to produce positive health outcomes. Vouchers could be introduced as an integral component of social franchises to reinforce the impact of outreach in raising awareness about service options, improving coverage, and facilitating access to facilities, including referrals and follow-up, for services such as voluntary counselling and testing for HIV.[39]

The synergies between vouchers and social businesses are apparent and the burgeoning presence in PNG of village-based commercial outlets for the sale of mobile phone flexi cards indicates the potential for such enterprises to provide a model for voucher distribution.[40] Indeed, the popularity and reach of mobile phones throughout the country, including the option for credit exchanges, point to possibilities for introducing voucher systems that work through established social networks as well as opportunities for integrating the use of mobile phones in health service referrals and follow-up, as is currently being done with apparent success by some private sector health providers. The free HIV telephone infoline operated by the PNG Business Coalition against HIV and AIDS (BAHA) is an excellent example of private sector involvement in the provision of HIV information and support,[41] indicating possibilities for expanding the use of mobile phones in supporting health service delivery.[42]

Micro-health insurance

Like voucher schemes, micro-health insurance has direct and untapped relevance to the cultural value of reciprocal exchange in PNG. It also holds relevance to cultural models for promoting health and responding to disease, which are commonly understood as measures of collective well-being and social cohesion.[43]

Micro-health insurance follows micro finance, and micro finance is struggling in PNG, limiting immediate scope for trialling forms of micro-health insurance as used elsewhere.[44] However, nascent forms of 'community insurance' in PNG could serve as building blocks for later development of larger scale micro-health insurance schemes. For example, wage earners in PNG are known to organise informal associations or 'fortnight clubs' where members contribute a small amount of their pay to a common fund which can be paid out to individual members as required to meet social obligations. It is worth exploring how the underlying principles of such models, including inter-household cash transfers based on reciprocal exchange and kinship obligations,[45] might be applied more directly to improving utilisation of health services.

Other examples of community-based financing arrangements in PNG function in a similar way to micro-insurance schemes. These arrangements are generally initiated by

community health management committees as well as health facilities to augment facility operating budgets.[46] For example, some communities in Southern Highland Province levy an annual fee on families as supplementary funding for the local sub-district health facility, in addition to the expected contribution of weekly grounds maintenance. The fee caps family health costs at K50 per annum, although some community members advocate a fee as high as K500 per family or 'houseline'. If the fee is not paid, the family is required to pay user fees for each consultation.

In the North Fly District of Western Province, some communities charge an 'annual tax' for health facility users. The tax is determined by local leaders on a single or family basis–with the most affordable range suggested as between K12 and K20 per family per annum–and covers all attendances for the year. Users are commonly charged a standard fee for each consultation if they choose not to pay the annual tax.[47] While the contribution of these arrangements to facility operating budgets appears nominal compared to the overall costs of running a health centre, as additional funds they could make a significant contribution to the capacity of the facility to improve service delivery.

The potential for advance payments for health services to have a direct effect on health-seeking behaviours and health outcomes is substantial, by adjusting the balance between prevention and treatment incentives, improving treatment adherence, and alleviating the anxiety of not having the immediate financial resources to deal with unforeseen health needs, particularly out-of-pocket expenses. While experience elsewhere indicates that community based health insurance schemes can have problems enrolling enough people and, as a result, the pooling of risk breaks down and expensive services such as safe motherhood are excluded unless heavily subsidised by government or development partners, this shortcoming may not apply in PNG. The services provided under local health centre based schemes have a relatively low unit cost and these schemes do not attempt to cover the high unit cost services provided in tertiary hospitals. Issues of equity and achieving a higher level of demand-responsiveness could be addressed through the complementary use of other mechanisms such as vouchers, or a voucher scheme which includes a conditional cash transfer or HEFs. For example, HEFs in Cambodia pay for transport to the hospital and hospital services.[48] Vouchers could also be used to ensure that all people, including those who had not paid the 'insurance premium', receive free access to treatment for domestic or sexual violence or STIs, as mandated by NDOH.

Similar to the potential effect of vouchers on health-seeking behaviour, sharing responsibility for health outcomes at the community level through informal 'micro-health insurance' could reduce the common reluctance of people to seek early treatment before a health condition seriously affects their capacity to function, as well as the reluctance to prioritise individual health issues over collective interests and community enterprises. The arrangements draw closely on the underlying principle of reciprocal exchange, where the 'pre-purchase' of access to services throughout the year creates an obligation on the health facility to deliver services, with implications that this mutual arrangement would also act as an incentive to improve service quality.

Social businesses

The malaria treatment program developed and implemented by Oil Search Limited (OSL) in Southern Highlands Province demonstrates how a resource company can directly involve communities in addressing an endemic health issue in a manner that utilises both existing community social networks and infrastructure and stands in contrast to the generally adopted traditional supply-side approach.

The program is based on the social business model and involves village based *marasin stoas* (medicine stores), with diagnosis and treatment provided by trained and supported *marasin stoa kipas* (medicine store keepers, or MSKs) (See Textbox 2). Where MSKs have operated consistently since the program was introduced in 2007, significant declines in malaria prevalence have been recorded. OSL is looking to extend the program to other parts of PNG as a franchised social business, with the company training and supporting franchisees to provide standardised services through existing community networks and health facilities.

Textbox 2: Marasin Stoa Kipas (MSKs)

Thirteen MSKs (12 women) have been trained by OSL Community Health team to provide malaria testing and three-day treatment in established village trade stores or purpose built medicine stores constructed with community assistance.

MSKs diagnose malaria from basic symptoms confirmed by blood testing and provide prepackaged colour-coded treatment based on the weight of the patient, checked on colour-coded scales. OSL supports and monitors MSKs.

OSL provides the initial supply of drugs free of charge. MSKs purchase subsequent supplies from OSL and sell them at an affordable price that allows for a small profit.

Village health committees help select MSKs based on agreed criteria - literacy, numeracy and partner support - and promote malaria prevention activities and MSK services.

The program is closely linked to public and church-run district health facilities, with referral protocols in place. Schools refer students with malarial symptoms to MSKs.

The uptake of MSK services, reportedly close to 100% of villagers with malaria symptoms, indicates wide acceptability, which could pertain to other areas in PNG. There is strong evidence that people seek treatment more quickly when they have malarial symptoms because "people trust MSK medicine" for its effectiveness and they value the diagnostic service, which is unavailable at sub-district health centres. Evidence also suggests that payment contributes to treatment adherence, an important consideration in controlling drug resistant strains of malaria.[49] Ease of access and packaging by dose per individual based on weight reduces the pressure of social obligation to share treatments, which can be a major impediment to adherence.

The likely sustainability of the program is affected by complex contextual factors, including the predominant presence of the OSL's operations in the area, community expectations about the flow of benefits and

entitlements from resource development, competing landowner interests, and a poorly managed provincial health system. Community expectations that the "company will provide", combined with the high level of ongoing program support from OSL, result in the community and the government regarding the service as a 'company program'. This raises the question as to whether lower levels of company day-to-day support would create greater self reliance.

Overall, the program presents important lessons for the development and implementation of social businesses elsewhere in PNG, as well as for OSL's planned scaling-up. These include:

- *User willingness to pay a 'fair' price.* Although sub-district health centres provide malaria treatment free of charge, the majority of community members with malarial symptoms are reported to seek diagnosis and treatment from MSKs, paying an agreed price of K3-K5 per treatment. In many cases, this payment will be less than the cost to the patient of obtaining 'free' treatment from the health centre, given transport costs and the service fee levied by many facilities. OSL are planning to test community perception of a 'fair' price by working with local church councils to add service fees to cover MSKs direct costs and reward MSKs for their time as well as a levy designed to encourage and support councils' ongoing management and promotion of MSKs. MSKs charging more than an agreed 'fair' price create tensions about incentives and motivations and carry the potential to undermine community confidence in social businesses.

- *Responding to financial incentives designed to improve service quality.* Initially MSKs were paid a retainer of K40 per month for blood slides and reports, regardless of number or quality. With this arrangement leading to a high proportion of poor quality slides, payment is now based on slide quality and a lower retainer. This change resulted in a significant increase in the proportion of good quality slides, reflected in improved diagnosis and treatment. OSL's planned introduction of fees that reward MSKs for their time and local church councils for their support is intended to reinforce the link between financial gain, service provision and service quality.

- *Working through established trade stores.* There are clear advantages in utilising existing infrastructure and adding value to ongoing businesses by attracting additional or more frequent customers. There are also challenges for negotiating the business role of MSKs in service provision. For example, trade store keepers are able to manage lines of credit, and often do so for other products, but the common expectation that credit will also be available for treatment services, or that payment can substituted by food or community support, creates pressures for MSKs who are motivated in part by the contribution they are making to community health.

- *Working through standalone stores.* Stores established solely for the program require a wide range of social products, with demand spread over the year, in order to generate sufficient income to warrant the store keeper diverting attention from other activities. While community members and

MSKs expressed interest in expanding the range of health related products in the stores, there was also recognition that providing other health treatments would require appropriate training as well as close coordination with local health facilities. This reflects awareness of the potential risks to MSKs of an extended product range if treatment proves ineffective or produces adverse effects. A straightforward way of expanding their product range would be to add mosquito nets–at the same time helping to address the concern that lack of access to either high quality insecticide-treated nets or long lasting insecticide impregnated nets at affordable prices through the commercial sector has the potential to undermine the sustainability of malaria prevention.

- *Addressing other health issues.* The successful provision of targeted malaria treatment invites the possibility of adapting the social business model to other endemic health issues, in particular tuberculosis and emerging issues like diabetes. Consideration should be given to whether the MSK model might work to strengthen outreach and follow up, using village trade stores to increase access to long-term drug therapy.

Drawing on these lessons, social businesses could be expanded by building on established partnerships between the public health system and organisations such as Population Services International, which is involved in family planning and sexual and reproductive health services, including the social marketing of condoms. The long term viability of such partnerships requires the stewardship of NDOH and close alignment with both the system for distributing essential medicines and medical supplies, and provincial and district health management, to ensure coordination of supplies, funding, logistics support, and data reporting.[50] In addition, community acceptance and reach require strong local partnerships, particularly with church councils.

Social franchises

Experience with social franchises in PNG is limited and those in place focus on reproductive health and family planning services in outreach and static clinics. Elsewhere, the scope of healthcare franchising extends to delivering products and services for malaria, tuberculosis and HIV.[51]

In PNG, available evidence on social franchises suggests that response to outreach services in rural areas reinforces willingness to pay for easily accessed services which are perceived as higher quality. Statements such as "people see our drugs as stronger and better" possibly reflect greater adherence to treatment for which they have paid, as well as a perception that payment results in better services, which involves gender-sensitive counselling, support, and follow-up, and hence better outcomes. Word of mouth about the range and quality of available services has prompted communities to initiate and organise outreach clinics, resulting in greater attendance of men and young people in their own villages.

The potential contribution of social franchises toward health system strengthening in PNG offers important scope for filling gaps in service delivery, particularly regular outreach to underserviced rural areas, provided that such programs work in close consultation with existing public and private health service

providers. Specific service gaps include sustained support for women and their partners to access antenatal care and supervised delivery; improved integration of HIV prevention, treatment and care with maternal health programs; and provision of integrated services for the prevention of parent to child transmission of HIV, and Antiretroviral treatment (ART) for HIV positive antenatal women and their partners;[52] increased outreach provision of HIV voluntary counselling and testing services;[53] ongoing ART and counselling and support for people living with HIV;[54] and follow-up support for patients on tuberculosis treatment.

A social franchise model that could be applied in PNG would be to create district-level networks of existing public and church-run health facilities, with the 'franchised' activity initially focused on antenatal care. One of a small number of social franchises created by networking public health facilities is in Vietnam, where significant improvements in reproductive health care service quality were achieved through a combination of improved clinic infrastructure, increased standardisation of quality services, staff instruction on proactive relationship management, and promotion of a culturally relevant brand plus a standardised schedule of affordable service fees.[55] In PNG, creating a 'franchised' network of health facilities could complement the role of vouchers in delivering consistent improvement in service quality. This could be trialled alongside the use of vouchers to improve the provision and utilisation of antenatal care.

In areas where tuberculosis prevalence is high, particularly in coastal provinces,[56] the franchised activity could focus on diagnosis, treatment and care of people with tuberculosis. For example, in Myanmar, an estimated one-third of tuberculosis cases go undetected or people get treated outside national programs, mostly with poor outcomes. A highly subsidised program delivered through a private sector social franchise helps reach tuberculosis patients with quality services, while partly protecting them from high health care expenditure.[57]

Common reservations

All demand-responsive mechanisms have limitations and can be criticised. However, it is important that criticisms do not lead to hasty rejection before consideration is given to how they might be redressed. With respect to these limitations it is important to consider that the fallback position of not employing demand-responsive mechanisms is likely more detrimental than dealing with their restrictions.

Common reservations include concern that the current narrow range of health care options restricts the capacity of users to exercise choice, particularly in rural and remote areas where the provision of basic health services is limited to poorly resourced and maintained sub-district facilities.[58] However, this reservation overlooks the role demand-responsive measures can play in providing support and incentives to improve services at existing facilities. It overlooks the availability of other community infrastructure that might be tapped cost-effectively once the better incentives associated with these mechanisms are in place. It also overlooks the present choice, which is being exercised, to underutilise existing services that are not perceived to meet requirements and needs.

Unwillingness or inability to pay for health services is cited as another restrictive factor, despite mounting evidence that people are prepared to pay for treatment, particularly treatment perceived as 'high quality' and provided fees are affordable. Distance from facilities and out-of-pocket expenses related to accessing services are more significant barriers.[59] However, demand-responsive measures are designed to lower these access barriers. Furthermore, NDOH is actively seeking ways of encouraging families to take greater responsibility for family members' health. For example, in a recent trial in Milne Bay Province, families were encouraged to buy home health care kits from the hospital, with a coupon ('voucher') that allowed used items to be repurchased.[60]

It is also argued that there is insufficient demonstration of health-seeking behaviour to warrant demand-responsive measures. This concern can be addressed on a number of counts. First, expression of demand must be seen in light of diminished expectations as a result of the failure of the health system to deliver and the lack of a vocal constituency to advocate improved services.[61] Second, there is strong evidence in PNG of people's desire for medical services and their willingness to travel long distances to access treatment.[62] Third, health-seeking behaviour in developing countries, including PNG, often reflects a pluralist approach to treatment options where traditional healing practices are used in combination with services provided at health facilities.[63] Demand-responsive measures are compatible with medical pluralism while encouraging closer alignment of provider and user incentives to improve service delivery and meet health needs, recognising that health-seeking behaviour involves many social, cultural, and structural factors affecting people's engagement with health systems.[64]

A further set of concerns relates to broader contextual factors, including whether places with established entrepreneurial activity are more responsive to social businesses and cash incentives, compared to places where people's direct experience with the cash economy is minimal and linked to recent resource developments. This underlines the need for close attention to variability and relevance, with each setting in PNG likely to have its own mix of cultural, technical and logistical challenges. However, this should not constrain identifying settings where success is more likely and trialling different combinations of measures commensurate with needs.

Implementing demand-responsive mechanisms in the PNG context

Demand-responsive mechanisms are not without challenges in introduction and implementation. However, packaging mechanisms to exploit synergies and sharing knowledge and experience between providers with complementary skills can reduce the scale of these challenges. The central role of NDOH in overseeing and coordinating the contributions of multiple providers is essential to ensure effective integration so that gaps are filled without creating wasteful overlap or unevenness in service provision.[65]

Start-up costs can be high, particularly in relation to determining the appropriate cost base for specific services, accrediting providers and establishing robust monitoring. Measures

that can be implemented on a small scale, using existing infrastructure and resources, with the potential for later scaling-up, can limit these costs and risks. Examples include social businesses created in existing village trade stores; social franchises created by linking existing public health facilities; or a form of micro-health insurance initiated through community levies and linked to local health facilities.

Administrative costs can also be high, particularly if regulators and providers lack necessary systems, capacity and skills. Under voucher schemes and micro-health insurance, providers need to be reimbursed on a regular basis. Continuous support to staff and monitoring of service delivery and quality is essential. These mechanisms can encourage collusive behaviour between providers in setting prices, and fraudulent behaviour among providers and users, claiming reimbursement for services not delivered. Over-servicing may result from the direct link between outputs and the receipt of payments or subsidies, or providers may seek to avoid providing care to groups that require more services than others.[66]

Again, the potential to leverage existing skills and overheads can limit administrative costs, as can the use of complementary packages of measures. Using packages of measures can also add to the costs faced by anyone seeking to misuse the system, by enhancing capacity for both inbuilt cross-checks on system abuse and for effective auditing for abuse. The combined effect may be to lower the risk of sustained high-impact misuse.

It is important to recognise that the risk of some fraud or other forms of misuse is not a compelling argument against the use of demand-responsive mechanisms if they can reduce substantial waste of resources that would otherwise continue. As with many forms of intervention,[67] a level of misuse may need to be tolerated – and even may be, in a perverse sense, 'cost-effective' if the alternative is to not use well-targeted instruments and to lock in structural weaknesses of the type now apparent in PNG's health system. Risks of misuse are important considerations, and can and should be addressed in the design of policies, in the testing of new instruments, and in the administration of any new arrangements. However, care is needed to strike a sensible balance. The costs of inadequate service provision and underutilisation, while also sustaining surplus (or wasted) capacity in some areas, may be much greater. Experience in other developing countries has also shown that in practice fraud has been amenable to detection and control,[68] and this has become easier as widespread access to mobile communications opens new means for verifying service delivery.

More generally, it is possible that some of these challenges may have lesser impact on costs and risks in PNG than elsewhere in the context of the following factors:

- A cost base for different types of health facilities and services has been established by the National Economic and Fiscal Commission removing the need for substantial additional investment as well as delay;[69]
- The forthcoming trial of direct health facility payments[70] should make the use of voucher schemes and some forms of social

franchising more attractive and manageable as a result of greater financial autonomy;
- Service quality issues resulting from current unreliable supply of essential medicines and medical supplies to public and church-run health facilities could, at least in part, be addressed by a new distribution system, with interim measures to be introduced in 2011;[71]
- A new distribution system, plus greater quality control associated with demand-responsive mechanisms, could reduce the use of unregulated private outlets for medicines, where some evidence suggests high mark-ups and, at times, sale of counterfeit products;
- The scope for market prices for health services to increase as demand increases could be limited by excess capacity and/or by competitive tendering for accreditation by public and private providers (which will also provide better information on true supply costs and reduce waste of resources);
- Risks of over-servicing should be weighed relative to current levels of under-servicing and the longer-term costs of poor adherence to treatments;
- Logistical difficulties created by geographic isolation might sensibly limit the reach of interventions.

Others challenges could be substantial where administrative and monitoring systems are inadequate and existing capacity and skills limited. In addition, the way in which demand-responsive mechanisms seek to harness community behaviour and user demands to guide service delivery means that they are necessarily susceptible to culture-specific influences. Again, these challenges reinforce the attractiveness of measures that can be implemented on a small scale, using existing community infrastructure and resources, with the potential for later scaling-up. This same approach allows for selective trialling of mechanisms without necessarily irreversibly committing to their indefinite use. Such trialling, with scope for scaling-up or down, with or without modifications, based on lessons learnt, is likely to be a crucial element in converging on a better overall policy mix.

Recommendations

Scaling-up traditional supply-side strategies, no matter how well executed, is likely to leave existing health service gaps unaddressed and even add to the mismatch between services provided and user needs and requirements. The evidence from PNG and the experiences from other developing countries facing similar health problems suggest that, with careful introduction and management, greater use of complementary packages of demand-responsive mechanisms to support traditional supply-side measures is likely to contribute to more effective – and more cost-effective – health system strengthening, even within existing budgets and without requiring substantial 'aid displacement'.

Selective trialling of demand-responsive mechanisms targeting specific health priorities presents a low-cost and low-risk way of testing the feasibility and value of these mechanisms in different PNG settings: rural, urban and resource enclaves. The results would serve to guide more sustainable health sector investment, including identifying where incremental investment is likely to have the greatest potential impact on achieving the goals

of the *National Health Plan 2011-2020* and the Millennium Development Goals specifically related to public health in PNG.

Recommendation 1: Selective trialling of demand-responsive mechanisms, alongside existing policy instruments. Focus on packages of measures that can be implemented on a small scale, using existing community infrastructure and resources, with the potential for later scaling-up, with or without modifications, based on lessons learnt. This allows for selective trialling of mechanisms without irreversibly committing to their indefinite or comprehensive use.

Recommendation 2: Selective trialling of demand-responsive mechanisms designed to facilitate and support access to priority health services where need is greatest. Voucher schemes, possibly in association with social franchises, offer an important opportunity to improve access to maternal health and family planning services and HIV treatment services, including referrals and consistent follow-up, and to reinforce ongoing links between service providers and clients.

Recommendation 3: In selecting geographic areas for trialling, pay close attention to variability and relevance. Each setting in PNG is likely to have its own mix of cultural, technical and logistical challenges which need to be taken into account in identifying where success is more likely and in trialling different combinations of measures commensurate with needs and requirements.

Recommendation 4: Explore the potential for replicating and expanding the social business model supported by OSL for malaria treatment. Focus on areas where malaria is a high-priority health issue and where there are strong church and community networks to provide local management oversight.

Recommendation 5: Public health system takes the central role. NDOH should take the central role in encouraging and facilitating public private collaboration in trialling and implementing demand-responsive mechanisms, drawing on the complementary skills of national, provincial and district governments and private sector organisations, including resource companies, management companies, churches, and development organisations. Strong oversight and coordination by NDOH of the contributions of the multiple providers of health services is essential to effective integration so that gaps are filled without creating wasteful overlap or unevenness in service provision. Collaboration and consultation are keys to ensuring the viability of partnerships.

Conclusion

Demand-responsive mechanisms could usefully complement existing and emerging policy instruments, including public private partnerships, as part of a more effective overall system of health service delivery. They are not proposed as replacements for traditional supply-side instruments – nor as the basis of a revolution in health service delivery. Supply-side strategies will remain central to redressing the resource and institutional constraints on service delivery and to allowing size and scope economies to be tapped in the further development of health and associated infrastructure.

It is clear that cost-effective strengthening of the health system will require more than just scaling-up the existing model. There is a need for better tailoring of infrastructure and service scope, quality and delivery to real demand patterns and for greater coordination between providers in delivering services. In effect, improved tailoring would help to plug existing gaps in the health care system as well as what might otherwise be gaps in the evolving system, and to support faster and more reliable system strengthening in areas where demand and value is greatest. Indeed, trialling these creative mechanisms, in addition to carefully assessing the outcomes, could play a key role in revitalising PNG's health system.

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Methodology

This paper is based on exploratory research that aims to contribute to the policy dialogue on the value of public and private sector collaboration in strengthening the health system in Papua New Guinea, with a particular focus on improving services for maternal health, HIV, TB and malaria in regional and rural areas. The research focus on demand-responsive mechanisms in health services delivery was developed from of initial in-country consultations in April 2010 with various health sector stakeholders.

In June 2010, the authors visited several health care settings in PNG with significant private sector involvement in service delivery, including the Oil Search Limited (OSL) project area in the Southern Highlands Province, the Lihir Gold Limited (LGL) project area on Lihir Island, New Ireland Province, and Mt Hagen, capital of Western Highlands Province. The site visits were undertaken to gain insights on contextual factors at the operations and facility level and how people access and utilise health services. The visits served to form a composite picture of different interactions between public and private sector providers and users of services to inform analysis of the applicability, acceptability and feasibility of demand responsive mechanisms in the PNG context. Open-ended discussions with policy makers, program managers, health staff, service users, and community members explored the influences these initiatives might have on service delivery, access to services, and decision-making regarding service options.

The focus of the visit to OSL at Moro, Southern Highlands, was the OSL Community Health Unit's village based malaria prevention and treatment program. Discussions were held with the OSL medical team and site visits were made to Baguala, Hebayia, and Waro communities to meet with health workers at district facilities, storekeepers involved in the program, and community members.

The visit to Lihir Island was organised through LGL and facilitated by a local community group, Kokonas Komuniti Konsultasen. Discussions were held with the LGL community health team, Lihir Islands Community Health Program manager, the sub-district health manager, and health workers at Lihir Medical Centre (company facility), Palie Health Centre (church facility), and Masahet Island health sub centre (government facility).

The visit to Mt Hagen involved meeting with health workers and service providers at Mt Hagen Hospital and Tininga STI and HIV Clinic, which are government facilities. Consultations were also held with staff at Marie Stopes Centre, an international NGO providing reproductive and sexual health services, and Susu Mamas, a non-profit national NGO which operates an accredited family health clinic providing STI, HIV, ANC and family planning services.

Following the site visits, a facilitated feedback session was held in Port Moresby with stakeholders involved in policy analysis and development, including representatives of the National Department of Health, multilateral organisations, donors, private sector health providers, and research organisations.

NOTES

[1] Government of Papua New Guinea, *National Health Plan 2011–2020*, Volume 1: Policies and Strategies, June 2010, pp 10-12.

[2] Recent studies include Department of Provincial and Local Government Affairs (DPLGA), *Case study of district and facility funding*. May 2009; B. Inder, J. Spinks, P. Srivastava, and R. Sweeney, *Papua New Guinea: modeling costs and efficiency of primary health care services in Papua New Guinea*. Final report, Centre for Health Economics, Monash University, Australia. Prepared for Papua New Guinea National Department of Health and Asian Development Bank, Technical Assistance Program TA4882, 2009; National Department of Health (NDOH), *Ministerial Taskforce on Maternal Health Papua New Guinea Report*. May 2009; T. Webster, and L. Duncan, *Papua New Guinea's development performance, 1975–2008*. National Research Institute Monograph No. 41, 2010.

[3] In particular: MDG 4 Reduce child mortality; MDG 5 Improve maternal health; MDG 6 Combat HIV/AIDS, malaria and other diseases. For the latest report on PNG's progress towards achieving the MDGs, refer to Department of National Planning and Monitoring (DNPM), Papua New Guinea-Millennium Development Goals Progress Summary Report 2009: http://www.un.org.pg/attachments/PNG%20MDGSR%202009%20-%20Final.pdf.

[4] Government of Papua New Guinea, *National Health Plan 2011-2020*, June 2010.

[5] PNG's tremendous cultural diversity, with over 800 distinct language groups, shapes the meaning and experience of health and disease in significant ways. For broad discussion of these factors, see DNPM, 2009. For ethnographic examples, see S. Frankel, *The Huli response to illness*. Cambridge, Cambridge University Press, 1986; K. Lepani, *Sovasova* and the problem of sameness: converging interpretive frameworks for making sense of HIV and AIDS in the Trobriand Islands. Special Issue, 'HIV/AIDS in Rural Papua New Guinea', edited by A. Dundon and C. Wilde. *Oceania* 77 (1) 2007; G. Lewis, *A failure of treatment*. Oxford, Oxford University Press, 2000; M. Macintyre, S. Foale, N. Bainton and B. Moktel, Medical pluralism and the maintenance of a traditional healing technique on Lihir, Papua New Guinea. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health* 3 (1) 2005.

[6] T. Ensor and S. Cooper, Overcoming barriers to health service access: influencing the demand side. *Health Policy Planning* 19 (2) 2004; H. Standing, *Understanding the 'demand side' in service delivery: definitions, frameworks and tools from the health sector*. London, DFID Health Systems Resource Centre, March 2004: http://www.dfidhealthrc.org/publications/health_service_delivery/Standing.pdf.

[7] Examples of use include addressing maternal mortality using vouchers, S. Ahmed and M.M. Khan, A maternal health voucher scheme: what have we learned from the demand-side financing scheme in Bangladesh? *Health Policy and Planning* 2010; and Schmidt, J.O., T. Ensor, A. Hossain and S. Khan, Vouchers as demand side financing instruments for health care: a review of the Bangladesh maternal voucher scheme. *Health Policy* 96 (2) 2010. Addressing malaria using vouchers, K. Hanson, N. Kikumbih, J. Armstrong Schellenberg, H. Mponda, R. Nathan, S. Lake, A. Mills, M. Tanner and C. Lengeler, Cost-effectiveness of social marketing of insecticide-treated nets for malaria control in the United Republic of Tanzania. *Bulletin of the World Health Organisation* 81 (4) 2003. Addressing reproductive health via social franchising, A.D. Ngo, D.L. Alden, N. Hang and N. Dinh, Developing and launching the government social franchise model of reproductive health care service delivery in Vietnam. *Social Marketing*

Quarterly 15 (1) 2009. Addressing tuberculosis via social franchises, K. Lönnroth, T. Aung, W. Maung, H. Kluge and M. Uplekar, Social franchising of TB care through private GPs in Myanmar: an assessment of treatment results, access, equity and financial protection. *Health Policy and Planning* 22 (3) 2007.

[8] For example, an evaluation of the impact of package of measures to address maternal care is provided by P. Ir, D. Horemans, N. Souk and W. Van Damme, Using targeted vouchers and health equity funds to improve access to skilled birth attendants for poor women: a case study in three rural health districts in Cambodia. *BMC Pregnancy and Childbirth* 10 2010.

[9] G. Lagomarsino, S. Nachuk and S.S. Kundra, *Public stewardship of private providers in mixed health systems: synthesis report from the Rockefeller Foundation-sponsored initiative on the role of the private sector in health systems*. Washington, D.C., Results for Development Institute, 2009.

[10] See Key Result Area 3: Strengthen health systems and governance, *National Health Plan 2011-2020*. See also E. Kwa, S. Howes and S. Lin, *Review of the PNG-Australia treaty on development cooperation (1999)*, April 2010: http://www.ausaid.gov.au/publications/pdf/PNGAustralianAidReview.pdf; AusAID Office of Development Effectiveness, *Working Paper 1: Papua New Guinea country report: evaluation of Australian aid to health service delivery in Papua New Guinea, Solomon Islands and Vanuatu*. Canberra, AusAID, 2009; J. Hayward-Jones, *Beyond good governance: shifting the paradigm for Australian aid to the Pacific Islands region*. Lowy Institute Policy Brief. Sydney, Lowy Institute for International Policy, 2008; T.C. Siegenbeek van Heukelom, HIV/AIDS to spread in PNG as funding fails, *The Interpreter*, Lowy Institute for International Policy, 23 November 2009: http://www.lowyinterpreter.org/post/2009/11/23/AIDS-to-spread-in-PNG-as-funding-fails.aspx.

[11] J. Thomason and M. Hancock, *Making the PNG resources boom count*. Paper presented to PNG Australia Business Council, Townsville, Australia, 17-18 May 2010.

[12] The PNG Department of Community Development and Mobilisation is exploring the development of social protection policy, which may include a form of social cash transfers tied to services. For a review of the potential use of social cash transfers in PNG, see Department of Community Development, Institute of National Affairs and UNICEF, *Cash transfers to improve the protection and care of vulnerable children and to empower families in the context of the HIV epidemic in Papua New Guinea: conceptual framework*, 2008.

[13] DPLGA, 2009; E. Kwa *et al*, 2010.

[14] DPLGA, 2009.

[15] National Department of Health (NDOH), *Minimum Standards for District Health Services in PNG*. Waigani, NDOH, 2001.

[16] B. Inder, *et al*, 2009.

[17] Government of Papua New Guinea, *National Health Plan 2011-2020*. Volume 2 Part A: Reference Data and National Health Profile, June 2010, p 99.

[18] L. Hammar, "*It's in every corner now": a nationwide study of HIV, AIDS, and STDs*. PNG Institute of Medical Research, Operational Research Unit, 2007; J. Hughes, Sexually transmitted infections: a medical anthropological study from the Tari Research Unit 1990-1991. *Papua New Guinea Medical Journal* 45 (1-2) 2002, pp 128-133.

[19] A. Decock, G. Hiawalyer and C. Katz, *Talking health: the wisdom of the village*. Port Moresby, NDOH, 1997; NDOH, 2009; W. Parks, *Bringing people in: community participation to improve rural health in Papua New Guinea*. Working paper for Papua New Guinea Rural Health Assistance Program, 1999; M. Unage, ed. *Community*

transformation: unlocking the development potential of the people. National Research Institute Special Publication No. 56, Waigani, NRI, 2009.

[20] Examples of experience in other developing countries are referenced in footnote 7 (voucher schemes, social marketing and social franchises). Low-cost micro-health insurance schemes designed to extend coverage to non-traditional and informal sector workers are discussed in M. Oliver, *Informality, employment contracts and extension of social insurance coverage*. Working Paper No 9, International Social Security Association, 2009.

[21] Two voucher schemes in Nicaragua provide good examples of the capacity of these schemes to prompt improvements in service delivery. One is a long-running STI/HIV prevention program. See A.C. Gorter, Z. E. Segura, P.H.M. Savelkoul, and S.A. Morré, Chlamydia trachomatis infections in Nicaragua: preliminary results from a competitive voucher scheme to prevent and treat sexually transmitted infections and HIV/AIDS among sex workers. *Drugs of Today* 42 (Suppl. A) 2006, pp 47-54. The other was a two-year trial designed to improve adolescent access to reproductive health. See L. Meuwissen, Improving sexual and reproductive health care for poor and underserved girls: impact of a voucher program on access and quality of primary care in Nicaragua. Maastricht, University of Maastricht, 2006. Recent experience of the impact of a package of mechanisms in Cambodia is described in P. Ir, 2010.

[22] The capacity of voucher schemes to leverage existing infrastructure and resources is discussed in detail in A.C. Gorter, P. Sandiford, Z. Rojas, M. Salvetto, *Competitive voucher schemes for health. Background Paper*. See also A.D. Ngo, *et al*, 2009; ICAS/Private Sector Advisory Unit of The World Bank Group, Creating a social franchise by networking public health facilities in Vietnam. 2003. In PNG, the Oil Search Limited malaria prevention program, based on the establishment of *marasin stoa kipas*, is an example of the capacity of social businesses to leverage existing infrastructure and resources.

[23] The schemes referenced in footnotes 21 and 22 also provide evidence of the capacity of demand-responsive mechanisms to encourage innovative, cost-effective and sustainable public private partnerships in health service delivery.

[24] Discussed in *Partnerships with the private sector in health: what the international community can do to strengthen health systems in developing countries*. Final Report of the Private Sector Advisory Facility Working Group, Center for Global Development, November 2009.

[25] Ibid.

[26] Refer to schemes referenced in footnotes 21 and 22.

[27] P. Ir, *et al*, 2010. HEFs are used to provide direct subsidies to poor and vulnerable populations to reduce access barriers and increase utilisation of public health facilities. Funds are provided from government revenues and/or development partners and providers are reimbursed on the basis of services provided. Reimbursement can cover transport and other out-of-pocket costs. To date, HEFs are predominantly used in Cambodia and Laos. See M. Bigdeli and P.L. Annear, Barriers to access and the purchasing function of health equity funds: lessons from Cambodia. *Bulletin of the World Health Organization* 87 2009.

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[29] Additional unpublished information provided by Dr Anna Gorter, personal communication.

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[32] See for example, R.J. Foster, Value without equivalence: exchange and replacement in a Melanesian society. *Man*, New Series 25 (1) 1990;

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[34] A. Kelly, *et al*, 2009.

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[36] M.R. Bhatia and A.C. Gorter, Improving access to reproductive and child health services in developing countries: are competitive voucher schemes an option? *Journal for International Development* 19 2007.

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[41] See BAHA website: http://www.baha.com.pg.

[42] Such services could even issue some vouchers via the phones, similar to the bar-coded airline boarding passes now being issued via SMS.

[43] K. Lepani, 2007.

[44] D.M. Dror and A.S. Preker, eds., *Social reinsurance: a new approach to sustainable community health financing*. Washington, D.C. and Geneva, The World Bank and International Labour Organisation, 2002.

[45] L. Chandy, *Linking growth and poverty reduction in Papua New Guinea*. Lowy Institute Analysis. Sydney, Lowy Institute for International Policy, 2009.

[46] Similar community-based arrangements are used in the education sector in PNG.

[47] B. Inder, *et al*, 2009; PNG Sustainable Development Program (PNGSDP). *Review of PNGSDP Western Province Health Program*, February 2010.

[48] P. Ir, *et al*, 2010.

[49] See for example, J. Chuma, V. Okungu and C. Molyneux. Barriers to prompt and effective malaria treatment among the poorest population in Kenya. *Malaria Journal* 9 2010.

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