The fallacy of coverage: uncovering disparities to improve immunization rates through evidence. The Canadian International Immunization Initiative Phase 2 (CIII2) Operational Research Grants

In BMC International Health and Human Rights 2009, 9(Suppl 1)

Consolidated Abstracts, July 2009

Introduction

Sharmila L Mhatre and Anne-Marie Schryer-Roy, The fallacy of coverage: uncovering disparities to improve immunization rates through evidence. Results from the Canadian International Immunization Initiative Phase 2 – Operational Research Grants

Immunization can and does save lives. However, the presence of vaccines does not easily translate into every child being vaccinated, and this is what the studies in this journal supplement reveal. From South Asia to West Africa, the evidence presented here reveals what we are calling the fallacy of coverage, going beyond uncovering the real vaccination rates to providing evidence on the reasons for the lack of effective coverage.

The evidence for the fallacy of coverage is part of an operational research program entitled the Canadian International Immunization Initiative Phase 2 (CIII2). Through a competitive peer review process, six research grants were awarded to increase access to and enhance immunization services. This journal supplement provides a forum for the presentation of the results of five of the six studies.

The story of the fallacy of coverage is made up of five theme areas of evidence – timeliness of immunization, social and gender inequities, vaccine efficacy, understanding demand side issues to tailor interventions, and national data sets masking actual district level coverage rates – that reveals the discrepancies in immunization coverage rates and the reasons behind these discrepancies. As part of the story, and to turn around the fallacy of coverage, the studies also provide proof of effective and locally relevant solutions.

Policies and funding, while keeping an eye on future diseases, clearly need to maintain and increase support to address existing vaccine-preventable diseases to increase coverage such that by 2015 we can achieve 90% national vaccination coverage and reach the MDG of reducing mortality rates among children under five by two-thirds. The results from the operational research grants of the CIII2 offer some answers on how to reach this goal by demonstrating how locally-generated evidence can inform immunization strategies to ensure that children who need to get vaccinated will get vaccinated, and vaccinated on time.

Opinion piece

Duclos P et al., Global immunization: status, progress, challenges and future

Vaccines have made a major contribution to public health, including the eradication of one
deadly disease, small pox, and the near eradication of another, poliomyelitis. Through the introduction of new vaccines, such as those against rotavirus and pneumococcal diseases, and with further improvements in coverage, vaccination can significantly contribute to the achievement of the health-related United Nations Millennium Development Goals. The Global Immunization Vision and Strategy (GIVS) was developed by WHO and UNICEF as a framework for strengthening national immunization programmes and protect as many people as possible against more diseases by expanding the reach of immunization, including new vaccines, to every eligible person. This paper briefly reviews global progress and challenges with respect to public vaccination programmes.

The most striking recent achievement has been that of reduction of global measles mortality from an estimated 750,000 deaths in 2000 down to 197,000 in 2007. Global vaccination coverage trends continued to be positive. In 2007 most regions reached more than 80% of their target populations with three doses of DPT containing vaccines. However, the coverage remains well short of the 2010 goal on 90% coverage, particularly in the WHO region of Africa (estimated coverage 74%), and South-East Asia, (estimated coverage 69%). Elements that have contributed to the gain in immunization coverage include national multi-year planning, district-level planning and monitoring, re-establishment of outreach services and the establishment of national budget lines for immunization services strengthening.

Remaining challenges include the need to: develop and implement strategies for reaching the difficult to reach; support evidence-based decisions to prioritize new vaccines for introduction; strengthening immunization systems to deliver new vaccines; expand vaccination to include older age groups; scale up vaccine preventable disease surveillance; improve quality of immunization coverage monitoring and use the data to improve programme performance; and explore financing options for reaching the GIVS goals, particularly in lower-middle income countries.

Although introduction of new vaccines is important, this should not be at the expense of sustaining existing immunization activities. Instead the introduction of new vaccine introduction should be viewed as an opportunity to strengthen immunization systems, increase vaccine coverage and reduce inequities of access to immunization services.

Project Title: “Development, validation and implementation of simple household instruments to measure immunization-related childhood mortality among 7.6 million people in India followed from 2004-2015” (India)

Pl: Prabhat Jha

(1 article)

Corsi et al, Gender inequity and age-appropriate immunization coverage in India from 1992 to 2006

Abstract

Background: A variety of studies have considered the affects of India’s son preference on gender differences in child mortality, sex ratio at birth, and access to health services. Less research has focused on the affects of son preference on gender inequities in immunization coverage and how this may have varied with time, and across regions and with sibling compositions. We present a systematic examination of trends in immunization coverage in India, with a focus on inequities in coverage by gender, birth order, year of birth, and state.
Methods: We analyzed data from three consecutive rounds of the Indian National Family Health Survey undertaken between 1992 and 2006. All children below five years of age with complete immunization histories were included in the analysis. Age-appropriate immunization coverage was determined for the following antigens: bacille Calmette-Guérin (BCG), oral polio (OPV), diphtheria, pertussis (whooping cough) and tetanus (DPT), and measles.

Results: Immunization coverage in India has increased since the early 1990s, but complete, age-appropriate coverage is still under 50% nationally. Girls were found to have significantly lower immunization coverage (p<0.001) than boys for BCG, DPT, and measles across all three surveys. By contrast, improved coverage of OPV suggests a narrowing of the gender differences in recent years. Girls with a surviving older sister were less likely to be immunized compared to boys, and a large proportion of all children were found to be immunized considerably later than recommended.

Conclusions: Gender inequities in immunization coverage are prevalent in India. The low immunization coverage, the late immunization trends and the gender differences in coverage identified in our study suggest that risks of child mortality, especially for girls at higher birth orders, need to be addressed both socially and programmatically.

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Cockcroft et al., One size does not fit all: local determinants of measles vaccination in four districts of Pakistan

Abstract

Background: Rates of childhood vaccination in Pakistan remain low. There is continuing debate about the role of consumer and service factors in determining levels of vaccination in developing countries.

Methods: In a stratified random cluster sample of census enumeration areas across four districts in Pakistan, household interviews about vaccination of children and potentially related factors with 10,423 mothers of 14,542 children preceded discussion of findings in separate male and female focus groups. Logistic regression analyses helped to clarify local determinants of measles vaccination.

Results: Across the four districts, from 17% to 61% of mothers had formal education and 50% to 86% of children aged 12-23 months had received measles vaccination. Children were more likely to receive measles vaccination if the household was less vulnerable, if their mother had any formal education, if she knew at least one vaccine-preventable disease, and if she had not heard of any bad effects of vaccination. Discussing vaccinations in the family was strongly associated with vaccination. In rural areas, living within 5 km of a vaccination facility or in a community visited by a vaccination team were associated with vaccination, as was the mother receiving information about vaccinations from a visiting lady health worker. Focus groups confirmed personal and service delivery obstacles to vaccination, in particular cost and poor access to vaccination services. Despite common factors, the pattern of variables related to measles vaccination differed between and within districts.

Conclusions: Vaccination coverage varies from district to district in Pakistan and between urban and rural areas in any district. Common factors are associated with vaccination, but
their relative importance varies between locations. Good local information about vaccination rates and associated variables is important to allow effective and equitable planning of services.

Shea et al., *Increasing the demand for childhood vaccination in developing countries: a systematic review*

**Abstract**

**Background:** Attempts to maintain or increase vaccination coverage almost all focus on supply side interventions: improving availability and delivery of vaccines. The effectiveness and cost effectiveness of efforts to increase demand is uncertain.

**Methods:** We performed a systematic review of studies that provided quantitative estimates of the impact of demand side interventions on uptake of routine childhood vaccination. We retrieved studies published up to Sept 2008.

**Results:** The initial search retrieved 468 potentially eligible studies, including four systematic reviews and eight original studies of the impact of interventions to increase demand for vaccination. We identified only two randomised controlled trials. Interventions with an impact on vaccination uptake included knowledge translation (KT) (mass media, village resource rooms and community discussions) and non-KT initiatives (incentives, economic empowerment, household visits by extension workers). Most claimed to increase vaccine coverage by 20 to 30%. Estimates of the cost per vaccinated child varied considerably with several in the range of $10-20 per vaccinated child.

**Conclusions:** Most studies reviewed here represented a low level of evidence. Mass media campaigns may be effective, but the impact depends on access to media and may be costly if run at a local level. The persistence of positive effects has not been investigated. The economics of demand side interventions have not been adequately assessed, but available data suggest that some may be very cost-effective.

Ledogar et al., *Knowledge synthesis of benefits and adverse effects of measles vaccination: the Lasbela balance sheet*

**Abstract**

**Background:** In preparation for a cluster-randomized controlled trial of a community intervention to increase the demand for measles vaccination in Lasbela district of Pakistan, a balance sheet summarized published evidence on benefits and possible adverse effects of measles vaccination.

**Methods:** The balance sheet listed: 1) major health conditions associated with measles; 2) the risk among the unvaccinated who contract measles; 3) the risk among the vaccinated; 4) the risk difference between vaccinated and unvaccinated; and 5) the likely net gain from vaccination for each condition.

**Results:** Two models revealed very different projections of net gain from measles vaccine. A Lasbela-specific combination of low period prevalence of measles among the unvaccinated, medium vaccination coverage and low vaccine efficacy rate, as revealed by the baseline survey, resulted in less-than-expected gains attributable to vaccination. Modelled on estimates where the vaccine had greater efficacy, the gains from vaccination would be more substantial.

**Conclusions:** Specific local conditions probably explain the low rates among the unvaccinated while the high vaccine failure rate is likely due to weaknesses in the vaccination delivery system. Community perception of these realities may have had some role in household decisions about whether to vaccinate, although the major discouraging
factor was inadequate access. The balance sheet may be useful as a communication tool in other circumstances, applied to up-to-date local evidence.

Mitchell et al. *Equity and vaccine uptake: a cross-sectional study of measles vaccination in Lasbela District, Pakistan*

**Abstract**

**Background:** Achieving equity means increased uptake of health services for those who need it most. But the poorest families continue to have the poorest service. In Pakistan, large numbers of children do not access vaccination against measles despite the national government’s effort to achieve universal coverage.

**Methods:** A cross-sectional study of a random sample of 23 rural and 9 urban communities in the Lasbela district of south Pakistan, explored knowledge, attitudes and discussion around measles vaccination. Several socioeconomic variables allowed examination of the role of inequities in vaccination uptake; 2479 mothers provided information about 4007 children aged 10 to 59 months. A Mantel-Haenszel stratification analysis, with and without adjustment for clustering, clarified determinants of measles vaccination in urban and rural areas.

**Results:** A high proportion of mothers had appropriate knowledge of and positive attitudes to vaccination; many discussed vaccination, but only one half of children aged 10-59 months accessed vaccination. In urban areas, having an educated mother, discussing vaccinations, having correct knowledge about vaccinations, living in a community with a government vaccination facility within 5 km, and living in houses with better roofs were associated with vaccination uptake after adjusting for the effect of each of these variables and for clustering; maternal education was an equity factor even among those with good access. In rural areas, the combination of roof quality and access (vaccination post within 5 km) along with discussion about vaccines and knowledge about vaccines had an effect on uptake.

**Conclusions:** Stagnating rates of vaccination coverage may be related to increasing inequities. A hopeful finding is that discussion about vaccines and knowledge about vaccines had a positive effect that was independent of the negative effect of inequity – in both urban and rural areas. At least as a short term strategy, there seems to be reason to expect an intervention increasing knowledge and discussion about vaccination in this district might increase uptake.

Andersson et al. *Discussion doubles childhood vaccination: a randomised cluster controlled trial of knowledge translation in Pakistan*

**Abstract**

**Background:** Childhood vaccination rates are low in Lasbela, one of the poorest districts in Pakistan’s Balochistan province. This randomised cluster controlled trial tested the effect on uptake of informed discussion of vaccination costs and benefits, without relying on improved health services.

**Methods:** Following a baseline survey of randomly selected representative census enumeration areas, a computer generated random number sequence assigned 18 intervention and 14 control clusters. The intervention comprised three structured discussions separately with male and female groups in each cluster. The first discussion shared findings about vaccine uptake from the baseline study; the second focussed on the costs and benefits of childhood vaccination; the third focussed on local action plans. Field teams encouraged the group participants to spread the dialogue to households in their communities. Both intervention and control clusters received a district-wide health promotion programme
emphasizing household hygiene. Interviewers in the household surveys were blind of intervention status of different clusters. A follow-up survey after one year measured impact of the intervention on uptake of measles and full DPT vaccinations of children aged 12-23 months, as reported by the mother or caregiver.

**Results:** In the follow-up survey, measles and DPT vaccination uptake among children aged 12-23 months (536 in intervention clusters, 422 in control clusters) was significantly higher in intervention than in control clusters, where uptake fell over the intervention period. Adjusting for baseline differences between intervention and control clusters with generalized estimating equations, the intervention doubled the odds of measles vaccination in the intervention communities (OR 2.20, 95% CI 1.24-3.88). It trebled the odds of full DPT vaccination (OR 3.36, 95% CI 2.03-5.56).

**Conclusion:** The relatively low cost knowledge translation intervention significantly increased vaccine uptake, without relying on improved services, in a poor district with limited access to services. This could have wide relevance in increasing coverage in developing countries.

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**Project Title:** “Expérimentation d’une stratégie d’amélioration de la couverture vaccinale des enfants de 0 à 11 mois dans le district sanitaire de Nouna” (Burkina Faso)

PI: Gilles Bibeau
(2 articles)

**Dugas et al., Portrait of a Lengthy Vaccination Trajectory in Burkina Faso: From Cultural Acceptance of Vaccines to Actual Immunization**

**Abstract**

**Background:** The global recognition of vaccination is strongly related to the fact that it has proved in the past able to dramatically reduce the incidence of certain diseases. Nevertheless, reactions regarding the practice of vaccination still vary among communities, affecting the worldwide vaccination coverage. Numerous studies, conducted from varying perspectives, have focused on explaining this active refusal or resistance to vaccination. Although in some cases low immunization coverage has been well explained by active refusal or resistance to vaccination, little is known about the reasons for low coverage where those reactions are absent or play a minor role, especially outside an epidemic context. This study attempts to explain this situation, which is found in the health district of Nouna in Burkina Faso.

**Methods:** An in-depth ethnographic study was undertaken in the health district of Nouna in an effort to understand, from an anthropological point of view, the logic behind the parental decision-making process regarding the vaccination or non-vaccination of children, in a context where rejection of, and reservations concerning vaccination are not major obstacles.

**Results:** Three elements emerged from the analysis: the empirical conceptions of childhood diseases, the perceived efficacy of vaccine and the knowledge of appropriate age for vaccination uptake; the gap between the decision-making process and the actual achievement of vaccination; and the vaccination procedure leading to vaccination uptake in the particular context of the health district of Nouna.

**Conclusions:** The procedures parents must follow in order to obtain vaccination for their children appear complex and constraining, and on certain points discord with the traditional systems of meaning and idioms of distress related to pregnancy, the prevention of childhood diseases and with the cultural matrix shaping decision-making and behaviour. Attention needs to be directed at certain promotional, logistical and structural elements, and at the procedure that must currently be followed to obtain vaccination for a child during routine
Sanou et al., *Assessment of factors associated with complete immunization coverage in children aged 12-23 months: a cross-sectional study in Nouna district, Burkina Faso*

**Abstract**

**Background:** The Expanded Program on Immunization (EPI) is still in need of improvement. In Burkina Faso in 2003, for example, the Nouna health district had an immunization coverage rate of 31.5%, compared to the national rate of 52%. This study identifies specific factors associated with immunization status in Nouna health district in order to advance improved intervention strategies in this district and in those with similar environmental and social contexts.

**Methods:** A cross-sectional study was undertaken in 41 rural communities and one semi-urban area (*urban in the text*). Data on 476 children aged 12 to 23 months were analyzed from a representative sample of 489, drawn from the Nouna Health Research Centre’s Demographic Surveillance System (DSS) database. The vaccination history of these children was examined. The relationships between their immunization status and social, economic and various contextual variables associated with their parents and households were assessed using Chi square test, Pearson correlation and logistic regression.

**Results:** The total immunization coverage was 50.2% (CI, 45.71; 54.69). Parental knowledge of the preventive value of immunization was positively related to complete immunization status (*p* = 0.03) in rural areas. Children of parents who reported a perception of communication problems surrounding immunization had a lower immunization coverage rate (*p* <0.001). No distance related difference exists in terms of complete immunization coverage within villages and between villages outside the site of the health centres. Children of non-educated fathers in rural areas have higher rates of complete immunization coverage than those in the urban area (*p* = 0.028). Good communication about immunization and the importance of availability of immunization booklets, as well as economic and religious factors appear to positively affect children’s immunization status.

**Conclusions:** Vaccination sites in remote areas are intended to provide a greater opportunity for children to access vaccination services. These efforts, however, are often hampered by the poor economic conditions of households and insufficient communication and knowledge regarding immunization issues. While comprehensive communication may improve understanding about immunization, it is necessary that local interventions also take into account religious specificities and critical economic periods. Particular approaches that take into consideration these distinctions need to be applied in both rural and urban settings.
recently implemented to strengthen performance of immunization programs. A range of measures were taken to ensure that immunization managers carry out their activities effectively through direct, personal contact on a regular basis to guide, support and assist designated health care facility staff to become more competent in their immunization work. The aim of this study was to document the effects of “supportive” supervision on the performance of the immunization program at the district(s) level in Georgia.

Methods: A pre-post experimental research design is used for the quantitative evaluation. Data come from baseline and follow-up surveys of health care providers and immunization managers in 15 intervention and 15 control districts. These data were supplemented by focus group discussions amongst Centre of Public Health and health facility staff.

Results: The results of the study suggest that the intervention package resulted in a number of expected improvements. Among immunization managers, the intervention independently contributed to improved knowledge of supportive supervision, and helped remove self perceived barriers to supportive supervision such as availability of resources to supervisors, lack of a clear format for providing supportive supervision, and lack of recognition among providers of the importance of supportive supervision. The intervention independently contributed to relative improvements in district-level service delivery outcomes such as vaccine wastage factors and the DPT-3 immunization coverage rate. The clear positive improvement in all service delivery outcomes across both the intervention and control districts can be attributed to an overall improvement in the Georgian population’s access to health care.

Conclusions: Provider-based interventions such as supportive supervision can have independent positive effects on immunization program indicators. Thus, it is recommended to implement supportive supervision within the framework of national immunization programs in Georgia and other countries in transition with similar institutional arrangements for health services organization.

Project Title: “Equité d’accès et immunisation en Afrique de l'Ouest. Partenariat de recherche Canada – Burkina Faso – Bénin – Mali” (Burkina Faso, Bénin, Mali)
PI: Slim Haddad
(4 articles)

Bicaba et al., Monitoring the performance of the Expanded Program on Immunization: the case of Burkina Faso

Background: The greatest challenge facing expanded programs on immunization in general, and in Burkina Faso in particular, lies in their capacity to achieve and sustain levels of immunization coverage that will ensure effective protection of children. This article aims to demonstrate that full immunization coverage of children, which is the primary indicator for monitoring national immunization programs, is sufficient neither to evaluate their performance adequately, nor to help identify the broad strategies that must be implemented to improve their performance. Other dimensions of performance, notably adherence to the vaccination schedule and the efficacy of the approaches used to reach all the children (targeting) must also be considered.

Methods: The study was carried out using data from surveys carried out in Burkina Faso: the 1993, 1998 and 2003 Demographic and Health Surveys and the 2003 national Survey of Immunization Coverage. Essentially, we described levels of immunization coverage and their trends according to the indicators considered. Performance differences are illustrated by amplitudes and maximum/minimum ratios.
**Results:** The health regions’ performances vary according to whether they are evaluated on the basis of full immunization coverage or vaccination status of children who have not completed their vaccinations. The health regions encompass a variety of realities, and efforts of substantially different intensity would be required to reach all the target populations.

**Conclusions:** Decision-making can be improved by integrating a tripartite view of performance that includes full immunization coverage, adherence to the vaccination schedule (timely coverage), and the status of children who are not fully vaccinated. With such an approach, interventions can be better targeted. It provides information on the quality and timeliness of vaccination and identifies the efforts required to meet the objectives of full immunization coverage.

**Koumare et al., Evaluation of immunization coverage within the Expanded Program of Immunization in Kita Cercle, Mali: a cross-sectional survey**

**Abstract**

**Background:** In 1986, the Government of Mali launched its Expanded Program on Immunization (EPI) with the goal of vaccinating, within five years, 80% of all children under the age of five against six target diseases: diphtheria, tetanus, pertussis, poliomyelitis, tuberculosis, and measles. The Demographic and Health Survey carried out in 2001 revealed that, in Kita Circle, in the Kayes region, only 13% of children aged 12 to 23 months had received all the EPI vaccinations. A priority program was implemented in 2003 by the Regional Health Department in Kayes to improve EPI immunization coverage in this area.

**Methods:** A cross-sectional survey using Henderson’s method (following the method used by the Demographic and Health Surveys) was carried out in July 2006 to determine the level of vaccination coverage among children aged 12 to 23 months in Kita Circle, after implementation of the priority program. Both vaccination cards and mothers’ declarations (in cases where the mother cannot make the declaration, it is made by the person responsible for the child) were used to determine coverage.

**Results:** According to the vaccination cards, 59.9% [CI 95% (54.7–64.8)] of the children were fully vaccinated, while according to the mothers’ declarations the rate was 74.1% [CI 95% (69.3–78.4)]. The drop-out rate between DTCP1 and DTCP3 was 5.5%, according to the vaccination cards. The rate of immunization coverage was higher among children whose mothers had received the antitetanus vaccine [OR = 2.1, CI 95% (1.44–3.28)]. However, our study found no difference associated with parents’ knowledge about EPI diseases, distance from the health centre, or socio-economic status. Lack of information was one reason given for children not being vaccinated against the six EPI diseases.

**Conclusions:** Three years after the implementation of the priority program (which included decentralization, the active search for missing children, and deployment of health personnel, material and financial resources), our evaluation of the vaccination coverage rates shows that there is improvement in the EPI immunization coverage rate in Kita Circle. The design of our study did not, however, enable us to determine the extent to which different aspects of the program contributed to this increase in coverage. Efforts should nevertheless be continued, in order to reach the goal of 80% immunization coverage.

**Fourn et al., Determinants of parents’ reticence toward vaccination in urban areas in Benin (West Africa)**

**Abstract**

**Background:** Despite the efforts of health authorities, vaccination coverage of targeted child populations is still poor in many regions. Parents’ reticence has been identified as one cause
of this situation. However, there is little data to explain the phenomenon that could support decision-making.

**Objective:** The objective of the study was to uncover the determinants of this reticence toward vaccination among the religious population of the cities of Parakou and Cotonou in Benin.

**Methods:** This was an exploratory study using a qualitative survey of 12 pastors and 30 faithful from churches that are vaccination-retticent and a control group of the same number of faithful belonging to other churches, all Christian. Individual and group interviews were carried out in the local language using a pre-established and pre-tested guide. The data collected underwent discourse content analysis focused on specific themes.

**Results:** Analysis of the data reveals an erroneous perception of child vaccination. Those who are reticent say vaccination goes against the will of God, that it is a poison from the “white witch doctor”, and that those who vaccinate their children are committing a sin. Members of the control group argued against this, but without conviction. They adhere to the principle of obedience to authority, a biblical precept invoked when the vaccinators oblige them to vaccinate their children. Other factors were identified that could explain the reticence, such as the tactlessness of the vaccinators, parents’ previous experiences and false rumours about vaccination.

**Conclusions:** The reasons for reticence are mainly related to parents’ beliefs in religious principles that are sometimes poorly understood. To limit the spread of this phenomenon, more detailed information and negotiation between the health authorities and the pastors of these churches are essential.

**Haddad et al., System-level determinants of immunization coverage disparities among health districts in Burkina Faso: a multiple case study**

**Abstract**

**Background:** Despite rapid and tangible progress in vaccine coverage and in premature mortality rates registered in sub-Saharan Africa, inequities to access remain firmly entrenched, large pockets of low vaccination coverage persist, and coverage often varies considerably across regions, districts, and health facilities’ areas of responsibility. This paper focuses on system-related factors that can explain disparities in immunization coverage among districts in Burkina Faso.

**Methods:** A multiple-case study was conducted of six districts representative of different immunization trends and overall performance. A participative process that involved local experts and key actors led to a focus on key factors that could possibly determine the efficiency and efficacy of district vaccination services: occurrence of disease outbreaks and immunization days, overall district management performance, resources available for vaccination services, and institutional elements. The methodology, geared toward reconstructing the evolution of vaccine services performance from 2000 to 2006, is based on data from documents and from individual and group interviews in each of the six health districts. The process of interpreting results brought together the field personnel and the research team.

**Results:** The districts that perform best are those that assemble a set of favourable conditions. However, the leadership of the district medical officer (DMO) appears to be the main conduit and the rallying point for these conditions. Typically, strong leadership that is recognized by the field teams ensures smooth operation of the vaccination services, promotes the emergence of new initiatives and offers some protection against risks related to outbreaks of epidemics or supplementary activities that can hinder routine functioning. The same is true for the ability of nurse managers and their teams to cope with new situations (epidemics, shortages
of certain stocks).

**Conclusions:** The discourse on factors that determine the performance or breakdown of local health care systems in lower and middle income countries remains largely concentrated on technocratic and financial considerations, targeting institutional reforms, availability of resources, or accessibility of health services. The leadership role of those responsible for the district, and more broadly, of those we label “the human factor”, in the performance of local health care systems is mentioned only marginally. This study shows that strong and committed leadership promotes an effective mobilization of teams and creates the conditions for good performance in districts, even when they have only limited access to supports provided by external partners.