

**Increasing access to health workers in remote and rural areas
through improved retention**

Background paper

*for the first expert meeting to develop evidence-based recommendations
to increase access to health workers in remote and rural areas through improved retention*

Geneva, 2-4 February, 2009

Appendices

Draft, February 2009

Table 5. Summary of studies that described or evaluated rural retention interventions

AFRO		AMRO		EMRO		EURO		SEARO		WPRO	
Country	Reference	Country	Reference	Country	Reference	Country	Reference	Country	Reference	Country	Reference
Ghana	Perry, 2006 Antwi, 2006 Boni, 2005	Canada	Nestman, 1998 Fournier et al, 2004, Fooks, Maslove, 2004 MoHS, 2004, 2005 Gagnon, 2006, 2007 Torgerson, 2007 Van Diepen, 2007 Mathews et al, 2008 Duplantie, 2007			Spain	Coma del Corral et al, 2005	Indonesia	Chomitz et al, 1998 Makowiecka et al, 2007	Australia	Wilks et al, 2007 Gardiner et al, 2005 Gardiner et al, 2006 New South Wales Dept of Health, 2006 Gibbon et al, 2006 Rural Health Workforce Australia, 2008
Kenya	Ndetei, 2008	Ecuador	Cavender & Alban, 1998 Ceaser, 2006					Thailand	Wibulpolprasert et al, 2003 Wongwatcharapaibon et al, 1999 Noree et al, 2005	Japan	Matsumoto et al, 2008
Madagascar	Ranjalahy et al, 2008	Peru	Jumpa et al, 2007							New Zealand	Janes et al, 2001, 2004
Malawi	Palmer, 2006	USA	Rabinowitz et al, 1993, 1999, 2001 Salafzky, 2005 Rosenblatt et al, 2006 O'Connor, 2007 Cosgrove et al, 2007 NACHC, 2008								
Mali	Coulibaly et al, 2008 Codjia et al, 2008										
Niger	Ministère de la Santé Publique, 2008										
South Africa	Reid, 2004 Abrahams, 2007 Omole et al, 2005										
Tanzania	Munga, 2008										
Zambia	Koot, 2005 Mwale et al, 2005										

Table 8. Education and regulatory interventions to improve retention of health workers in remote and rural areas - evaluations

Country	Description	Evaluation results	Reference
Canada	<p>Memorial University (MUN) rural targeting scheme</p> <p>Memorial University, situated in the rural state of Newfoundland, has worked towards increasing the number of rural physicians. The MUN residency programme, includes a strong rural component and gives priority to students from the rural Newfoundland and Labrador province.</p> <p>The study design includes data collection from class lists, alumni and postgraduate databases, a review of all MUN graduates 1973-1998. A multiple logistic regression model was used for data analysis.</p> <p>Quality assessment - low</p>	<ul style="list-style-type: none"> Although only on a small scale, the MUN has made a significant contribution to the rural physician supply, particularly in Newfoundland (NL) and the rest of Canada. " In 2004, 167 (12.6%) MUN graduates worked in rural Canada and 81 (6.1%) MUN graduates worked in rural NL. Those who were more likely to practise in rural Canada (when compared with graduates from urban backgrounds, those who had not done any residency training at MUN or specialists, respectively) were graduates from a rural background (odds ratio [OR] 1.95, 95% confidence interval [CI] 1.38–2.76), those who had done residency training at MUN (OR 1.56, 95% CI 1.06–2.29) and family physicians (FPs)–general practitioners (GPs) (OR 6.64, 95% CI 4.31–10.23)." 74.3% of those working in rural Canada had residency training at MU which shows the success of MU trying to encourage and promote rural health practice. "Consistent with other studies, we found that FPs and graduates who had a rural background were more likely to work in rural communities." 	<p>Mathews, M., Rourke, J.T.B. & Park, A., 2008, The contribution of Memorial University's medical school to rural physician supply. <i>Canadian Journal of Rural Medicine</i>, vol.13, no.1, pp.15-21</p>
Ecuador	<p>Compulsory medical service</p> <p>In 1970, Ecuador introduced the compulsory service requirement for all graduates of the country's medical, dental and nursing schools as a condition for obtaining a license to practice. Since then, over 13,000 physicians have participated in the service. This scheme was developed specifically to ensure more rural health cover and to try and reduce the comparatively high morbidity and mortality rates within rural areas. The rural physicians are usually placed in small hospitals or primary care clinics.</p> <p>The study design included a self-administered questionnaire of 127 respondents as well as site visits - four rural placement sites visited - which included observational analysis and feedback</p> <p>Quality assessment - low/medium</p>	<ul style="list-style-type: none"> There were 19 out of 21 provinces included in the respondent sample Of the 127 respondents, 59% received no orientation programme before their placement. 16% of those who did reported that they found it unsatisfactory. 58%, the majority of respondents reported no housing, food or transportation challenges, 35% reported significant difficulties in these areas. Transportation ranked highest as a problem, followed by communication, housing, food, access to water and electricity 38% of respondents said they experienced problems with culture difference. Several specifically mentioned language barriers with some patients proved problematic Reported possibility of decrease in quality of care "Aside from promoting feelings of isolation, lack of access to local and long distance telephone services also prevents the inexperienced and perhaps not very confident medico rural from consulting with more experienced physicians about problems of diagnosis and treatment." Despite these problems, from the questionnaire, an overwhelming majority of 94% of respondents agreed that their compulsory rural service year was rewarding, both personally and professionally. The mixed comments highlighted the chance for greater awareness of health conditions that exist in rural areas, an appreciation of 'serving the people', the chance to learn more of Ecuador's cultural diversity and a valuable continuation of their medical education. However, claims of infant mortality decreasing following the programme's start (from 11.4 per 1000 population in 1966 to 4.9 per 1000 in 1991) cannot be attributed or directly linked to the compulsory service. 	<p>Cavender, A. & Alban, M., 1998, Compulsory medical service in Ecuador: The Physician's perspective. <i>Social Science and Medicine</i>, vol.47, no.12, pp.1937-1946.</p>
Indonesia	<p>Compulsory service, incentives and subsidized training</p> <p>This study evaluates Indonesia's bundled approach to retention of physicians throughout the 1990s. Indonesia has compulsory service</p>	<ul style="list-style-type: none"> In the before and after study, it revealed that, "the proportion willing to go to ordinary or remote posts in the outer islands increases almost threefold, from about 17% to about 50% after the incentives were introduced. The proportion willing to go to very remote posts increases more than fivefold, from 3.1% to 17.8%" amongst males. Before the new set of incentives were introduced, in one batch of students, only 5.6% of males and 1.7% of females volunteered to go to very remote areas in the Outer Islands. 	<p>Chomitz, K.M., et al., 1998, <i>What do doctors want? Developing incentives for doctors to serve in Indonesia's rural and remote areas.</i> The World Bank Policy Research Working Paper 1888, Available at http://www.worldbank.org/html/dec/Publicatio</p>

	<p>for all physicians which is a prerequisite to gaining your license to practice. For those opting for remote locations, they are provided more financial incentives and a considerably higher chance of gaining a subsequent civil service appointment (90% chance of subsequent civil service whereas only 10% chance for those in ordinary areas) and subsidised training opportunities.</p> <p>The study design was based on a before and after study to determine location of graduating medical students (the <i>revealed preference</i> analysis). It also uses survey data on choices among hypothetical assignments to determine physicians' preferences over a set of characteristics describing compensation, career prospects and locational amenities (stated-preference analysis). It builds on, and provides a quantitative follow-up to an earlier focus-group-based study of contract doctor issues in Indonesia</p> <p>Quality assessment - low/medium</p>	<ul style="list-style-type: none"> • The evidence gathered through the survey and data collection also shows that, regardless of the incentive regime, students from outer island faculties are far more likely to volunteer for remote and very remote outer island assignments than are students from Java/Bali faculties." (75% predicted probability of those from outer island, 17% probability of those from Java or Bali.) • From the stated-preference survey it was revealed that "graduates would be willing to forgo Rp 187,000/month in income in order to reduce contract length by one year." Males from Java/Bali placed extremely high importance upon specialist training and all placed a high importance on civil service appointment. • Location preferences revealed that Irian Jaya, which is the province with the most challenging and remote conditions, would require a differential of nearly Rp 2 million/month 	<p>ns/Workpapers/WPS1800series/wps1888/wps1888.pdf</p>
Japan	<p>Jichi medical university bonding scheme</p> <p>The Jichi Medical University of Japan began a new and unique "home prefecture recruiting scheme" in 1972 with the aim to produce rural doctors and distribute them evenly nationwide. Students who attend JMU are fully funded by their prefecture government to study medicine and they sign a contract bonding them to working in their home prefecture medical institutions for 9 years post-graduation. 5-6 years of this obligation includes rural dispatch areas chosen by their home prefecture. If they breach their contract, they are demanded to pay all their medical school expenses in one lump sum.</p> <p>The study design included a retrospective cohort study, baseline data collected from matriculation and graduation 1972-1991 and national population census a multivariate analysis conducted of personal factors, sex, population: physician ratio etc and follow-up surveys</p> <p>Quality assessment - medium</p>	<ul style="list-style-type: none"> • 1477 graduates from JMU were reviewed and surveyed in 2000,2004 and 2006. On average, 69.8% of JMU graduates remained in their home prefectures for at least 6 years after their obligatory service. The rates varied from 45.5% to 93.3% depending on prefectures • Interestingly, if settlement is defined as being in a home prefecture at least one out of the three time points, the settlement rate of post-obligation JMU graduates rises to 76.3% • Among the prefectural variables, the number of physicians per 100,000 population and the number of clinics and hospitals per 100,000 population were negatively correlated with settlement rate of the prefecture. Therefore, an interesting conclusion of the study was that the prefectures with a relative shortage of physicians actually had higher settlement rates. • "The cumulative rate of JMU graduates who completed the contract among all the graduates is over 95%" (completion rate) • JMU graduates only account for 0.7% of all physicians in Japan, so the impact of the JMU distribution of physicians will be small. However, because the JMU has proven so successful, the Japanese government has begun implementing and planning similar, but more broad-scale interventions. For example, in the last year, the government submitted a budget to create 'rural quotas' with an obligatory work period of approximately 6 or 7 years of rural service for most of the 80 medical schools in Japan. • Female sex was negatively associated with home prefecture settlement whereas primary care specialty was positively associated with home prefecture settlement. 	<p>Matsumoto, M., Inoue, K. & Kajii, E., 2008, Long-term effect of the home preference recruiting scheme of Jichi Medical University, Japan. <i>Rural and Remote Health</i>, vol.8, no.920, pp.1-15</p>

<p>South Africa</p>	<p>Compulsory community service (CS)</p> <p>Compulsory community service (CCS) was introduced in 1997 as part of an initiative to address the inequitable distribution and retention of doctors. Doctors must complete one year of community service, usually within a rural area before they gain their first professional post.</p> <p>This study was a qualitative study in which three focus group interviews were conducted to gain perceptions of the compulsory community service. Observational analysis was conducted as well as the direct feedback through interviews with CS doctors.</p> <p>Quality assessment - low</p>	<ul style="list-style-type: none"> • <u>Health service delivery</u> - CS led to reports of decreased work pressure. There was a perceived reduction in referrals from the clinics and a decreased waiting time in hospitals with previous staff shortages. But were also reports of the CS doctors taking much longer in patient consultations than senior doctors. • <u>Experience and skills of CS doctors</u> - Reports that CS doctors lack procedural skills and experience which impact negatively on the pace of consultations • <u>Continuity of care</u> - Hospital managers reported a lack of continuity of care considering CS doctors leave after one year • <u>Impact on resource utilization</u> - Perceived increase in patient utilization BUT CS doctors wasting resources • <u>Impact on the local community</u> - Felt that communities were receptive to CS doctors yet their community impact could be better enhanced through improved transport etc • <u>Impact on hospital posts</u> - Cs does provide constant manpower to underserved areas BUT there is poor retention of CS doctors once they have finished the mandatory period due to lack of posts etc • <u>Impact on rural health team</u> - Reports of CS doctors helping to enhance racial integration, but also reports of negative relationships due to the feelings of being forced to work in rural areas against their wishes • <u>Impact on local administration</u> - Hospital managers expressed difficulties in managing CS doctors (problems of implementation, lack of experience etc) and some reported increased workloads as a result of CS doctors • <u>Lack of support for CS doctors</u> - The majority of hospital managers indicated that CS doctors not given enough social, administrative and clinical support • "The hospital managers interviewed in this study perceived CS as having had a positive impact on the supply of needed manpower, health service delivery and patient care." 	<p>Omole, O.B., Marincowitz, G. & Ogunbanjo, G.A., 2005, Perceptions of hospital managers regarding the impact of doctors' community service. <i>South African family practice</i>, vol.47, no.6, pp.55-59</p>
<p>Thailand</p>	<p>Bundled strategy - rural placements, scholarships, compulsory public service and financial incentives</p> <p>Various strategies used by Thailand to try and solve inequitable distribution of doctors. These include rural recruitment, training and hometown placement, increasing the supply of health workers, scholarships, compulsory public service and various financial incentives. Compulsory public service contracts (three years) for doctors began in Thailand in the 70s and produced immediate results as more doctors were distributed to rural areas. However, despite this bonding scheme, in latter years graduates would break this contract in favour of private practice.</p> <p>These studies were based on semi-structured telephone interviews, using a questionnaire, an extensive literature review, extracting data from previous studies and a retrospective cohort study. A logistical regression model was used for data analysis.</p>	<ul style="list-style-type: none"> • Compulsory public service contracts contributed greatly to the success of a more equitable distribution of doctors to the rural district hospitals in the late 1970s and the 1980s. The number of MoPH's doctors increased more than two fold in 10 years. • However, since then there has developed a considerable brain drain, with doctors breaking their contracts, paying their fines for doing so, and then choosing to work in the private sector (mainly urban practices). • Internal brain drain reached peak in June 1997 when 22% of new medical graduates resigned from MOPH. • 41.5% of those interviewed cited "Don't want to work in hardship area" and 41.8% cited "Don't know the real situation of the area" as perceived reasons for their friends resigning • Compulsory transfer from one province to another (mismanagement of human resources) was the primary cause stated for many resignations. Other factors included family reasons and desire for further training. • "In Thailand, after 28 years of compulsory contract with medical students, 49.5% of rural district hospital doctors are new graduates." • The fine you must pay if you breach the contract has not kept up with inflation. The attempt to increase the fine to correct for inflation was strongly opposed by the medical schools. • 74.6% of the non-resigned doctors believed that their friends resigned due to the compulsory transfer to other provinces element • The Thai government also made a concerted effort to increase the number of rural doctors. The Collaborative Project to Increase Production of Rural Doctors (CPIRD), was launched in 1995. In 1990 24.54% and in 1993 23.37% of medical students were 	<p>Wilpulpolprasert, S. & Pengpaibon, P., 2003, Integrated strategies to tackle the inequitable distribution of doctors in Thailand: four decades of experience. <i>Human resources for health</i>, vol.1, no.12, pp.1-17.</p> <p>Wongwatcharapaiboon, P., Sirikanokwilai, N. & Pengpaiboon, P., 1999, The 1997 massive resignation of contracted new medical graduates from the Thai Ministry of Health: What reasons behind? <i>Human Resources for Health Development Journal</i>, vol.3, no.2, pp.147 - 156.</p>

	Quality assessment - medium	<p>from a rural background. In 1996 this had increased to 25.09% and in 2001 it was as high as 31.45% - establishment of more regional medical schools having positive impact</p> <ul style="list-style-type: none"> • The special allowance for rural district hospital doctors is specifically for rural/remote practice. • In total, a new medical graduate working in a rural district may receive from USD825 (in regular districts) to USD1379 per month (in the remotest districts.) But this is still lower than the salary of a new graduate in private practice in an urban area, who has an income of at least USD1500 per month • The special rural allowance has also reportedly caused many inequities. "Some district hospitals only 10km to 20km apart on paved roads experience a 5-fold to 10-fold allowance differential." 	
USA	<p>Physician shortage area programme (PSAP) – Jefferson medical college</p> <p>Jefferson medical college (JMC) began the physician area shortage programme to specifically recruit and admit medical school students from rural backgrounds who intend to practice family medicine in rural areas. Through this programme, students receive financial aid and advanced training as an incentive to practice in a rural area.</p> <p>The study was based on a retrospective cohort study of 1978 - 1993 graduates. Additionally, data on physician speciality was gathered from the Jefferson Longitudinal study of medical education and a univariate analysis of data was conducted.</p> <p>Quality assessment - medium</p>	<ul style="list-style-type: none"> • Reported an 87% retention rate of PSAP graduates currently practicing rural family medicine - equal to 87% of those practicing 5-10 years ago (this is over twice than that reported for the National Health Service Corps) • "A total of 150 graduates from the classes of 1978 to 1991 of all 7 Pennsylvania allopathic medical schools were practicing family medicine in rural Pennsylvania in 1997. Twenty-one percent (32) of these rural family physicians were PSAP graduates even though they represent only 1 % of all graduates from those schools." • 34% of the PSAP graduates were practicing in rural areas of United States. 52% were practicing in the specialty of family medicine. 84% were practicing in either a rural or small metropolitan area. • Of those who were still working as rural primary care physicians in 1999 (59.7% of the JMC graduates), growing up in a rural area and attending college in a rural area were univariately related to retention. Also, a willingness to work and plan for rural family medicine as early as freshman level was seen as very important. • Taking a rural preceptorship and having an NHSC scholarship were univariately predictive of rural primary care practice. • Expectations of high income or medical school debt were not factors in choosing rural primary care as a career • PSAP graduates are 4 times more likely as non-PSAP graduates to practice in rural or underserved areas. Successes in gaining long term rural service. • PSAP has been expanded to 5 other US colleges. 	<p>Rabinowitz, H.K. 1993, Recruitment, retention, and follow-up of graduates of a program to increase the number of family physicians in rural and underserved areas. <i>The New England Journal of Medicine</i>, vol.328, no.13, pp.934-939.</p> <p>Rabinowitz, H.K., et al., 1999, A program to increase the number of family physicians in rural and underserved areas: impact after 22 years. <i>Journal of the American Medical Association</i>, vol.281, no.3, pp.255-260</p> <p>Rabinowitz, H.K., et al., 2001, Critical factors for designing programs to increase the supply and retention of rural primary care physicians. <i>Journal of the American Medical Association</i>, vol.286, no.9, pp.1041-1048.</p>
USA	<p>Rural medical education programme (RMED) - University of Illinois</p> <p>The RMED programme was launched in 1993 and specifically recruits rural students who express a desire to practice rural medicine. It then trains them using a specifically rural focused curriculum. Once they have completed their study, they are expected to fulfil their pledge to work in a rural community.</p> <p>This study includes an in depth description of RMED. Including conception, finance, how recruit students, curriculum etc as well as tracking of graduates through university and census sources.</p> <p>Quality assessment - low</p>	<ul style="list-style-type: none"> • "To date, there have been some 118 RMED graduates. Of the graduates in practice, 55 (85%) practice in primary care, 48 (74%) practice in Illinois, of which 44 (68%) practice in rural Illinois. Thus, the programme has begun to achieve its targeted endpoints." • There is currently a 65-70% success rate in terms of return physicians to rural communities. • Expansion of model - Considering its success, in 2000, the Illinois Board of Education created the Center for Rural Health Professions Education, Evaluation and Research (RPEER). This centre wants to improve rural service through emphasizing recruitment and retention of all health professionals, not just physicians. 	<p>Salafsky, B. & Glasser, M., 2005, Addressing issues of maldistribution of health care workers. <i>Annals academy of medicine</i>, vol.34, no.8, pp.520-525</p>

<p>USA</p>	<p>New Mexico rural education scheme</p> <p>University of New Mexico rural education scheme - Provides scholarships, grants, rural focused curriculum and offers unique rural medical preceptorship opportunities. The admission process encourages those from rural and remote communities</p> <p>The study design includes a document review, data collected from the school (applicant numbers, origins of students etc), a survey of student's views and a descriptive overview of programme, curriculum etc</p> <p>Quality assessment - medium</p>	<ul style="list-style-type: none"> • There has been notable success in increasing the number of physicians available in New Mexico, a largely rural state. "One third of the licensed physicians in the state are graduates of the UNM school of medicine or its residency programmes..." • Far more impressive perhaps is that, "84% of physicians who were graduates of both the school of medicine and one of its rural family medicine residencies entered long-term practice in rural New Mexico." • 65% of those students who accepted the offer of admission were from rural communities. • The survey of 317 graduates from 1974 through to 2004 results showed that all students rated the academic courses, student support and living-learning community aspects of the program as satisfied with or very satisfied with. • Due to the success of this programme, and other similar programmes (Jefferson Medical College PSAP for example), there are plans to increase the medical school class from 75 students to 100 in 2010. 	<p>Cosgrove, E.M., et al., 2007, Addressing physician shortages in New Mexico through a combined BA/MD program. <i>Academic medicine</i>, vol.82, no.12, pp.1152-1157.</p>
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Table 9: Monetary compensation (direct and indirect financial incentives) to improve retention in remote and rural areas - evaluations

Country	Description	Evaluation results	Reference
Australia	<p>Rural retention programme (RRP)</p> <p>The RRP began in 1999 to provide financial incentives to long-serving doctors in rural and remote areas experiencing difficulties in retaining General Practitioners (GPs).</p> <p>The study was based on a review of relevant documents and report as well as interviews with RRP grant recipients and key stakeholders (policy makers etc)</p> <p>Quality assessment - low/medium</p>	<ul style="list-style-type: none"> • There has been a steady increase in the number of RRP recipients and the total amount paid under the RRP has increased 70% between 1999 and 2005. • "The CPS has consistently achieved higher retention rates, from 86% one year after initial payment to 65% after five years. Retention rates for the FPS decline from 66% one year after initial payment to 31% after five years. The overall retention rate for the RRP at five years after initial payment is 63%." • GPs reported that they would be more likely to consider leaving rural or remote area if RRP was taken away, others would seriously consider early retirement without the RRP • However, interviews also highlighted that the total remuneration package offered to rural GPs is more important for retention than the RRP 	<p>Gibbon, P. & Hales, J., 2006, <i>Review of the Rural Retention Program - Final report</i>. Australian Government Department of Health and Ageing, Available at http://www.health.gov.au/internet/main/publishing.nsf/Content/751B9B296D05A4C8CA25741E0079E487/\$File/review.pdf</p>
Ghana	<p>Additional duty hour allowance</p> <p>Introduced in 1998/1999. The ADHA allows virtually all health staff to claim over-time hours pay. Designed to satisfy demands of health workers, but then transformed into a performance incentive and a direct retention strategy by increasing salaries.</p> <p>This study design involved semi-structured interviews with key informants and a limited document review</p> <p>Quality assessment - low</p>	<ul style="list-style-type: none"> • Caused budget cuts in other ministries and tensions between cadres over how many additional hours allowed to claim - only doctors are allowed to claim up to 200 additional duty hours per month. Nurses may only may claim for a maximum of 140 additional hours. • Authors argue that ADHA likely to have contributed to more public sector employees and increase in nurse training programmes ("last year there were 50,000 applicants for 3,000 places") • Perspective that, "Salary increases were high enough to diminish or even reverse the movement of public sector staff into other sectors within Ghana..." • Those interviewed reported that "in some cases ADHA has been used by health staff to pay for air fares and moving costs to take jobs overseas." • "...the interviewees consistently expressed doubt about the effectiveness of ADHA...as either a performance incentive or as a retention strategy..." 	<p>Perry, S., 2006, <i>Preliminary retention strategy review: Ghana (Draft)</i>. Capacity Project, Available at http://207.58.190.251/hrh/doc.php?doc_id=232&action=inline</p>
Ghana	<p>Deprived area incentive allowance (DAIA)</p> <p>The DAIA began in 1999 to target retention of health professionals, those who work in the 55 targeted deprived districts (mostly rural), receive an additional allowance of 20-35% of their basic salary paid monthly as DAIA. Those districts that extended the DAIA to all cadres reduced the percentage levels of allowance, although did so in order to appease calls for 'fairness'.</p> <p>The study design was based on informal interviews with district directors to gain perceptions. There was also observational analysis conducted in central and greater Accra region during field visits and the collection of qualitative data from district directors and health care providers (total</p>	<ul style="list-style-type: none"> • Selection of deprived districts according to a. Paucity of critical staff, b. lack of amenities such as good roads, electricity, portable water, c. lack of basic social facilities such as good schools and d. GPRS indicators • Total number of beneficiary staff in scheme - 2864 • Problems with funding. By March 2005, the DAIA had only been paid for June, July, August and September 2004 (2005 no funding available) and significant delays in release of funds. • Shares the concerns of some districts - "Funds should be released quarterly instead of monthly. Cumbersome procedure in the release of cheques through region to district. Prompt release of funds" • Some eligible staff did not benefit in some districts. • Also highlighted problems with management - district directors were not aware of the selection criteria that the Ministry of Health used. • Directors in non-deprived districts that were adjacent to deprived district did not understand why one district was selected but another was not." 	<p>Antwi, J., 2006, <i>Deprived area incentive scheme</i>. (presentation part of the ECSA workforce observatory meeting Arusha, Tanzania, 26th-29th September 2006), Available at http://www.hrhresourcecenter.org/node/993</p> <p>Boni, P., 2005, <i>Monitoring and evaluating human resources for health incentive reforms in Ghana</i>. Ministry of Health, Available at www.moh-ghana.org/.../health_summit05/presentations/DeprivedAreaPresentation%20byMr%20Prince%20Boni.ppt</p>

	<p>funds received, number of staff benefiting, criteria of DAIA)</p> <p>Quality assessment - low/medium</p>		
New Zealand	<p>Rural ranking scale (RRS)</p> <p>The Rural Ranking Scale introduced in 1999 was implemented to define 'rural' GPs entitled to claim a rural bonus payment. Only GPs scoring 35 points or greater (maximum 100 points) were considered 'rural' and entitled to apply for a 'rural bonus' payment.</p> <p>This study design was largely based on anonymous postal questionnaires, followed with data analysis and a small number of semi-structured interviews</p> <p>Quality assessment - low</p>	<ul style="list-style-type: none"> • The questionnaires reported the perception and satisfaction of GPs with the RRS. Although an increase in salary was appreciated, there are several problems. For example, arguments that the judgment of 'rural' should be broadened. • Also inequities and discrepancies between full and part time GP benefits. • Many GPs feel they have been unfairly categorised and some have been financially disadvantaged by the system. • There was a 75% response rate to the questionnaires, with the positive aspects identified as interesting jobs and continuing education initiatives and the negative aspects identified as excessive workload, administration, on-call duty and lack of locum cover • However, despite the RRS, of the 59 South Island rural localities, 38 still had less than 3 GPs and of the 83 North Island localities, 35 had less than 3 doctors (identified as a critical number for the stress of on-call) 	<p>Janes, R. & Dowell, A. 2004, 'New Zealand rural general practitioners 1999 survey - Part 3: rural general practitioners speak out. The <i>New Zealand Medical Journal</i>, vol.117, no.1191, pp.1-9</p> <p>Janes, R. & London, M., 2001, Rural general practitioners in New Zealand: November 1999 census. <i>New Zealand family physician</i>, vol.28, pp.244-249.</p>
Niger	<p>Financial package for doctors accepting to work outside the capital city</p> <p>In April 2006, the Niger government implemented a financial package for doctors accepting to work outside the capital city. This study attempts to evaluate the impact of this policy.</p> <p>Baseline data was collected in August 2005, through a direct census. For follow-up purposes, the same census was performed in June 2008.</p> <p>This time, the survey was complemented with a discrete choice experiment. Out of 292 doctors in Niger, a sample of 100 was produced. Each of the surveyed doctors was proposed to choose between one of two (virtual) packages for settling in a rural area.</p> <p>Nineteen questions were developed, using the SPSS routine Orthogonal Design. Focus groups were also held with representatives of partners in the country, along with interviews with key stakeholders.</p> <p>Quality assessment - medium/high</p>	<ul style="list-style-type: none"> • Between 2005 and 2008, the proportion of doctors working in the capital city remained roughly the same: 35%. • Why policy has not had the desired impact of improving the percentage could be explained in the results of a logistic regression, which found that the second parameter within each virtual package (probability of post-specialization) was the most powerful factor for explaining the probability of settling in a rural area. • However, it should be noted that the actual number of doctors in activity outside Niamey rose from 93 in 2005 to 134 in 2008, or 44% increase. The number of pharmacists and dentists follows the same trend with respective growth rates of 46% and 42%. • Practically, the model showed that to achieve a 60% probability for settling in rural area (i.e. this probability level would allow to correct the distribution skewness throughout the country), doctors would ask either for a 55% probability of getting a post-specialization or a financial incentive of \$275 per month (approximately one third of their salary). • The comparison between the levels of motivation of doctors, pharmacists and dentists based on surveys of 2005 and 2008 actually shows that the situation has improved in 2008 compared to 2005. The proportion of doctors, pharmacists and dentists moderately or highly motivated increased from 79% in 2005 to 88% in 2008, resulting in a gain of 9% between the two surveys. • Yet there are improvements to be made. Although 89% of respondents reported that they benefit from the 2006 decree and allowances that followed, 62% reported that certain elements of the financial incentive scheme were not successfully carried out. They expressed particular problems with the child-care allowance and the phone allowance. • 	<p>Ministère de la Santé Publique, 2008, <i>Impact des mesures d'incitation financière accordées aux Médecins, Pharmaciens et Chirurgiens Dentistes</i>. Ministère de la Santé Publique, Niger</p>

<p>South Africa</p>	<p>Rural allowance (RA)</p> <p>The RA was implemented in March 2004 (although retroactive to July 2003). The RA benefits the majority of health professionals in designated rural clinics. The areas included were identified by the integrated sustainable rural development strategy and the public service bargaining chamber. At present, it remains a purely financial incentive.</p> <p>The study design was based on a longitudinal cohort study design used before and after the introduction of the new allowance. Two rounds of data collection were undertaken in the same institutions: the first in November 2003, before the new allowance was introduced, and the second in May 2004, two months after it was implemented. Questionnaires were sent to all health professionals working in the sample institutions. The team also conducted follow-up surveys.</p> <p>Quality assessment - low/medium</p>	<ul style="list-style-type: none"> • The majority of respondents to the second round of sampling (51%) stated that the new RA influenced them favourably towards working in a rural area in South Africa in the future. • "After implementation of the new allowance, the data suggest that between 28% and 35% of rural health professionals, largely professional nurses, have actually changed their short-term career plans because of the new rural allowance. • "Experienced respondents (had been in service for more than 5 years) perceived the rural allowance as more important than career development opportunities whereas the younger (those doing their community service or been in service for 5 years or less) reported the opposite • In the questionnaire responses, "Most respondents stated that R50,000 per annum would influence them, the majority of professional nurses said that they would change their plans only if the allowance was R100,000 per annum or more." • However, many respondents answered that financial considerations are only one of a number of important factors that would influence their willingness to stay in a rural location. 	<p>Reid, S., 2004, <i>Monitoring the effect of the new rural allowance for health professionals</i>. Research project report, Durban, Health Systems Trust, Available at http://healthlink.org.za/uploads/files/rural_allowance.pdf</p>
<p>Zambia</p>	<p>Health workers retention scheme</p> <p>In return for signing a contract to work in a designated rural area for 3 consecutive years, each medical cadre earns a hardship allowance. Depending on the cadre, they may also receive financial aid for housing rehabilitation, vehicle loan, and some facility incentives, such as provision of medical equipment and provision of solar panels.</p> <p>The study design included semi-structured interviews, observations of health workers during field research in several provinces, relevant document review, use of MOH statistical data and expert opinions as well as a participant feedback survey</p> <p>Quality assessment - medium</p>	<ul style="list-style-type: none"> • In 2001, there was a 49% vacancy rate for doctors, 48% vacancy rate for nurses and 56% vacancy rate for clinical officers • In total, there were 68 doctors who joined the scheme, with a total of 6 leaving. Those who left were all from category C locations which are not as remote as category D locations. • "During the mid-term review 20 doctors on the scheme were interviewed. The majority of the doctors interviewed that without the incentives they would not have come to the district where they were working. They would have tried to find more attractive postings (A or B districts), or would have left government service." • In the satisfaction analysis of health workers (through the interviews and feedback survey), the 'education facilities for children', workload, social amenities and secondary income opportunities were all rated as not at all satisfactory by participants. However, overall rates showed that participants were 'somewhat satisfied' with retention allowances and benefits. 	<p>Central Board of Health Zambia, <i>Expansion of the ZHWRS to other cadres</i>. Accessed 04.08.2008, Available at http://www.cboh.gov.zm/documents/EXPANSION.pdf</p> <p>Mwale, H.F. & Smith, S., <i>Human Resources Retention Scheme: Qualitative and Quantitative Experience from Zambia</i>. Accessed 31.07.2008, Available at http://www.who.int/workforcealliance/forum/presentations/Hilary_Francis.pdf</p> <p>Koot, J. & Martineau, T., 2005, <i>Zambian Health workers retention scheme (ZHWRS) 2003-2004: Mid term review</i>. Available at http://www.hrhresourcecenter.org/hosted_docs/Zambian_Health_Workers_Retention_Scheme.pdf</p>

Table 10. Management, environment and social support interventions to improve retention of health workers in remote and rural areas - evaluations

Country	Description	Evaluation results	Reference
Australia	<p>Dr Doc Programme</p> <p>The Dr Doc programme launched in South Australia in 2006 is focused on maintaining the health and wellbeing of rural doctors. The programme has set up various support mechanisms such as telephone consultations, crisis support, linking rural GPs to provide health treatment for rural GPs and their families as well as country practice retreats to allow rural GPs some rest and relaxation.</p> <p>The study design used questionnaires for a large sample of GP, a before / after cohort study to rate improvements in satisfaction, a review of documents and reports, and consultations with key stakeholders.</p> <p>Quality assessment - low/medium</p>	<ul style="list-style-type: none"> • Reduction in the number of GPs wanting to leave rural practice in the short to mid-term (30% to 25%) - many indicated this was due to the improved networking and increased contact with other GPs following Dr Doc • Through interviews, doctors have reported increased contact and interconnectedness with other GPs and an increase in morale through more opportunities to discuss professional and personal issues with other GPs. • Overall, it appears there has been a "reduction in rural distress" and fewer GPs feeling personally isolated or unsupported in rural areas • There has been utilization of rural retreats and visiting health check-ups. • 66.7% of respondents reported that rural doctors workforce agency emergency support line had helped 'very much so' and 75% said that the rural retreats had helped them 'very much so' 	<p>Gardiner, M., et al., 2005, The role of psychological well-being in retaining rural general practitioners. <i>Australian Journal of Rural Health</i>, vol.13, pp.149-155.</p>
Australia	<p>Psychiatrist recruitment and retention scheme Latrobe Hospital</p> <p>Implemented by Latrobe Regional Hospital after they reached an employment crisis in 1994 with only one psychiatrist left. They launched a bundled strategy approach encompassing a strong orientation programme launched to provide assistance with housing, schooling options and help getting established in the community for new rural psychiatrists. A sectorized medical staff structure was implemented - included the support of medical officers and doctors for psychiatrists and less travel requirements. Also concerted effort made to raise the profile and credibility of psychiatry.</p> <p>The study was based on data collection from employment records, individual interviews with psychiatrists, an observational study and results from an internal review.</p> <p>Quality assessment - medium</p>	<ul style="list-style-type: none"> • Between 1994 and 2006 the number of full time psychiatrists employed at Latrobe increased from one to eleven. • Retention rates (judged as length of service in Latrobe) of psychiatrists improved from an average of 18 months in 1994 to an average of 4 years in 2006 and overall there was a positive response to these retention strategies from feedback gathered • The Southern Region Training Committee Psychiatry Registrar Programme also had a positive impact. The programme provides two full-time registrars with four, three-month, compulsory rural rotations per year. They provide vital support for the psychiatric staff and were well received. 	<p>Wilks, C.M., Oakley Browne, M. & Jenner, B.L., 2008, Attracting psychiatrists to a rural area - 10 years on. <i>Rural and remote health</i>, vol.8, no.1, ppp.824</p>

<p>Canada</p>	<p>Telehealth projects</p> <p>Telehealth projects and pilots became increasingly popular in rural areas in Canada throughout the 90s and in more recent years. They were set up to try and combat the decreasing numbers of physicians being attracted and staying in rural practices. Telehealth potentially impacts on individual, organizational, educational and professional factors for those in rural locations.</p> <p>These studies were based on a delphi study - with 12 experts (essential expert opinions), semi-structured interviews with physicians and managers, qualitative iterative strategy for data analysis and field study in four regions of Quebec to explore perceptions regarding impact of telehealth through focus group discussions.</p> <p>Quality assessment - low/medium</p>	<ul style="list-style-type: none"> • For most physicians and managers, telehealth was perceived as a powerful tool to improve healthcare services. Five physicians and nine hospital managers specifically mentioned the benefits of access to specialized services. Many respondents highlighted the benefit of having access to a second opinion as well as improved communication and knowledge development. Both hospital managers and physicians also highlighted that telehealth supports the hospital as a regional reference centre. However, physicians in particular wished to stress through the interviews and discussions that telehealth could never replace on site physicians. • 43 respondents had utilized telehealth and experienced its benefits, whereas 17 had never used the telehealth services • Reported increase in satisfaction due to improved communications, interconnectedness etc and most respondents highlighted the positive possibilities for decreased workloads, professional support and knowledge updates. 	<p>Gagnon, M-P., et al., 2007, Implementing telehealth to support medical practice in rural/remote regions: what are the conditions for success? <i>Implementation science</i>, vol.1, no.18, pp.1-8.</p> <p>Duplantie, J., et al., 2007, Telehealth and the recruitment and retention of physicians in rural and remote regions: a delphi study. <i>Canadian Journal of Rural Medicine</i>, vol.12, bo.1, pp.30-36.</p>
<p>Canada</p>	<p>Nova Scotia rural retention package</p> <p>These strategies began appearing in 1989 after the Nova Scotia Royal Commission on Health Care recommended that the government make concrete efforts to improve the geographic distribution of physicians. These include adequate training and exposure to rural medicine, residency programmes in rural areas, compulsory 12 week rotation in rural practice, a locum service providing physicians with time for vacation and continuing education and a pilot telemedicine project in three rural communities in rural Nova Scotia. Additionally, Nova Scotia provides financial incentives (a \$50,000 rural salary bonus, moving expenses).</p> <p>The study design was based on a survey of rural physicians across Nova Scotia and a relevant document review.</p> <p>Quality assessment - low/medium</p>	<ul style="list-style-type: none"> • Concluded that the dissatisfaction with working hours largely due to demanding on-call requirements in rural areas. 8% of respondents to the survey stated that they were on-call 24 hours a day, every day. Over 40% were on call at least one third of their time. • Lack of time off and working hours were the most popular reasons for dissatisfaction, followed by earnings and professional freedom • 56% said the addition of communication technologies would aid them in conducting their practices. 44% said it would not. 83% said that technologies would have to be subsidized before using them. • "Close to 90 percent cited enhanced locum replacements as very or extremely important. Over 80 percent cited extra payment for rural emergency room on-call shifts as very or extremely important." • Only 5 out of 27 physicians declared they intended to stay in rural practice for the next five years. This suggests that more needs to be done to retain the physicians in Nova Scotia. 	<p>Nestman, N.A., 1998, <i>The retention of physicians in rural areas: The case of Nova Scotia</i>. Industrial Relations Centre, Queen's University, Canada</p>
<p>Madagascar</p>	<p>Santé Sud project to install and support general practitioners in isolated areas in Madagascar</p>	<ul style="list-style-type: none"> • The survey carried out among slightly less than one third of the physicians has demonstrated that they provide, in the view of their communities, high quality medical 	<p>Ranjalahy-Rasolofomanana, J., et al., 2008, <i>Evaluation a mi-parcours du projet Santé Sud Madagascar</i>. Institut National de Santé</p>

	<p>Activities began in November 2003 for a three year project to set up 42 community general practitioners in 38 isolated zones.</p> <p>The project aimed to assist in the installation of rural community general practitioners in areas where there was no pre-existing health care structure and to support these doctors over time in order to ensure their provision of good quality community medical care. Financial aid was made available when choosing the place of installation, for the facilities (medical cabinet and living accommodation) and for the medical equipment. Offers of initial training and continuous professional development specific to medical practice in isolated rural areas. Technical and operational support during the installation and in supervision</p> <p>This was a mid-term evaluation and aimed to establish its current status and progress. Evaluation commenced in October 2006. Interviews were undertaken at international, national, regional and local level with main stakeholders, partners and actors. Twelve sites in four regions (Analamanga, Bongolava, Itasy et Vakinankaratra) of the province of Antananarivo were visited, including both the first and most recent installations for observational analysis.</p> <p>Quality assessment - medium</p>	<p>services.</p> <ul style="list-style-type: none"> • They provide a service that is comparable to physicians in a CSB 2 (basic health centre 2). The income of the physicians who have set up practice, which is on average higher than that of physicians in public service, allows them to be independent. • However, the villagers' income is not stable or dependable throughout the year. • The cost of helping a physician to set up practice is €12 000. The cost of the infrastructure, material and equipment needed for the Santé Sud physicians to practice medicine is considerably lower than for a physician in a CSB2. • Demographic characteristics: average age 37, 77% men, over 60% qualified over 5% • Type of position prior to installation: more than half at some point were private • Reasons for choosing position: rural preference/background, liberal practice opportunity, stability, support available • Time taken until stable: about half were stable in 6 months • Self-reported satisfaction with equipment (70% satisfied), facilities (70% without drinking water), quality and availability of medicines (about 80% satisfied), pre-training (100% positive), professional development (100% positive), supervision (100% positive) • Number of visits to clinic: dependent on multiple seasonal and epidemiological factors and periods/areas of increased poverty; also on patient satisfaction • Activities offered with regard to the PMA (only 46% offer all PMA activities)) • Medical charges (average profit is 25%) • Amount of patients paying immediately: most patients respect the payment time-limit • Integration into the community: generally, both doctors and populations are satisfied with level of integration • Integration into the health system (most rural doctors in the project have an 'excellent' relationship with neighbouring centres.) 	Publique et Communautaire, Antananarivo
Mali	<p>Medicalization of rural areas (bundled, plus contracting)</p> <p>After the administrative reform of 1999-2002 which introduced decentralization, community health centres (CSCOM) were revived or opened in rural areas.</p> <p>Due to the lack of career prospects in public service on account of structural adjustment measures, young physicians have gradually set up practice in rural areas, either by making their services available to the</p>	<ul style="list-style-type: none"> • Provision of the services of physicians is a suitable response to the lack of interest for front-line services • The strategies introduced succeed in attracting physicians to rural areas (over 100 installed in ten years), although the precarious nature of the job and the working conditions act as a brake on any long-term career prospects. Those supported by the AMC/Santé Sud and the Malian government stay on average 4 years in rural areas, in contrast to those who are not supported in the negotiations with their employers and who did not receive an installation package • The various combinations/'bundles' of the retention strategies do not all succeed in equal satisfaction of the doctors: • Most satisfying bundled approach: combine support in finding a post and in negotiating a contract, provision of an 'installation package', means of transport and accommodation, a 	Codjia, L., Jabot, F. & Dubois, H., 2008, <i>Evaluation du programme d'appui à la médicalisation des aires de santé rurales au Mali</i> . World Health Organisation, Geneva

	<p>CSCOM or in private practice. As early as in 1989, the non-governmental organization Santé Sud lent its support to this process.</p> <p>To varying degrees, the bundled strategies combined: support in finding and establishing posts; negotiating contracts (salary amounts and modes), and conditions; provision of installation packages (mode of transport, accommodation, medical kit, solar panel, etc); opportunity for professional development and specialization; social and professional peer-support, etc.).</p> <p>The study design included an analysis of the documentation, a survey using a questionnaire among 120 physicians practising in rural areas, Interviews with national decision-makers, institutional partners and operators involved in the implementation of the programme. There was also a cost analysis of the measures adopted and close observational studies in the four regions in which the physicians practice.</p> <p>Quality assessment: high</p>	<p>regular salary comparable to that of a public post, the opportunity of professional development and receiving 25% of the medical payments.</p> <ul style="list-style-type: none"> • Fairly satisfying bundled approach: combine the availability of accommodation (incomplete installation strategy), regular salary payment (but less than that of a public post) and receiving a fixed percentage of the medical payments. • Least satisfying bundled approach: limited to available accommodation and an irregularly paid fixed amount salary • The improved access to health care for the population is tangible, albeit hard to document. • The feasibility and sustainability of the strategies depends on the existing process being institutionalized and on the provision of support mechanisms for the strategies in place. • Various financial scenarios for extending, sustaining and institutionalizing the programme are proposed, depending on variation and timeframe considered. 	
Spain	<p>Telehealth – internet based community</p> <p>UniNet launched a pilot project in a rural health clinic in Spain in 2001. This project provided every doctor at the clinic with access to internet, communications, a network of doctors, links to specialists in a larger urban hospital and the potential for on-line consultations.</p> <p>The study design included an interventional study that included a control group of rural family doctors, a before and after study with control group to evaluate the intervention after 12 months and the inclusion of expert opinions and other relevant studies</p> <p>Quality assessment - medium</p>	<ul style="list-style-type: none"> • Results of this study show that the rates of consultation visits to specialists for patients and the number of hospital admissions decreased once this programme was initiated in the rural health clinic, which the authors conclude has led to an overall improvement in quality of care and service. (There was a 4.6% reduction in consultation visits to specialists for patients for nephrology 19.36% reduction in all medical specialties and 13.89% reduction in global consultations) • Feedback suggests that the internet and communications removed some of the isolation barriers. • However the evaluation did report that “The motivational level among the clinical staff to use the workstations varied, depending on their age, work style and the presence of a leader who would lead by example, as we found in the rural health centre.” • Physicians also indicated that regardless of the importance of the information needed, busy clinicians will use the service only if the computer connections and interfaces are convenient ad easy to use. 	<p>Como del Corral, M.J., et al., 2005, Utility of a thematic network in primary health care: a controlled interventional study in a rural area. <i>Human Resources for Health</i>, vol.3, no.4, pp.1-7</p>