5. *Report of evaluation of Reaching Every District approach in five countries*. Brazzaville: WHO Regional Office for Africa, 2005 [unpublished document].
6. WHO vaccine-preventable diseases: monitoring system: 2006 global summary. Geneva: WHO; 2006 (WHO/IVB/2006). Available from: http://www.who.int/immunization_monitoring/data/en/

Health insurance in sub-Saharan Africa: a call for subsidies

De Allegri et al.[1] rightly describe low enrolment as a principal problem related to the functioning of community health insurance (CHI) in sub-Saharan Africa. Furthermore, they identify a set of important factors affecting the decision to enrol. Nonetheless, on reflection about the evidence established by this paper and related research, I would like to suggest some additional considerations.

First of all, the described (and not too surprising) fact that the educational and, importantly, the socioeconomic status of a household play predominant roles in the decision of whether to enrol in health insurance is depicted by a series of articles[2] as well as several systematic article reviews.[3] Some of them are quoted by the authors themselves.[4,5]

Second, the consistency of this observation and the clear-cut cause–effect relationship between socioeconomic well being and the readiness to embark on an expenditure (be it for health insurance or anything else) allow the conclusion that wealth is a fundamental predictive factor for enrolment into health insurance.

Third, if then poverty can be understood as a risk factor for *not* embarking into health insurance, the discussion around an insurance approach for the poor should focus very much on the following three questions: What percentage of the population targeted by the envisaged or existing insurance scheme are too poor to enrol on their own? By which kind of corrective measures can they be included? What consequences do these measures have for the financial viability of the scheme?

Two recent analyses from Ghana[6] and Rwanda[7] suggest that the capacity of households to contribute financially is so weak that the dual objectives of mobilizing significant resources for health on one side, and of covering a large percentage of the targeted rural population on the other, are mutually exclusive. That is to say that insurance schemes requiring a contribution of little more than a few US dollars per year are beyond the reach of the majority, but they still do not allow the financing of reasonable (and thus attractive) health services! Furthermore, schemes charging about ten times such an amount are still affordable by a considerable minority of the population and maximize resource mobilization in absolute terms. This phenomenon is explained largely by the highly skewed distribution of wealth in the settings studied (as expressed equally by a high Gini coefficient). This finding seems to be one of the main reasons underlying the aforementioned low enrolment rate scrutinized by De Allegri et al. In many countries in sub-Saharan Africa, health insurance schemes might find themselves in a tragic situation: Depending on the design, people are either unable to pay for the schemes, or the schemes are unable to pay for the envisaged services.

Therefore, it is suggested that future research go beyond the identification of additional predictive factors for health insurance enrolment. If health insurance is to cover broader population strata in sub-Saharan Africa and to assure satisfactory health services, schemes will require continuous and long-term subsidies to bridge the gap between household capacity to contribute financially and the real costs of health care. The development of approaches addressing this dilemma should be considered as a research priority. They might include initiatives of north–south risk pooling as between the Netherlands and Ghana.[8] This necessity is underpinned by the capacity of health insurance to formalize social protection and to create a market between health service providers and their "customers", simultaneously alleviating poverty and empowering communities. Yet, available evidence points out that to play these roles, health insurance needs subsidies. ■

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References

1. De Allegri M, Kouyaté B, Becher H, Gbangou A, Pokhrel S, Sanon M. et al. Understanding enrolment in community health insurance in sub-Saharan Africa: a population-based case-control study in rural Burkina Faso. *Bull World Health Organ* 2006;11:852-8.
2. Musango L, Dujardin B, Dramaix M, Criel B. Les profils des membres et non membres des mutuelles de santé au Rwanda: le cas du district sanitaire de Kabutare. *Trop Med Int Health* 2004;9:1222-7. PMID:15548320 doi:10.1111/j.1365-3156.2004.01318.x
3. Preker AS, Carrin G, Dror D, Jakab M, Hsiao W, Arhin-Tenkorang D. Effectiveness of community health financing in meeting the cost of illness. *Bull World Health Organ* 2002;80:143-50. PMID:11953793
4. Ekman B. Community-based health insurance in low-income countries: a systematic review of the evidence. Health Policy Plan 2004;19:249-71. PMID:15310661 doi:10.1093/heapol/czh031
5. Walkens MP, Criel B. *Les mutuelles de santé en Afrique sub-Saharienne – Etat de lieu et réflexion sur un agenda de recherche*. Washington, DC: World Bank; 2004 [Health, Nutrition and Population Discussion Paper].
6. Arhin-Tenkorang D. Experience of community health financing in the African region. In: *Health financing for poor people: resource mobilization and risk sharing*. Washington, DC: World Bank; 2004.
7. Schmidt JO, Mayindo JK, Kalk A. Thresholds for health insurance in Rwanda: who should pay how much? *Trop Med Int Health* 2006;11:1327-33. PMID:16903895 doi:10.1111/j.1365-3156.2006.01661.x
8. Improving social protection for the poor: *health insurance in Ghana – The Ghana social trust pre-pilot project*. Geneva: International Labour Organization; 2005.

Anti-tuberculosis medication side-effects constitute major factor for poor adherence to tuberculosis treatment

Two significant issues that require further clarification in Garner et al.'s stimulating paper (*Promoting adherence to tuberculosis treatment*[1]) are the impact of medication side-effects on treatment adherence as well as how adherence to tuberculosis (TB) chemotherapy should be defined and monitored. The treatment regimen recommended

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within the DOTS approach is associated with significant side-effects. Side-effects such as hepatitis, dyspepsia, exanthema and arthralgia were responsible for termination of therapy in up to 23% of patients during the intensive phase.[2] Medication side-effects were also found to be significantly associated with defaulting.[3] At Kyrgyzstan prisons, where the author worked as a TB doctor in early 2007, medication side-effects were among the most common reasons for patient non-attendance at DOTS clinics. The author observed similar non-attendance and defaulting trends among community-based TB patients in northern Nigeria during the 1990s. The side-effects profile of TB chemotherapy is magnified in patients with concurrent HIV treatment and/or prior history of hepatitis,[4] and those being treated with second-line drugs for multidrug-resistant TB, during which as many as 86% of patents may develop medication side-effects.[5,6] To minimize the adverse impact of medication side-effects in TB treatment adherence, it is important that TB health staff are adequately trained on their recognition and management. Such training should include how to provide concise pretreatment counselling to patients on possible side-effects of treatment.[7] It is also important that medications for managing side-effects should be ordered concurrently with the ordering of anti-TB chemotherapy to facilitate timely and adequate treatment of such side-effects.

The DOTS strategy contains elements of adherence and compliance. While these terms were initially used synonymously and are still commonly used interchangeably in TB literature, they have subtle but noteworthy significant differences. The term "adherence" (or "patient-centred compliance"[8]) refers to the extent to which patients follow a prescribed regimen. It implies a more active and collaborative involvement of patients working with health-care providers in managing their treatment. "Adherence" is currently preferred to "compliance" in medical literature as it portrays a more respectful and active role of the patient in disease management. It captures the increasing complexity of TB chemotherapy by characterizing patients as independent, intelligent and autonomous people who take active and voluntary roles in defining and pursuing goals for their medical treatment. The extent of treatment adherence may be facilitated by positive or negative attributes related to health system, social/family issues, personal factors, and drug factors (e.g. medication side-effects are negative drug attributes while a fixed-dose combination is a positive drug attribute in relation to treatment adherence). Empowerment of people with TB, and communities, through advocacy, communication and social mobilization as well as patient and community participation in TB care are important in facilitating treatment adherence using the DOTS approach.[9]

In exceptional situations, the DOTS approach of facilitating adherence might not achieve its objectives, since patients need to make themselves available for treatment and are less likely to do so if they are imprisoned, suffer medication side-effects or experience homelessness, drug addiction, unemployment or alcoholism.[4,10] In Kyrgyzstan prisons, the practice of self-administered anti-TB treatment on weekends was discontinued in March 2007 due to repeated documented evidence that many patients were trafficking their weekend TB medications, despite concerted efforts aimed at enhancing patient empowerment and peer support.

The most cited definition of treatment compliance is by Haynes – "the extent to which a person's behaviour (in terms of taking medication following diets, or executing lifestyle changes) coincides with medical or health advice".[11] "Compliance" may be used to describe the "right of public health authorities to demand adherence"[1] such as by compelling patients to take TB chemotherapy using Public Health Detention Orders.[12] Or it may be used as a framework to evaluate adherence. For example, patients who adhere to TB medication as prescribed 95% of the time are said to demonstrate high compliance, while patients who adhere for 40% of the time are said to demonstrate low compliance.

The World Health Organization defines a TB treatment defaulter as a patient whose treatment was interrupted for two consecutive months or more. It indicates a closure of the current treatment, and documents that patients' compliance has been 0% for so long. As with HIV treatment, TB therapy requires high (> 90%) compliance to facilitate cure. Good adherence results in high compliance and absence of treatment default. Default rate is a crude approach to adherence monitoring, since it does not really reveal why the patient interrupted treatment for 2 or more consecutive months. Promptly implementing compliance assurance measures provide for better adherence monitoring than defaulter tracing, provided that a baseline compliance level is set at which investigation of the reasons for poor adherence can be undertaken. Currently at the Kyrgyzstan prison TB project, we undertake investigation of reasons for poor adherence if a patient misses at least two doses of anti-TB treatment in a week. This "patient contact" baseline period is in line with the maximum duration of non-adherence that will adversely impact on the efficacy of treatment.[13] ■

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References

1. Garner P, Smith H, Munro S, Volmink J. Promoting adherence to tuberculosis treatment. *Bull World Health Organ* 2007;85:404-6. PMID:17639229 doi:10.2471/BLT.06.035568
2. Schaberg T, Rebham K, Lode H. Risk factors for side-effects of isoniazid, rifampicin and pyrazinamide in patients hospitalized for pulmonary tuberculosis. *Eur Respir J* 1996;9:2026-30. PMID:8902462 doi:10.1183/09031936.96.09102026
3. Tekle B, Mariam DH, Ali A. Defaulting from DOTS and its determinants in three districts of Arsi zone in Ethiopia. *Int J Tuberc Lung Dis* 2002;6:573-9. PMID:12102295
4. Fry RS, Khoshnood K, Vdovichenko E, Granskaya J, Sazhin V, Shpakovskaya L, et al. Barriers to completion of tuberculosis treatment among prisoners in St. Petersburg, Russia. *Int J Tuberc Lung Dis* 2005;9:1027-33. PMID:16158896
5. Torun T, Gungor O, Ozmen I, Bolukbasi Y, Maden E, Bicakci B, et al. Side effects associated with the treatment of multi-drug resistant tuberculosis. *Int J Tuberc Lung Dis* 2005;9:1373-7. PMID:16468160

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6. Leimane V, Riekstina V, Holtz TH, Zarovska V, Skripconoka L, Thorpe K, et al. Clinical outcome of individualized treatment of multi-drug resistant tuberculosis in Latvia: a retrospective cohort study. *Lancet* 2005;365:318-26. PMID:15664227
7. *Self-study modules on tuberculosis: patient adherence to tuberculosis treatment.* Washington, DC: National Center for HIV, STD and TB Prevention, US Department of Health and Human Services; 1999. Available from: http://www.cdc.gov/tb/pubs/ssmodules/pdfs/9.pdf
8. Conrad P. The meaning of medication: another look at compliance. *Soc Sci Med* 1985;20:29-37. PMID:3975668 doi:10.1016/0277-9536(85)90308-9
9. *Building on and enhancing DOTS to meet the TB-related Millennium Development Goals.* Geneva: WHO: 2006. Available from: http://www.who.int/tb/publications/2006/who_htm_tb_2006_368.pdf
10. Khan MA, Walley JD, Witter SN, Shah SK, Javeed S. Tuberculosis patient adherence to direct observation: results of a social study in Pakistan. *Health Policy Plan* 2005;20:354-65. PMID:16183735 doi:10.1093/heapol/czi047
11. Haynes RB. Determinants of compliance: the disease and the mechanics of treatment. In: *Compliance in Health.* Baltimore: Johns Hopkins University Press; 1979.
12. Senanayake SN, Ferson MJ. Detention for tuberculosis: public health and the law. *Med J Aus.* 2004;180:573-6.
13. Frieden T. What is intermittent treatment and what is the scientific basis for intermittency. In: *Toman's tuberculosis: case detection, treatment and monitoring.* Geneva: WHO; 2004.

Response to opt-out approach to prevent mother-to-child transmission of HIV

I read with great interest the paper on routine HIV testing for pregnant women in Zimbabwe by Winfreda Chandisarewa et al.[1] The paper reported a significant increase in the acceptance of PMTCT (preventing mother-to-child transmission) services such as HIV testing, counselling and follow-up after the introduction of routine HIV testing ("opt-out" approach).

However, the conclusion that the opt-out approach for HIV testing was operationally feasible and acceptable to all women, and that HIV-infected women reported relatively low levels of spousal abuse and other adverse social consequences, seems to be overstated. Results from a survey of the tested mothers indicated that approximately 10% of those women who disclosed their test results still experienced negative effects. These findings hardly indicate "low levels of spousal abuse and other adverse social consequences" in consideration of these women's personal safety.

It is necessary to evaluate the opt-out approach for HIV testing by comparing the incidence of adverse effects with mothers who opted-in to HIV testing to conclude whether the benefit of the opt-out approach outweighs the risk. More importantly, more attention must be paid to the issue of domestic violence by partners after disclosure, since many cases have been reported in African countries.[2–4] In addition, the authors should show the percentage of those mothers who had been tested and counselled before the study period. As the majority of mothers in the study were reportedly multiparae, they might have been tested for HIV in previous pregnancies. Mothers re-tested during the study are likely to have experienced fewer negative effects.

Moreover, I would like to suggest that the authors provide more information on the role of the community mobilization activities conducted before the introduction of the opt-out approach. Barriers and predictors to HIV testing have been investigated to improve the acceptance of HIV testing in PMTCT services.[5,6] This research shows that community activities play an important role in clearing some of the barriers to testing and counselling services, therefore providing an entry point to prevention and care services including PMTCT. These activities, together with high-quality counsellors, might have contributed to increasing the acceptance of HIV testing and counselling and to reducing its adverse effects.

The contents of the community mobilization activities, including male involvement, could be analysed more and shared with readers, so as to provide a good model to commencing provider-initiated HIV testing and counselling (PITC) in other areas.

There have been a lot of arguments about human rights and HIV testing. However, I would like to stress that we need more good practices with successful increased uptake of PMTCT services and minimal negative impact, so as to provide practical ideas for the adaptation of the WHO guidelines on PITC at country level.[7] The activities outlined in this study, especially those conducted in the community, could help to provide such ideas. ■

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References

1. Chandisarewa W, Stranix-Chibanda L, Chirapa E, Miller A, Simoyi M, Mahomva A, et al. Routine offer of antenatal HIV testing ("opt-out" approach) to prevent mother-to-child transmission of HIV in urban Zimbabwe. *Bull World Health Organ* 2007;85:843-50. PMID:18038074
2. Baiden F, Remes P, Baiden R, Williams J, Hodgson A, Boelaert M, et al. Voluntary counseling and HIV testing for pregnant women in the Kassena-Nankana district of northern Ghana: is couple counseling the way forward? *AIDS Care* 2005;17:648-57. PMID:16036251
3. Medley A, Garcia-Moreno C, McGill S, Maman S. Rates, barriers and outcomes of HIV serostatus disclosure among women in developing countries: implications for prevention of mother-to-child transmission program. *Bull World Health Organ* 2004;82:299-307. PMID:15259260
4. Maman S, Mbwambo JK, Hogan NM, Weiss E, Kilonzo GP, Sweat MD. High rates and positive outcomes of HIV-serostatus disclosure to sexual partners: reasons for cautious optimism from a voluntary counseling and testing clinic in Dar es Salaam, Tanzania. *AIDS Behav* 2003;7:373-82. PMID:14707534 doi:10.1023/B:AIBE.0000004729.89102.d4
5. Bajunirwe F, Muzoora M. Barriers to the implementation of programs for the prevention of mother-to-child transmission of HIV: A cross-sectional survey in rural and urban Uganda. *AIDS Res Ther* 2005;2:10. doi:10.1186/1742-6405-2-10
6. Maman S, Mbwambo J, Hogan NM, Kilonzo GP, Sweat M. Women's barriers to HIV-1 testing and disclosure: challenges for HIV-1 voluntary counselling and testing. *AIDS Care* 2001; 13:595-603. PMID:11571006 doi:10.1080/09540120120063223
7. *Guidance on provider-initiated HIV testing and counselling in health facilities.* Geneva: WHO/UNAIDS; 2007. Available from: http://whqlibdoc.who.int/publications/2007/9789241595568_eng.pdf

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