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What determines providers' stated preference for the treatment of uncomplicated malaria?☆

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ABSTRACT

As agents for their patients, providers often make treatment decisions on behalf of patients, and their choices can affect health outcomes. However, providers operate within a network of relationships and are agents not only for their patients, but also other health sector actors, such as their employer, the Ministry of Health, and pharmaceutical suppliers. Providers' stated preferences for the treatment of uncomplicated malaria were examined to determine what factors predict their choice of treatment in the absence of information and institutional constraints, such as the stock of medicines or the patient's ability to pay.

518 providers working at non-profit health facilities and for-profit pharmacies and drug stores in Yaoundé and Bamenda in Cameroon and in Enugu State in Nigeria were surveyed between July and December 2009 to elicit the antimalarial they prefer to supply for uncomplicated malaria. Multilevel modelling was used to determine the effect of financial and non-financial incentives on their preference, while controlling for information and institutional constraints, and accounting for the clustering of providers within facilities and geographic areas.

69% of providers stated a preference for artemisinin-combination therapy (ACT), which is the recommended treatment for uncomplicated malaria in Cameroon and Nigeria. A preference for ACT was significantly associated with working at a for-profit facility, reporting that patients prefer ACT, and working at facilities that obtain antimalarials from drug company representatives. Preferences were similar among colleagues within a facility, and among providers working in the same locality. Knowing the government recommends ACT was a significant predictor, though having access to clinical guidelines was not sufficient.

Providers are agents serving multiple principals and their preferences over alternative antimalarials were influenced by patients, drug company representatives, and other providers working at the same facility and in the local area. Efforts to disseminate drug policy should target the full range of actors involved in supplying drugs, including providers, employers, suppliers and local communities.

Introduction

The market for health care is characterized by information asymmetry, as patients delegate decision-making and rely on providers to select as well as administer treatment (Arrow, 1963). The performance of providers in low-and-middle-income countries continues to be scrutinized and there is widespread interest in strategies to improve their practice (Rowe, de Savigny, Lanata, & Victora, 2005). In designing interventions to improve the quality of care it is important to understand what or who influences providers' treatment decisions. Structural factors are often emphasized, and providers' practice may be constrained by the availability of essential equipment, supplies and medicines (Peabody, Taguiwalo, Robalino, & Frenk, 2006), and by shortages of health professionals, as existing staff care for large volumes of patients and substitute for more senior cadres (Chen et al., 2004). There is,

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however, evidence on providers' knowledge, competence and practice demonstrating that poor resource availability and knowledge of clinical guidelines are not the only reasons why patients receive poor quality care (Das, Hammer, & Leonard, 2008; Willis-Shattuck et al., 2008).

The literature on medical practice variation examines the extent to which individual providers affect the quality of patient care. The notion of 'practice style' was introduced to describe the variation attributed to providers' preference over alternative forms of care (Wennberg, Barnes, & Zubkoff, 1982). Early studies focused on geographic variation, and showed that variations in medical practice were not fully explained by patients' health care needs and demographic characteristics (McPherson, Wennberg, Hovind, & Clifford, 1982). As the literature grew, studies investigated differences between facilities and between individual providers (Scott & Shiell, 1997a, 1997b). For example, Davis et al. examined decision-making in primary care facilities and found considerable variation between doctors in prescribing, referral for diagnostic tests and follow up having accounted for case-mix, patient, and practitioner attributes (Davis, Gribben, Scott, & Lay-Yee, 2000). Although the literature on medical practice variation is reasonably extensive, it offers limited insight into the extent to which providers' preference varies by type of organization. Moreover, most studies come from high-income countries where facilities are well-resourced and institutions monitor and regulate the quality of health care.

Providers' preference over alternative treatments is said to be revealed by their actual practice, though the choice of treatment may be constrained by other factors, such as the stock of medicines, specific information about the patient's condition or the patient's ability to pay. Stated preferences are usually used in economic studies to substitute for revealed preferences under conditions where it is not possible to capture revealed preferences (because, for example, the product in question is not available in the market). However, in some cases it may be useful to focus on stated preferences in their own right, as distinct from revealed preferences. For instance, focussing on what providers' state they prefer, rather than what they know or do, will help to determine whether an intervention that targets providers' knowledge is likely to be effective or whether additional effort is needed to change what they prefer. In other words, it is acknowledged that changing what providers prefer may not be sufficient to change actual practice, but any gap between stated and revealed preference would require supplementary interventions, such as those that address resource constraints or reduce the patients' cost of accessing care.

Providers' stated preferences for the treatment of uncomplicated malaria were examined as part of the formative stages of a study undertaken to test supply-side interventions to improve malaria diagnosis and treatment in Cameroon and Nigeria (Wiseman, Ezeoke, et al., 2012; Wiseman, Mangham, et al., 2012). Malaria places a considerable burden on the health system in sub-Saharan Africa, and is treated by providers working at a range of facilities, including private-sector pharmacies and drug stores. The clinical guidelines for malaria treatment are unambiguous, and can be used by providers with limited clinical knowledge or expertise. Artemisinin-combination therapy (ACT) is the recommended antimalarial for uncomplicated malaria and should be supplied to all patients presenting with a fever or history of fever, unless they have a negative test result or are in the first trimester of pregnancy. ACT has been the first-line antimalarial in Cameroon since 2004 and in Nigeria since 2005. In each country, the Malaria Control Programme of the Ministry of Health, at either national or state level, is responsible for disseminating malaria policy (Ministry of Health of the Federal Republic of Nigeria, 2005; Ministry of Public Health of the Republic of Cameroon, 2008). Their efforts include distributing clinical guidelines and holding training workshops. Providers in public and mission facilities have greater access to information and training, though professional associations may conduct training for staff at private-sector pharmacies and drug stores.

In this paper, we report the type of antimalarial that providers in Cameroon and Nigeria state they prefer to use to treat uncomplicated malaria. We assess whether their stated preference is consistent with their knowledge of the recommended antimalarial, and investigate who or what influences their preference over alternative antimalarials. Previous epidemiological studies from Cameroon and Nigeria have investigated the factors associated with patients receiving an ACT, though these studies do not focus on providers' preference or practice as they include patients at pharmacies and drug stores that requested specific treatment (Mangham et al., 2012, 2011). Studies from elsewhere in sub-Saharan Africa have examined providers' actual practice in treating febrile patients, though these were limited to care provided at public and mission facilities (Osterholt et al., 2006; Rowe et al., 2000; Zurovac et al., 2004). This paper complements the existing literature by investigating providers' preference using stated preference data obtained from providers working at non-profit health facilities and for-profit pharmacies and drug stores in Cameroon and Nigeria.

Theoretical considerations

Providers' preference over different types of antimalarials was examined from an economic perspective founded in agency theory. An agency relationship occurs when one individual acts on behalf of another (Shapiro, 2005), and this arises in health care interactions, including those at pharmacies and drug stores, when the patient relies on the provider to determine their health care needs (Coast, 2001). It is conventional to focus on the principal-agent relationship between patients and providers, though providers may be party to multiple agency relationships (Blomqvist, 1991). In this study, we acknowledge that providers operate within a network of relationships, and may be an agent not only for their patients but also for other actors in the health system, such as their employer, the Ministry of Health, or antimalarial supplier (Jan, 2005). Agency relationships may have a formal contract, though will often be an unwritten understanding in which the provider perceives a responsibility to act on behalf of another.

The economics literature assumes agents are rational and make choices to maximize their own utility. In standard agency theory it is assumed that agents are financially motivated and would act to obtain an optimal combination of income and leisure time, or at least achieve a threshold level of income, irrespective of the principal's preference (Evans, 1974). The provider's preferred treatment could, therefore, reflect the method of remuneration, whether the organization has a profit motive, or income from additional sources, such as secondary employment, sales commission, or ownership of private businesses (Chaix-Couturier, Durand-Zaleski, Jolly, & Durieux, 2000; Ferrinho, Van Lerberghe, Fronteria, Hipolito, & Biscaia, 2004). These influences can be considered from a static or dynamic perspective, with the latter taking into account reputation effects, in which future income depends on the amount of competition and the principal's satisfaction with the agent's current practice (Mooney & Ryan, 1993). The theory has also been extended to recognize that providers have a professional responsibility to act in the interests of the patient and may derive satisfaction from their work (Mooney & Ryan, 1993). Thus, providers' choice of treatment may reflect an intrinsic motivation not only to fulfil patients' expectations and improve patients' health, but also to satisfy their