Appendix B. Summaries of the articles included in this review

| **Survey Studies** | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Main focus of study** | **What surveying** | **Country** | **Main Findings** | **Grading** | **Sample size** | **Urban / rural** | **Primary / secondary care** | **Cadre** | **Differences between groups** |
| Adzei & Atinga (2012) | To explore the influence of financial and non-financial incentives on healthworker motivation and retention. | Motivation and retention | Ghana | Found both financial incentives - salary level, rural payment, and commitment based payments - and non-financial incentives: leadership skill and supervision, opportunities for continuing professional development and availability of infrastructure and resources to influence healthworker motivation and retention. | Moderate / Low | 285 | Rural | Secondary | HWs | NA |
| Agyepong et al. (2004) | To understand what motivates and demotivates healthworkers, and their overall levels of motivation | Satisfaction | Ghana | Found low levels of motivation, and a number of financial and non-financial 'obstacles' to motivation including salaries too low to live on, lack of essential equipment and supplies, delayed promotions, transport difficulties, housing and training. | Moderate | 617 | Both | Both | HWs | Urban / rural |
| Alameddine et al. (2012) | To assess levels of burnout and likelihood to quit in primary healthcare workers, and potential factors contributing to them. | Retention | Lebanon | Found high levels of burnout and 40% intention to quit. The three most cited factors influencing intention to quit were pay, better opportunities internationally and lack of professional development. Regression analysis showed burnout, lower levels of education and lower time in post all associated with intention to quit. | Moderate | 755 | Both | Primary | HWs | Education and time in post both influenced intention to quit |
| Chandler et al. (2009) | To understand the reasons for low performance among clinicians, and then explore the factors that contribute to low motivation. | Motivation | Tanzania | Found environmental factors were most often discussed by healthworkers as affecting motivation, including pay, perception of status, and organisational, social and physical work environments. Regression analysis found salary a ‘pre-requisite’ for motivation: higher salary was associated with higher internal motivation. | Strong | 177 | Both | Secondary | Clinical officers | Age, salary level. |
| Delobelle et al. (2011) | To understand job satisfaction, intent to leave and correlates in nurses. | Satisfaction and retention | South Africa | Nurses reported satisfaction with work content and peer relationships and dissatisfaction with pay and work conditions. The study found job satisfaction to be associated with time in post, professional rank and turnover intent. Turnover intent was influenced by job satisfaction, age and education. Satisfaction with supervision was the only facet significantly explaining turnover intent when controlling for age, education, years of nursing and unit tenure. | Moderate | 143 | Rural | Primary | Nurses | Differences according to age and education |
| Dieleman et al. (2006) | To understand motivating and demotivating factors for healthworkers, and whether current performance management tools supported motivation. | Motivation | Mali | Found the main motivators were related to responsibility, training and recognition, and salary. They also found poor implementation of performance management tools, which could be contributing to low motivation. | Moderate | 367 | Both | Both | HWs | Differences between cadres and rural / urban healthworkers |
| Ebuehi & Campbell (2011) | To understand satisfaction and contributing factors for Nigerian clinicians | Satisfaction | Nigeria | The majority of healthworkers liked their current job – with contributing factors identified as pay, relationships with colleagues, job prospects and career development opportunities. A number of factors likely to attract healthworkers to rural jobs were identified, including better working conditions, good support systems, opportunities for career development, financial incentives, better living conditions and family support systems. | Moderate | 179 | Both | Primary | HWs | Rural / urban |
| Franco et al. (2004) | To assess motivational outcomes and determinants for healthworkers | Motivation and satisfaction | Jordon & Georgia | Healthworkers stated that pay was critical for their job satisfaction, however a number of other factors were related to motivational outcomes and the study suggests they may be more cost-effective to influence. Non-financial incentives identified as contributing to healthworker motivation include self-efficacy, pride, management openness, job properties, and values. | Strong | Around 1000 | Both | Secondary | HCWs | Individual factors, countries, professions, organisations. |
| Hagopian et al. (2009) | Aimed to measure job satisfaction and correlates and reasons for possible intent to leave in a nationally representative sample of healthworkers. | Satisfaction | Uganda | Found a number of factors contributing to job satisfaction: jobs being a good match with skills and experience, satisfaction with salary, happy with supervisor, manageable workload, enjoyable job and job security. Negative factors affecting satisfaction included salary, working and living conditions, and workload. | Moderate | 641 | Both | NA | HWs | Cadre, age, and sector. |
| Jayasuriya et al. (2012) | To assess job satisfaction and factors correlating with satisfaction in nurses. | Satisfaction | Papua New Guinea | Work climate and supervisory support were the biggest predictors of satisfaction in nurses, followed by ownership of the facility (government / church) and community support. In aggregate these factors explained 35% of the variation. | Moderate | 344 | Rural | Primary | Nurses | Age and experience. |
| Kekana, Du Rand & Van Wyk, (2007) | To assess the job satisfaction of nurses and contributing factors. | Satisfaction | South Africa | Found the majority of nurses dissatisfied with working conditions and emotional climate, but satisfied with social climate. Workload, pay and levels of pressure were the key dissatisfying issues. | Low | 39 | Both | Secondary | Nurses | NA |
| Klopper et al. (2012) | To understand the practice environment, job satisfaction and burnout of critical care nurses. | Satisfaction | South Africa | Found high levels of burnout among participants. Nurses were generally positive about their working environment, with the exception of adequate staffing and resource levels and good governance. Key negative influences on satisfaction were salary, lack of opportunities for advancement and lack of study leave. | Moderate | 935 | Both | Secondary | Nurses | NA |
| Lephoko, Bezuidenhout & Roos (2006) | To understand how different factors relating to the organisational climate influence job satisfaction. | Satisfaction | South Africa | Found nurses to be slightly satisfied with intrinsic factors (motivation, empowerment and organisational alignment) and dissatisfied with extrinsic factors (physical environment, career development and performance management). | Low | 140 | Both | Secondary | Nurses | NA |
| Luboga et al., (2011) | To understand the satisfaction of doctors, and contributing factors to it. | Satisfaction, motivation | Uganda | Found high levels of dissatisfaction among doctors. The largest sources of dissatisfaction were pay, quality of management, availability of equipment and supplies, quality of infrastructure, staffing and workload, political influence, location and lack of professional development. | Moderate | 37 | Both | Secondary | Doctors | NA |
| Malik et al. (2010) | To identify the determinants of job motivation in doctors. | Motivation | Pakistan | Found ‘Intrinsic and socio-cultural factors like serving people, respect and career growth’ were important motivators. De-motivators were largely organisational: pay and working conditions and workload meaning less personal / social time. | Moderate | 360 | Both | Both | Doctors | Levels of care, gender and public / private sector. |
| McAuliffe et al. (2009) | To explore the link between perceived organisational justice and job satisfaction. | Satisfaction | Malawi | Found a strong correlation between perceived organisational justice (fairness of treatment, procedures and communication by management) and job satisfaction. Pay, promotion opportunities and satisfaction with current work assignments were all also linked with job satisfaction. | Moderate | 126 | Both | Both | HWs | NA |
| Mokoka, Ehlers & Oosthuizen, (2011) | To assess which factors would motivate nurses to stay at their current employers | Retention | South Africa | Found 90% of the surveyed nurses’ decisions to stay with their current employers would be influenced by factors related to finances, safety and security, equipment and/or supplies, management, staff and patients. | Low | 108 | Both | Both | Nurses | NA |
| Peters et al. (2010) | To ascertain what healthworkers believe is important for satisfaction / motivation, and how much of these factors are present in their current job. | Satisfaction and motivation | India | Four groups of factors were identified as influencing motivation: job content and work environment, extrinsic benefits (income, employment benefits, time for family life etc.), autonomy and security and transparency (i.e. lack of corruption). Several factors more prevalent than income in an ‘ideal’ job. | Moderate / Strong | 1916 | Both | Both | Clinicians | Regional, sector |
| Pietersen (2005) | To measure the satisfaction and correlating factors of nurses in a hospital environment. | Satisfaction | South Africa | Found just over half of nurses to be generally satisfied with their jobs. Satisfying factors were the nature of the job itself and the financial stability of the hospital, while dissatisfiers were working conditions, pay, interaction with supervisors and organisational support. | Moderate | 109 | Urban | Secondary | Nurses | NA |
| Pillay (2009) | To assess the job satisfaction and contributing factors in Nurses. | Satisfaction | South Africa | Pay, workload and available resources were the most frequently cited dissatisfies among public sector nurses, with pay and career development opportunities the most mentioned for their private sector counterparts. | Low | 569 | Both | Both | Nurses | Sector |
| Uys et al. (2004) | To measure the job satisfaction, self-esteem, views on supervision and factors influencing them. | Satisfaction | South Africa | Found satisfaction close to neutral, high self-esteem and low satisfaction with supervision. A slight relationship between supervision and satisfaction was identified, in addition to a link between self esteem and personal satisfaction with their contribution to the work. | Moderate | 319 | Both | Both | Nurses | NA |
| van der Doef, Mbazzi & Verhoeven (2012) | To understand levels of satisfaction, burnout and somatic complaints in nurses, and understand how these factors link to working conditions. | Satisfaction | Kenya, Tanzania, Uganda | Found high levels of burnout and somatic complaints. Low job satisfaction correlated to low financial reward and supervisor support. Burnout was correlated with poor information provision and high workload. Somatic complaints were correlated with physically demanding work conditions. | Moderate | 309 | Both | Secondary | Nurses | Sector |

| **Interview Studies** | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Focus** | **Country** | **Main Findings** | **Grading** | **Sample size** | **Urban / rural** | **Primary / secondary care** | **Cadre** | **Differences between groups** |
| Ashmore(2013) | To understand the differences in private and public work in south Africa, with a view to improving retention in the public sector | South Africa | Found differences in motivational and de-motivational factors between settings, for instance the poor resource availability, view of the department of health and career opportunities were strong de-motivators in the public sector (often emphasised as much at the lower wages), while de-motivators in the private sector included the lack of a team environment and less opportunity to feel ‘relevant’. | Moderate / Strong | 28 | Urban | Secondary | Doctors |  |
| Chhea et al. (2010) | To understand how rural healthworkers treating tuberculosis patients operate, and the barriers / motivating factors they experience. | Cambodia | Found a number of demotivating factors, both them into institutional (e.g. structure of the health system, lack of staffing) and personal (e.g. optimism, status, and personal finances). They emphasise the importance of individual financial coping strategies in retention, and that these may also be de-motivating factors – e.g. diverting patients to private clinics. | Low | 10 | Both | Both | HWs |  |
| Jack et al. (2013) | To explore the factors motivating mental healthworkers - looking at both reasons for joining the profession and motivational factors at work. | Ghana | Many of the factors found affecting motivation were to do with relationships. Motivating factors included some specific to mental health – an academic interest in psychiatry, improved personal relationships, and some broader factors - including a desire to help patients and good relationships with colleagues. Demotivating factors were a lack of resources, a rigid hierarchy, low feedback on performance and a lack of career opportunities. | Moderate | 28 | Both | Secondary | HWs |  |
| Kotzee & Couper (2006) | To understand what interventions doctors think would help them stay in rural areas. | South Africa | Identified a large number of interconnected themes and recommended multifaceted intervention to fix them. Themes involved increasing the recognition of rural practice, better pay and benefits, better living conditions, further education and better professional support. | Moderate / Low | 10 | Rural | Both | Doctors |  |
| Leshabari et al. (2008) | To assess motivation and contributory factors for healthworkers. | Tanzania | High levels of dissatisfaction among staff were found, with a number of factors contributing. Sources of dissatisfaction included low salary, the frequent unavailability of necessary equipment and resources, poor performance evaluation and feedback, poor communication and a lack of participation in decision-making processes. | Moderate / Low | 448 | Urban | Secondary | HWs |  |
| Mathauer & Imhoff (2006) | To understand motivational factors for healthworkers, focusing on non-financial incentives | Kenya & Benin | Professional ethos was consistently mentioned as a motivator for health professionals, with the work environment and equipment a secondary factor, and pay / allowances mentioned by relatively few participants. Improving the availability of equipment / supplies for the job was the most mentioned factor for improving professionals’ motivation. | Moderate / strong | 99 | Both | Both | HWs | Differences between countries, sector and cadre |
| Mbilinyi, Daniel & Lie (2011) | To understand how HIV treatment has affected healthworker motivation and views on their jobs. | Tanzania | Found a number of factors related to HIV treatment negatively impacting motivation - including time out for training, trust between the community and healthworkers, and logistical problems in the health system. | Moderate | 30 | Both | Both | HWs | Differences between cadres |
| Oman, Moulds & Usher (2009) | To understand the main influences on job satisfaction from specialist trainees, some of whom had since left the public sector. | Fiji | Found three main categories of factor that influenced satisfaction: professional growth, service and patient care, and recognition - with dissatisfying factors falling into these themes. | Moderate | 47 | Both | Secondary care | Doctors | NA |
| Prytherch et al. (2012) | To understand the issues the motivation of rural maternal and newborn healthworkers. | Tanzania | Found positive influences on motivation included community appreciation, perceived support from government / donor, and the opportunity to learn. Negative influences were mostly financial, with poor equipment also mentioned. | Moderate | 25 | Rural | Both | HWs | Lower cadres were more demotivated |
| Prytherch et al. (2013) | To understand motivation and views on incentives in rural maternal and neonatal healthworkers. | Burkina Faso, Ghana & Tanzania | High levels of commitment to remaining as healthworkers were expressed, with lower levels of commitment to working rurally, and concerns over poor quality care. Positive influences on motivation included appreciation of the community and managers, and negative influences the lower perceived status of rural work and low pay. | Moderate | 75 | Rural | Both | HWs | Differences between countries |
| Razee et al. (2012) | To understand the difficulties faced by rural healthworkers in social factors - for instance the reaction of the community, personal safety. | Papua New Guinea | Found the key issues discussed as affecting motivation were a supportive & respectful local community – with functioning community ‘ownership’ of health facilities, family responsibilities particularly for female healthworkers, the perceived safety of the area / community, and health beliefs and attitudes of patients and community members (for instance believing in traditional remedies). | Moderate | 33 | Rural | Primary | HWs | NA |
| Reuter & Couper (2007) | To elicit the factors that make people choose to practice and stay practicing rurally. | South Africa | Found a number of themes influencing decisions to take / stay in a rural job - including previous exposure to a rural environment, opportunities for education and social support. | Moderate | 15 | Rural | Both | Doctors |  |
| Sheikh et al. (2012b) | To explore why rural practitioners have chosen to continue to practice in rural government posts. | India | A number of environmental and personal factors were cited for staying on. Factors include relationships with the community and colleagues, family considerations, enjoying rural life and a sense of vocation. | Moderate | 37 | Rural | Primary | Doctors | NA |
| Snow et al. (2011) | To understand doctors’ views on what could influence rural service, and then develop policy recommendations for improving it. | Ghana | Discussions with doctors suggest that while salary is important, it is career development priorities that are keeping doctors in urban centres. Short-term service in rural areas would be more appealing if it were linked to special mentoring and/or training, and led to career advancement. | Moderate | 84 | Both | Both | Doctors | NA |
| Witter et al. (2011a) | To understand doctors' views on the different factors influencing their willingness to work in a rural area. | Vietnam | Four typical ‘directions of travel’ are identified for Vietnamese doctors - from lower to higher levels of the system, from rural to urban areas, from preventive to curative health and from public to private practice. Substantial differences in income from formal and informal sources all reinforce these preferences. Working conditions, training opportunities, living conditions and career development were also mentioned as affecting recruitment and retention. | Moderate / low | 32 | Both | Both | HWs | Regional |
| Zinnen et al. (2012) | To ascertain healthworkers’ motivation, and factors / to improve it. | Tanzania | Found a high level of stability in healthworkers, and a preference for the stability and pension that the public sector provided. Healthworkers described themselves as dissatisfied, with a lack of resources, high workload, poor hospital infrastructure and poor management all contributing. | Moderate / low | 285 | Rural | Secondary | HWs |  |

| **Discrete Choice Experiment Studies** | | | | | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Main focus** | **Country** | | **Main Findings** | | **Grading** | | **Sample size** | | **Urban / rural** | | **Primary / secondary care** | | **Cadre** | | **Differences between groups** | |
| Hanson & Jack (2010) | To understand clinicians' preferences for different interventions to improve chances of working in a rural area. | Ethiopia | | Found the most important incentives for doctors were financial and provision of housing, while nurses preferred better equipment and better availability of supplies. | | Moderate | | 219 | | Both | | Secondary | | Doctors | | Cadre | |
| Mangham & Hanson (2008) | To assess the factors influencing nurses’ job choices on. | Malawi | | Found the six factors investigated all had an impact on job choice, with pay, opportunities to upgrade qualifications and housing the factors having the most influence. | | Strong | | 107 | | Both | | Secondary | | Nurses | | NA | |
| Mullei et al. (2010) | To understand the preferences of upgrading nurses and trainees for different jobs | Kenya | | Found concerns with rural employment include career stagnation, loss of training opportunities and several perceived social disadvantages. Career development, permanent contracts and salary were identified as important factors in job decisions. | | Moderate | | 250 | | Both | | NA | | Nurses | |  | |
| Penn-Kekana et al. (2005) | To assess a range of factors relating to nurses' motivation, retention and likelihood to emigrate. | South Africa | | Pay, a well equipped facility and good management were the three most highly rated factors in making job decisions. | | Moderate | | 27 facilities | | Rural | | NA | | Nurses | |  | |
| Rao, (2012) | To examine the effect of job attributes on healthworker choices: both in service healthworkers and those in training | India | | Found salary and qualifications had the greatest impact on job preferences. There were differences in the preferences of students and in service healthworkers. | | Moderate | | 406 | | Rural | | NA | | Clinicians | | Cadre and students / in service HWs | |
| Robyn et al. (2012) | To elicit healthworker preferences for different mechanisms of community based insurance payments. | Burkina Faso | | Found healthworkers preferred schemes without results-based payments, and also absolute rather than relative performance payments. | | Moderate | | 176 | | Both | | NA | | HWs | | NA | |
| Rockers et al. (2013) | To assess the factors influencing choice of rural posts for nurses, and the differences in these factors between practicing and student nurses. | Laos | | For both groups, choice of job posting was strongly influenced by salary and direct promotion to permanent staff. Practicing nurses had lower preference for housing allowance and housing provision as well as provision of transportation for work and personal use than students. | | Moderate | | 249 | | Rural | | NA | | Nurses | | NA | |
| Vujicic (2010) | To understand the factors affecting rural job choices of nurses and midwives. | Liberia | | Found preferences for rural work vary considerably by exposure to rural areas. Pay levels and improving transportation were the two most cost effective policy options identified (despite pay ranking relatively lowly in relative importance of factors). | | Moderate | | 197 | | Both | | NA | | nurses | | NA | |
| Vujicic et al. (2010) | To compare the preferences of medical students and in service doctors in making job decisions - particularly for rural postings. | Vitenam | | Found significant differences between preferences for medical students and in-service doctors. The most important attribute excluding salary was rural/urban location for in-service doctors, and the opportunity of long-term education for medical students. | | Moderate | | 292 | | Doctors | | NA | | Doctors | | Students and in-service doctors | |
| **Focus Group Studies** | | | | | | | | | | | | | | | | | | |
| **Study** | **Main focus** | | **Country** | | **Main Findings** | | **Grading** | | **Sample size** | | **Urban/rural** | | **Primary / secondary care** | | **Cadre** | | **Differences between groups** | |
| Campbell et al. (2011) | To understand the sources of motivation and frustration for healthworkers delivering Antiretroviral Treatment in rural settings. | | Zimbabwe | | Healthworkers found the changes in patients' quality of life brought about by treatment to be a big motivator. Frustrations expressed were mainly around resource shortages, particularly medication. | | Moderate | | 25 | | rural | | NA | | HWs | | NA | |
| Dieleman et al. (2003) | To understand motivating and demotivating factors for rural healthworkers – with a view to improving performance | | Vietnam | | Found the main motivating factors for healthworkers were appreciation by managers, colleagues and the community, a stable job and income and training. The main de-motivating factors were related to low salaries, difficult transportation and heavy workloads. | | Moderate | | 56 | | Rural | | Primary | | HWs | | NA | |
| Lievens et al. (2011) | To understand the factors affecting job choice for healthworkers in Ghana. | | Ghana | | Found a number of attributes driving job choice, including salary (most importantly), benefits and allowances, access to training, workload, the availability of medical equipment, and social recognition. | | Moderate | | 63 | | Both | | NA | | HWs | | NA | |
| Manongi, Marchant & Bygbjerg (2006) | To explore the motivation, satisfaction and frustrations of healthworkers. | | Tanzania | | The key factors raised by healthworkers were workload in the context of staff shortages, supportive supervision from line managers and transparency in career development opportunities. | | Moderate | | 64 | | Both | | Primary | | HWs | | NA | |
| Mbindyo et al. (2009) | To assess levels of motivation and contributing factors among healthworkers. | | Kenya | | A number of interrelated factors were identified contributing to motivation - including supportive management, salary, workload, fairness in opportunities, management working for change and national policy on promotions. | | Moderate / Low | | 185 | | Both | | Secondary | | HWs | | Age | |
| Songstad et al. (2012a) | To understand the impact of implementing a performance management system and pay for performances on healthworkers and their motivation. | | Tanzania | | Found a strong focus on salary in healthworkers’ discussions – with low salary cited as a cause for low motivation and performance pay thought a strong motivational tool. | | Low | | 29 | | Rural | | Primary | | HWs | | NA | |
| Songstad et al. (2012b) | To understand in detail job preferences for rural healthworkers relating to the ownership of facilities. | | Tanzania | | Found a clear preference for public sector employment. The main reasons cited for this were better job security and the availability of pensions in the public sector. This preference was despite acknowledgement that the Church sector was better equipped and provided better care. | | Low | | 62 | | Both | | Both | | HWs | | NA | |
| Stringhini et al. (2009) | To explore the role of informal payments in job satisfaction and motivation | | Tanzania | | Informal payments were acknowledged as widespread. They seem to impact negatively on motivation and satisfaction of healthworkers - through fear of detection, concerns of the fairness of payments received by senior staff, and feeling 'enslaved' to bribing patients. | | Moderate | | 64 | | Both | | Both | | HWs | | NA | |

| **Measurement Studies** | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Main focus** | **Country** | **Main Findings** | **Grading** | **Sample size** | **Urban/ rural** | **Cadre** | **Differences between groups** |
| Brock, Lange & Leonard (2012) | To understand effects on doctors’ performance of peer scrutiny and an 'encouragement visit' according to generosity | Tanzania | Generous clinicians provide higher quality care, and all clinicians respond to peer scrutiny and peer encouragement, with peer encouragement showing the greatest improvements in performance. | Strong | 103 | Rural | Clinicians | NA |
| Das, Hammer & Leonard (2008) | To describe and discuss the performance of doctors in LMICs, and potential reasons for this. | 4 countries | Found low levels of knowledge in doctors practicing in LMICS, and additionally low levels of performance (measured by guideline adherence) compared to knowledge. The lowest quality care was experienced by the poorest patients. | Strong | 4 studies | Both | HWs | Countries and type of institution |
| Leonard, Masatu & Vialou (2007) | To assess performance of doctors against clinical guidelines and what correlates with performance. | Tanzania | Found that training impacted knowledge, but type of organisation made more of a difference to actual performance measured by guideline adherence. | Moderate / Strong | 80 | Rural | Doctors | Cadres |
| Leonard & Masatu (2010) | Ethnographic observation of professionalism and its relationship to performance. | Tanzania | Found that clinicians exhibiting professionalism delivered high quality care with or without extrinsic incentives - and this group comprised 20% of their sample. Also found Clinicians operating in facilities with decentralised decision-making powers had a smaller ‘know-do’ gap. | Strong | 80 | Both | Clinicians | NA |
| Mæstad, Torsvik & Aakvik (2010) | To understand the link between workload and quality of care in a resource-constrained setting. | Tanzania | Found no link between workload and effort per patient (in an observed diagnostic task in clinics). They did find links between levels of training and quality. | Strong | 159 | Rural | Clinicians | NA |
| Sipsma et al. (2012) | To understand the impact of training, supervision and incentives on the quality of provision in maternal and newborn healthcare. | Rwanda | Found wide variation in adherence to recommended practices, and no evidence that training, supervision or incentives were consistently associated with better practice. | Moderate | 455 facilities | Both | HWs | Regions and types of facility |

| **Intervention Studies** | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Title** | **Main focus of study** | **Country** | **Main Findings** | **Grading** | **Sample size** | **Urban / rural** | **Cadre** | **Type of study** |
| Antwi & Phillips (2012) | To assess the impact of a pay increase on worker retention in Ghana. | Ghana | Found increased pay improves retention in those cadres who are likely to leave the public sector, often to emigrate – aged 20-35. A 10% increase in pay resulted in a 0.9-1.8 percentage point reduction in annual attrition. | Moderate / Low | NA | Rural | HWs | Observational |
| Chopra et al. (2008) | A review of systematic reviews looking at the effectiveness of different policy options to improve different aspects of human resources: supply, distribution and performance of healthworkers. | Many | Found a general paucity of evidence. Available evidence focused on organisational mechanisms for improving human resources such as task shifting, quality improvement and changes to workflow rather than individual mechanisms. | Moderate | 55 papers | Rural | HWs | Systematic review |
| Dieleman, Gerretsen & Van (2009) | Systematic realist review focusing on human resource management interventions to improve healthworker performance. | Many | Found that combined interventions, continuing educations and local quality initiatives could be successful, and success was different in different contexts. In addition, few interventions had been implemented in different contexts, making understanding important contextual factors problematic. | Moderate | 9 reviews with a LMIC component | Both | HWs | Systematic review |
| Dolea, Stormont & Braichet (2010) | A literature review of interventions to attract and retain healthworkers in underserved and rural areas - high and low income countries | Many | Found a lack of evidence, and strongly argues for better future research into the topic. Their findings confirm previous reviews – with evidence for targeted rural selection, multifaceted training interventions, financial incentives, and compulsory service / bonding schemes. | Strong | 27 papers - 8 with a LMIC component | Rural | HWs | Systematic review |
| Efendi (2012) | To assess the success of changing contracting and pay in improving staffing in remote areas. | Indonesia | Found improving financial incentives and making contracts more flexibility improved the availability of healthworkers in remote areas, however considerable challenges still remained. | Low | NA | Rural | HWs | Observational |
| Lehmann, Dieleman & Martineau (2008) | To systematically review the evidence of what works in attracting and retaining staff to rural areas in LMICs. | Many | Found a lack of evidence, and a complex set of factors influencing attraction and retention of healthworkers in rural areas. Also found composite interventions (suggested as covering living conditions, working conditions and development opportunities) are more likely to be successful than those focusing on a single aspect. | Strong | 110 papers | Rural | Clinicians | Systematic review |
| Peabody et al. (2011) | To assess the impact on quality of care of a performance-related bonus and provider-level incentives. | Philippines | Found measurable improvements in quality of care under performance related pay and hospital-level financial incentives. This effect was maintained over the medium term – with improvements still evident 36 months after the start of the intervention, however there were also improvements in the control group in the latter part of the study. | Strong | 617 | Both | Doctors | Controlled trial |
| Rowe et al. (2005) | Systematic review looking at interventions to improve performance of healthworkers. | Many | Found a general scarcity of evidence, particularly of cost effectiveness information. In terms of interventions found some differences in HIC and LMIC results, and evidence for supervision and audit with feedback, and little for dissemination of written guidelines without other interventions. | Moderate | 27 studies - majority from HICs | Rural | HWs | Systematic review |
| Wilson et al. (2009) | To comprehensively review the literature on what interventions help attract and retain healthworkers to rural and remote areas. | Many | Categorised interventions against five mechanisms: Selection, Education, Coercion, Incentives and Support. They found evidence for selection and support, and some evidence for incentives. | Moderate | 110 papers – mix of HICs and LMICs | Both | HWs | Literature review |
| Witter et al. (2011b) | To evaluate the impact of a pay for performance scheme as one aspect of a broader project on health system strengthening. | Pakistan | Found little impact of performance-related-pay, however there were several design and implementational issues identified with the programme. | Moderate | NA | Both | HWs | Observational |
| Zurn et al. (2010) | To understand the effects of changing contracting and allocations to posts in increasing numbers of rural healthworkers. | Senegal | Found changing the mechanism of recruiting to rural posts and improving the flexibility of contracting improved the numbers of rural healthworkers - but found some variation between regions in how well this policy worked. | Low | NA | Rural | HWs | Observational |