

# Dengue and health care access: the role of social determinants of health in dengue surveillance in Colombia

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**Abstract:** Based on a first-hand experience from Colombia in the context of a local dengue research project, this paper illustrates how social determinants of health are associated with public health and how they can affect disease surveillance systems. The paper shows how various issues related to dengue case notification procedures and health insurance systems in Colombia are intertwined with more structural socio-economic factors. We argue that there is a need for public health interventions and health related research to acknowledge and consider the important role social determinants play in public health dynamics. (Global Health Promotion, 2012; 19(4): 45–50)

**Keywords:** health care access, social determinants, inequities, dengue, health coverage, Colombia

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## Introduction

Over the past years the term ‘social determinants of health’ (SDH) has gained significant prominence in health research literature. A general consensus exists (1–3) on the structural role that socio-economic factors play with regard to people’s health status and their access to health care. And yet, the implications that come with this insight are still too often overlooked in the context of health research, whether on disease control interventions or health system organization.

In their final report of 2008 (4) the WHO Commission on Social Determinants of Health described these determinants as ‘*the conditions in which people are born, grow, live, work and age*’. Conditions shaped by the distribution of money, power and resources, which are themselves influenced by policy decisions. The report demonstrates the link between social determinants and health inequalities, which are ‘*the unfair and avoidable differences in health status seen within and between countries*’. Various models (5) of social determinants point to a set of key factors which are considered to be the root of such forms of health

inequity: basic sanitation, water supply, job and education opportunities, transportation, and housing conditions (4). It is therefore argued that a basic level of equity in health and access to health care can only be guaranteed when such determinants are adequately addressed.

This paper presents a first-hand field experience from Colombia in the context of a dengue control research project, highlighting the importance of adopting an approach sensitive to social determinants when analyzing and addressing public health problems such as the control of infectious diseases. Dengue, a vector-borne disease with an increasing incidence in the tropics (6,7), is a well-recognized disease with a complex transmission cycle influenced by living conditions, poverty, social inequalities and illiteracy (8,9). In Colombia this is an important public health problem (10) that is targeted by the government, albeit with unsatisfactory results (11).

## Health care coverage in Colombia

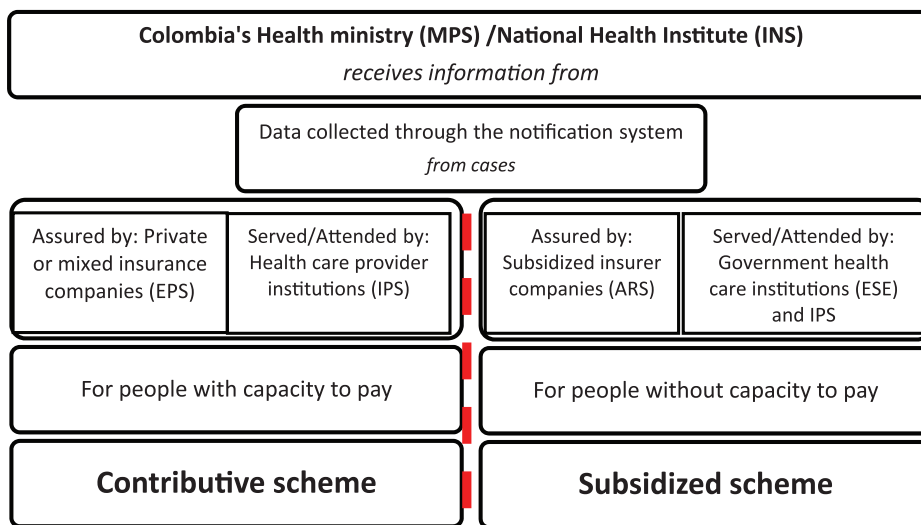
In 2002 the World Health Organization set the bar by putting ‘Universal health coverage’ forward

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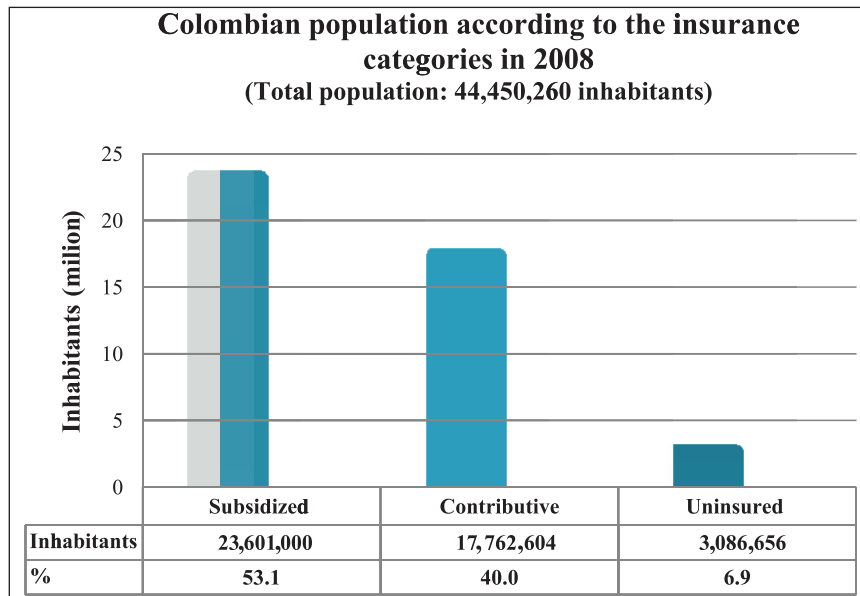
as the principal goal for health systems worldwide (1,2). If the ultimate goal is to reach ‘health for all’, then providing health care to all is an essential intermediate step. However, in most low and middle-income countries, health systems that ensure equitable access to health care are still in development, with varying degrees of success (1,2,12). Although the Colombian healthcare system has been – and still is – regarded as a successful experiment in improving access to healthcare (13,14), important problems and inequalities remain (14–16). In Colombia the national health insurance system is segmented and consists of two main insurance categories: i) the *contributive* scheme, which caters to those who are employed and have the financial capacity to pay insurance fees, and ii) the *subsidized* scheme, which covers people who cannot afford to pay. Those in the contributive system have to pay for their own services, as well as make a contribution to the subsidized population (17). A clear distinction in access to health care services exists between the two schemes, as the contributive scheme offers a qualitatively superior insurance package, ensuring (among others) minimal delays in receiving medical care (15,18). This differential health care access is also present within

the contributive scheme itself: for example, families with higher incomes can opt to purchase additional health insurance benefits which cover a broader range of services, such as dermatologic and laparoscopic interventions (14,15,18).

In 2008, 93% of the Colombian population was insured by the national health system (SGSSS, Spanish acronym) either by the contributive or subsidized scheme (19), leaving 7% of the total population out of the system and without any form of health insurance (Figure 1b). However, 12.6% of those who were insured (either by the contributive or the subsidized scheme) reported experiencing barriers in accessing health services (20), such as financial considerations, limitations regarding geographical access to health services, and doubts about the quality of care. A study by Vargas *et al.* (21) showed how barriers to health care are inherent to the design of the Colombian health insurance system and can lead to inequality in accessing essential health services. Such barriers can defer the search for care, particularly among low income or marginalized groups, with consequences for individuals, households and communities (22). Further complications of a segmented health insurance system such as Colombia’s also become



**Figure 1a.** Colombian health insurance system and its interaction with the dengue case notification process. MPS: Spanish translation for ‘Ministry of Social Protection’. INS: Spanish translation for ‘National Health Institute’. EPS: Spanish translation for ‘Health Insurance Companies for the contributive scheme’. ARS: Spanish translation for ‘Health Insurer Companies for the subsidized scheme’. IPS: Spanish translation for ‘Health Care Provider Institutions’. ESE: Spanish translation for ‘Government Health Care Institutions’.



**Figure 1b.** Distribution of the Colombian population in 2008 according to the insurance categories. Source: Ministerio de la Protección Social, Indicadores de aseguramiento; 2008.

apparent when focusing on specific health problems, like dengue (8), as the following case illustrates.

**The basis of this commentary: a dengue research project**

Although the focus of this paper is not on reporting results of the dengue research project, the background and outline of the dengue research project need to be mentioned, as this serves as the basis for this particular viewpoint.

*Description of the research project*

In 2008 the Vector Control team of the International Center for Medical Research and Training (CIDEIM, Spanish translation) and the School of Public Health of the Universidad del Valle in Cali, Colombia proposed a joint research task with the local Secretary of Health. As a result, an interdisciplinary working group was established with an operational team including physicians, biologists, sociologists, anthropologists and social workers. The project is specific objectives focused on i) the design of a surveillance program for aedics indices and the strengthening of the dengue

case report system; ii) the development of a system for continuous reporting of surveillance results; and iii) assessing the effects of the project’s interventions.

The project took place in Guadalajara de Buga, a municipality located in the center of the Valle del Cauca, a state in Southwest Colombia. With its ~100,000 inhabitants, this municipality has one of the highest dengue incidences in Valle del Cauca (~470 cases/100,000 inhabitants), with four dengue serotypes in circulation (23).

*Dengue surveillance in Colombia*

In the course of the study an evaluation of the dengue surveillance system – based on a relevant CDC model (24) – was performed. This exercise showed several striking problems with the two key indicators used for dengue surveillance: the notification rate (i.e. dengue cases reported by health facilities to higher echelons of the health system) and the formal case confirmation rate (i.e. dengue cases officially confirmed by government laboratory facilities). As a result, analysis of available data was poor and did not lead to informed interventions. These issues were found to

be linked to the organisation of the Colombian health insurance system.

For example, in 2009 we observed that a disproportionately high number of dengue cases being reported to the health system (i.e. the notification rate) came from people insured through the contributive system (73.1%), while people insured through the subsidized system (20%) and the uninsured (6.9%) seemed to be severely under-reported, especially considering the higher risk of dengue infection in the latter – lower-income – groups (7,8). Similarly, from the total number of hospitalized cases included in the study ( $n = 64$ ), 68.8% were insured by the contributive scheme, as opposed to less than 23.4% of cases covered by the subsidized scheme (25) (Table 1). This implies an important difference in quality of care between both insurance schemes.

Additionally, the overall lack of formal case confirmation by government laboratory facilities (i.e. the formal case confirmation rate) was also found to be related to the form of insurance a particular person was covered by. The blood samples of patients insured through the contributive insurance scheme were handled and evaluated by private clinics that had the necessary laboratory equipment to perform the confirmatory tests themselves. These blood samples were therefore not sent to the departmental public health laboratory (DPHL) for formal case confirmation, even though this is mandatory in order to inform the national dengue surveillance system of the actual number of officially confirmed dengue cases (10). In the case of patients covered by the subsidized insurance scheme, who

were therefore managed by public clinics, only about 30% of the samples were sent out to the DPHL for formal laboratory confirmation of the disease. This meant that 70% of the presumed dengue cases remained unconfirmed through laboratory testing. Clinical implications aside, this observation, combined with the common practice of private clinics not to send blood samples to the DPHL for case confirmation (14), significantly undermined the national dengue surveillance system's ability to report on actual confirmed dengue cases.

Thus, dengue cases managed by private health facilities catering to those covered by the contributive insurance scheme were generally confirmed by diagnostic tests within the clinic. Although these cases were reported to the health system, the relevant samples were not sent to the DPHL for formal case confirmation, leading to conflicting surveillance data where locally diagnosed case notification figures were high, but formal case confirmation rates were low. On the other hand, public health facilities used by patients covered by the subsidized system did not have access to the necessary dengue diagnosis tools, and although some patient samples were sent to the DPHL for official case confirmation, most were not. Many cases handled by public health facilities therefore remained unconfirmed, leading to a relatively low case notification rate. Formal case confirmation by DPHL facilities, however, was relatively high compared to the private health facilities' confirmation rates. In effect, both the case notification rates as well as the formal case confirmation rates were skewed, which led to contradictory and unreliable dengue surveillance data.

On the basis of these observations, we would argue that the poor performance of the surveillance system masked the real problem of greater dengue incidence in the low income populations. Socio-economic conditions determined whether someone was covered by the subsidized or contributive health insurance system. This in turn was not only associated with the quality of care one was likely to receive, but also affected the degree to which a dengue case was picked up by the surveillance system. An improved surveillance system, where case notification and confirmation guidelines are better implemented and adhered to, would not only highlight the role that social determinants of health

**Table 1.** Dengue cases notified and hospitalized according to the insurance categories in Guadalajara de Buga, 2009.

<i>Insurance Categories</i>	<i>Notified*</i>	<i>Hospitalized*</i>
	<i>n (%)</i>	<i>n (%)</i>
<b>Contributive</b>	117 (73.1%)	44 (68.8%)
<b>Subsidized</b>	32 (20%)	15 (23.4%)
<b>Uninsured</b>	11 (6.9%)	5 (7.8%)
<b>Total</b>	<b>160 (100%)</b>	<b>64 (100%)</b>

(\* ) Cases notified up to epidemiologic week N° 51, 2009  
Source: SIVIGILA. Archivos planos Evento 210 y 220, 2009.

play in dengue prevalence, but would also improve the reliability of data and allow for more informed interventions.

### *Social determinants of health as a risk factor for dengue*

Although surveillance and quality of care are only two pieces of the overall picture of the dengue problem, the issues discussed above provide some insights into how social determinants, access to health care and disease surveillance can be intertwined. However, social determinants do not only influence the access to health care services – described as a ‘*vital determinant of health*’ (4) – they also interact with the dengue transmission risk (8,9). Limited employment opportunities and low levels of income lead to difficulties in obtaining a sufficient level of medical insurance (1,3,15), which in turn can affect case management. Low education levels form another barrier that negatively influences the capacity of the community to access, learn and understand information about prevention and disease management. Other factors, such as a lack of transportation and other social determinants, can lead to significant difficulties in accessing medical services, increasing dengue related morbidity and mortality rates (8). These examples further illustrate how many barriers related to healthcare are determined by socio-economic factors (15,21) which find their root in the social determinants of health (1,3,4).

### **Conclusion**

This paper illustrated how social determinants of health, through the proxy of the national health insurance system, can affect the performance of surveillance systems and skew disease prevalence data. This is an example of the pertinence of the social determinants of health as a fundamental consideration in health-related policy and research. Given their link with dengue prevalence, which was also touched upon here, we additionally want to suggest that any intervention aimed at the control of this disease should consider the role and implications of the insurance systems and social determinants of health. Addressing such structural socio-economic dimensions could reap additional benefits – not merely limited to lower dengue prevalence – by improving general living conditions.

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