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# **Professionalism, Latent Professionalism and Organizational Demands for Health Care Quality in a Developing Country**

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# Professionalism, Latent Professionalism and Organizational Demands for Health Care Quality in a Developing Country

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## Abstract

Medicine is a professional pursuit, and even in developing countries professionalism should lead at least some practitioners to care for their patients despite the absence of direct incentives to do so. Even if practitioners do not behave as professionals, what is the extent of latent professionalism, in which socialization in the profession conditions health workers to respond to a demand for professionalism even if they do not normally act as professionals? How many health care workers in developing countries act as professionals all the time and what will happen if health services turn toward remuneration schemes in which health workers are paid by the output or outcome? We examine the behavior of 80 practitioners from Arusha region of Tanzania for evidence of latent professionalism, professionalism and responsiveness to extrinsic incentives in the form of organizational demands for high quality care. We show that about 20% of these practitioners act like professionals and almost half of these practice in the public sector. Professional health care workers provide high quality care even when they work in an environment that does not reward this effort, a finding that has important implications for the use of performance-based incentives

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# 1 Introduction

Medicine is a professional pursuit and professionals should care for their patients despite the absence of direct incentives to do so. Despite the poor levels of average quality provided, how many health care workers in developing countries act as professionals, that is, do the best for their patients in difficult circumstances? For those who do not behave as professionals, what is the extent of latent professionalism, in which socialization in the profession conditions health workers to respond to demands for professional behavior even if they do not normally act as professionals? There is increasing evidence that the average clinician responds well to demands for quality care when these demands are backed with extrinsic incentives. Do professionals also respond to these incentives, or do such incentives undermine their professionalism? In this paper, we address these questions using data on the behavior of 80 practitioners from Arusha region of Tanzania. We look for evidence of latent professionalism, professionalism and responsiveness to extrinsic incentives in the form of organizational demands for high quality care.

The poor quality of health care services in low-income countries means that millions die every year from preventable illnesses (Black et al., 2003). Although there are too few facilities and health care providers, some responsibility for these poor outcomes lies with the inadequate performance of existing health practitioners (Maestad and Torsvik, 2008; Rowe et al., 2005). The increasing evidence that clinicians in developing countries have the capacity to significantly improve their performance (Banerjee et al., 2004; Chaudhury and Hammer, 2004; Das and Hammer, 2007; Filmer et al., 2000; Leonard and Masatu, 2007; Leonard et al., 2007), has led to increased interest in performance or outcome-based financing. In part, this new push is inspired by the relative success of nongovernmental organizations (NGOs) in this same sector and by positive results from new performance-based schemes. NGOs provide a large proportion of public services such as health care and education in many African countries and provide significantly better services than do their public counterparts (Berman et al., 1995a,b; Gilson et al., 1997; Gruenais, 2004; Leonard, 2002; Leonard and Masatu, 2007;

McPake, 1997; Mliga, 2000; Reinikka and Svenson, 2004). Importantly, NGOs institutions are more autonomous, flexible and decentralized and remuneration is more responsive to the effort of health care workers (Gilson et al., 1997; Leonard, 2002; Mliga, 2000), leading to employees who face real demands for quality from their employers. In addition, early evidence from experiments with output-based financing has shown potentially important gains from tying salary top-ups to key output measures in rural facilities (Meessen et al., 2006). Thus, there is reason to believe that changing the way we pay practitioners—either by making the public service more like NGOs or by tying payment of all practitioners explicitly to outputs or outcomes—should improve the amount and quality of health care by appealing to the self interest of practitioners.

On the other hand, the proposition that extrinsic rewards—such as organizational demands for quality or direct incentives tied to outputs—can drive performance is particularly sensitive in health care because medical personnel are trained to exert effort not for reward but because they are professionals. Medicine is a classic example of a profession, implicitly trading a monopoly over the right to prescribe medicines for an obligation to public welfare (Freidson, 2001, p. 72). Professionalism is a set of characteristics describing a member of a profession and the institutions—such as peer influence or organizational identity (Akerlof and Kranton, 2000, 2005)—that encourage all members to hold to accepted standards.

The two most general ideas underlying professionalism are the belief that certain work is so specialized as to be inaccessible to those lacking the required training and experience, and the belief that it cannot be standardized, rationalized, or as Abbott (1991, p. 22) puts it, “commodified.” (Freidson, 2001, p. 18)

Paying for outputs or outcomes is dangerously close to commodification of health care, and if health sector workers are professional then incentives and professionalism are substitutes, not complements. Indeed, there is empirical evidence from other settings that extrinsic incentives crowd-out intrinsic motivation such as professionalism (Frey, 1997; Frey and Jegen, 2001; Gneezy and Rustichini, 2000).

Thus, if clinicians in developing countries are not professional, and their skills and activities can be successfully commodified (at least by other health sector workers, if not by patients), then payment based on outcomes or output can improve quality and quantity. However, if clinicians are professional—or some clinicians are professional—and the full range of activities under-taken by these professionals cannot be commodified, then outcome-based payments could reduce the overall effort of those with professional motivation and redirect the activities of all practitioners away from important but harder to measure activities.

We examine data from a sample of 80 clinicians from Tanzania, observing their activities in the outpatient clinic and testing them on their abilities with case-study patients in the same setting. To measure the quality of care provided, we compare the activities of each clinician to a checklist of items required by protocol (given the patient’s presenting symptoms), both for a series of their regular patients and for the case-study patients. We use these measures of quality, the difference between the quality provided for regular patients and the quality provided for case study patients, and the changes in quality in the presence of the research team to measure latent professionalism, professionalism and responsiveness to organizational demands for quality.

We can measure latent professionalism because the researchers visiting health facilities were also health practitioners, allowing us to evaluate the reaction of every subject clinician to the act of being observed by a peer from their profession. Those clinicians who change their behavior when in the presence of the team display a latent, untapped professionalism; they see themselves as being members of a shared profession and change their behavior to impress their peer.

We measure two aspects of clinician quality: diagnostic and communication quality. Diagnostic quality is a measure of the effort exerted (through asking questions and examining the patient) to reach the correct diagnosis. Communication quality is the degree to which the clinician adequately communicates with the patient. We take advantage of the fact that organizations do not monitor or observe the degree to which clinicians communicate with

their patients, despite its importance to health outcomes and centrality to the profession of medicine. Thus, clinicians who communicate well with their patients are not responding to organizational demands for this aspect of quality, and instead are displaying professionalism. On the other hand, organizations do monitor and observe diagnostic quality, and we examine the characteristics of organizations in which clinicians do provide high levels of diagnostic quality.

Using measures of latent professionalism, professionalism and the levels of diagnostic quality, we investigate the following. First, what is the extent of professionalism, and in particular, are there are clinicians in the public sector who act as professionals? Second, to what degree do clinicians display latent professionalism in their provision of diagnostic quality, and does this vary with the degree of professionalism and the organizational demand for quality? Third, are professionals responsive to organizational demands for quality in the same way as non-professionals?

## **2 Methodology**

The data used in this paper were collected over a period of two years from October of 2001 through March of 2003 and focus on the activities of clinicians in outpatient clinics. Thirty-nine health facilities in the rural and urban areas of Arusha region were visited at least two times each. Clinicians who were present at these facilities during any of the visits were evaluated for competence and performance using case-study patients (vignettes) and direct observation, respectively.

### **2.1 Measures of Quality**

The research team used the direct clinician observation (DCO) instrument to measure the actual performance of clinicians with their regular patients. DCO measures compliance with Tanzanian protocol and is designed to be sensitive to the limited resources available in the

facilities we survey. Every clinician visited was trained in protocol and had the resources at his or her disposal to follow it. Protocol requires history taking (such as asking the patient the duration of the illness or whether diarrhea is accompanied by vomiting) and physical examination (such as taking the patient’s temperature or auscultating the chest). With the DCO instrument, a clinician on the research team sits in on the examined clinician’s consultations. For each consultation, the observer fills a protocol checklist designed to match patients presenting with fever, cough or diarrhea. For other conditions, there is a more general history taking protocol and one physical examination protocol item. 80 clinicians were observed directly and evaluated over 928 consultations.

In addition, each of these clinicians was evaluated using vignettes, which are case-study patients presented by an actor. There are many possible ways of implementing a vignette; we use the unblind case study with an actor. There are two researchers present: a ‘patient’ and an examiner. The examiner, after introductions, never speaks, he only observes. The ‘patient’ presents herself as a patient would, entering the room from outside and leaving after the consultation. She describes her symptoms and answers questions as a patient would. It is explained to the clinician that he must do physical examination by posing questions. The patient then answers the question verbally. For instance, if the clinician says “I would take the patient’s temperature”, the ‘patient’ would say “the temperature is 38.5.” The examiner then fills a checklist of the expected inputs including expected history taking questions, physical examination items and health education points. Each clinician was tested in their ability for six typical cases: malaria, pelvic inflammatory disease, diarrhea, pneumonia, flu and worm infestation.

## **2.2 Clinicians**

The clinicians in our sample include nurses of various specializations, clinical assistants, clinical officers, assistant medical officers (AMOs), and medical officers (MOs). Clinical assistants have an elementary school education and three years of medical training. Clinical



officers traditionally have O level education and two years of medical training. AMOs are clinical officers with two additional years of training. MOs have both an A level education and five years of university-level medical training. Nurses are not supposed to diagnose but in the rural areas they are frequently the only health personnel present and they do diagnose patients in these circumstances. With the exception of nurses, all clinicians examined in this study diagnose patients, prescribe medicines, and are addressed using the title “doctor.” Thus, even though most clinicians in the sample are not medical officers, they do belong to the larger profession of medicine and are treated by outsiders and the state as if they were professional medical care providers.

## **2.3 Organizations and Institutional Characteristics**

Most clinicians in the sample, as in Tanzania, work in the public service in government-run health facilities. In addition, there are seven other types of organizations delivering care in the area, one parastatal hospital (owned by the government but operated as an independent entity) one private facilities and five faith-based nongovernmental (NGO) organizations operated by the Lutheran, Roman Catholic, Seventh Day Adventist and Church of Gospel International and the Ithna Asheri Mosque.

We take advantage of a study of all these organizations conducted by Mliga (2000) and place all facilities on a scale measuring the decentralization of decision-making authority. The variables used to create the index of decentralization include: a dummy variable indicating whether the chief of post can hire and fire personnel; the level at which salaries are set (national / regional / local); the degree to which the chief of post can use local funds to pay salaries and buy medicines (low / medium / high); and the level at which choices about staffing are made (national / regional / local). These measures are highly correlated and jointly determined, so we examine the impact of an overall decentralization score, not the marginal impact of each characteristic. Leonard et al. (2007) create a single index of decentralization by using the first factor from a factor analysis of these variables entered as

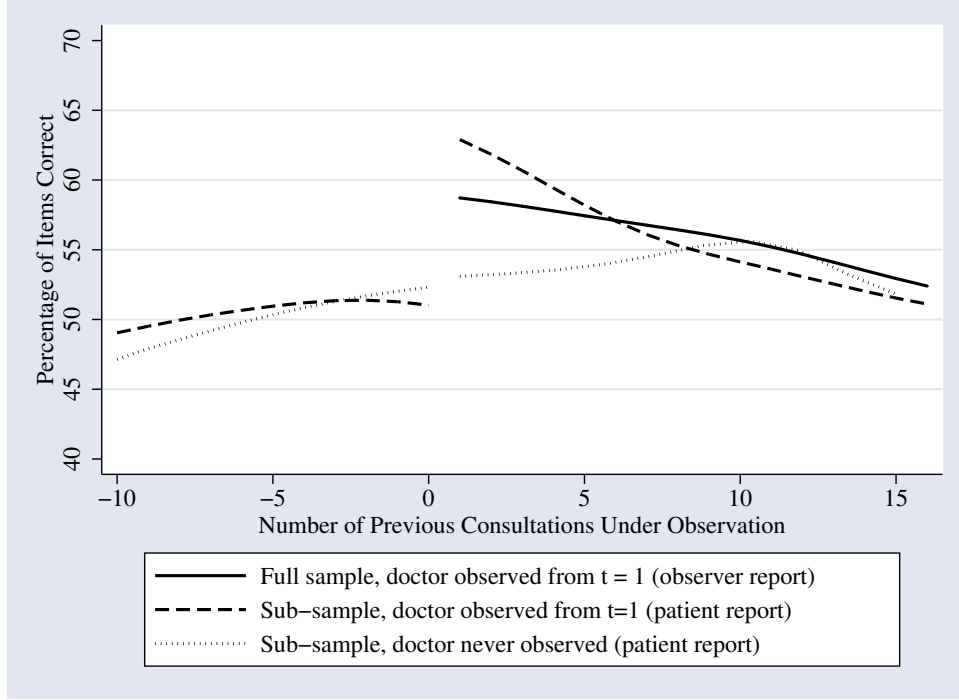
dummy variables representing each category within each of the four variables (11 categorical variables). The index puts the greatest weight on the ability of the chief of post to hire and fire and the three other characteristics have smaller but significant weights. This index varies across organizations and across facilities within organizations, but does not vary within a facility.

Organizations that effectively demand quality from their employees are likely to be those that manage to provide extrinsic incentives for quality. In this setting, the technology for providing incentives combines medical supervision with either punishment or reward. Although health care suffers from asymmetric information in the doctor–patient interaction, clinicians can evaluate the effort and activities of other clinicians. Thus, supervising clinicians visit facilities and, by observing the activities in that facility, they can assess the quality of care that is provided. In theory, a stakeholder supervises every facility we study; in practice, supervision in some organizations is perfunctory. One clinician, who was frequently supervised, stated that in a typical visit the supervisor asked that all logbooks requiring a signature be brought to him as he sat in his still-running (air-conditioned) vehicle. Our index implicitly states that such supervision visits are less likely when the supervisor has the power to act on what he would find if he left the car. Thus, the differences between organizations are not whether they are supervised, but whether the supervisor has the authority to act on what he or she discovers. Our measure of decentralization, therefore, captures the ability of an organization to demand quality from their employees.

## **2.4 The Hawthorne Effect and Latent Professionalism**

One of the more striking features of the data is the steady decline in the quality of care provided by most of the clinicians over the period that the research team observed their consultations. The solid line in Figure 1 shows the average impact of this dropoff. Quality—the percentage of diagnostic inputs required by protocol that are actually implemented—falls by about 5 percentage points (10%) over 10 to 15 consultations from when the team arrived.

Figure 1: The Hawthorne Effect on Adherence to Protocol (quality)



Source: (Leonard and Masatu, forthcoming)

Full sample: Consultations observed by researchers in 39 facilities in Arusha Municipal District, Arumeru District and Monduli districts in 2002 and 2003 Leonard and Masatu (2005). Sub-sample: Patient exit interviews for patients in 11 facilities in Arusha Municipal District Leonard and Masatu (2006). Results represent a semi-parametric smoothed regression following DiNardo and Tobias (2001), controlling for illness, patient and item characteristics.

This dropoff is actually a return to normal quality from an artificially high level of quality caused by a temporary Hawthorne effect. The Hawthorne effect refers to a situation in which an individual's behavior changes when he realizes he is being observed. It is characterized by a positive but temporary change in some measurable behavior in a situation in which there was no deliberate attempt to affect behavior (Benson, 2000; Mayo, 1933). Diagnostic quality is falling from an abnormally high level caused by the arrival of the research team towards the normal level of quality. Leonard and Masatu (2006) document the full pattern of the Hawthorne effect with a small sample of clinicians practicing in Arusha municipality. They measured the quality of a consultation using a patient exit interview and showed that

this instrument is a good approximation of the data on quality collected by clinicians on the research team. Because they used a patient exit survey, they could collect data for three types of patients: patients who had consultations before the team arrived at a facility, patients consulted after the team arrived whose consultations were observed by the research team, and patients consulted after the research team arrived whose consultations were not observed by the research team. Patients in this third group were seen by clinicians who were not evaluated by the research team, but who practice at facilities where other clinicians were evaluated. The dashed and dotted lines in Figure 1 show the pattern of quality as estimated from patient responses for observed and unobserved clinicians. For clinicians who were observed, the dashed line shows a significant jump in quality when the team arrived. However, for clinicians who were never observed (dotted line), there is no significant change in quality.

Although we do not have data for the activities of clinicians before our team arrives in the data that we use in this paper, Figure 1 shows that the fall in quality (which we do observe) represents the same phenomenon as the increase in quality when the team arrived. Thus, the behavior of the average clinician displays a latent professionalism: when clinicians are observed by peers in their profession, they react, change their behavior, and provide better care. However, since the visiting professionals are passive during the time they observe consultations and provide no feedback the implicit demand for professionalism rapidly returns to normal levels and the observed clinicians no longer care about being seen to be professional and return to their normal activities. Therefore, the Hawthorne effect exposes a gap between what clinicians do with their regular patients and what they are capable of doing. The same gap is shown in the difference between what a clinician does with a case-study patient (the vignette) and what they do with their regular patients (Das and Hammer, 2007; Leonard and Masatu, 2005).

The size of the gap or the degree of latent professionalism can be modeled as a function of the baseline motivation that clinicians have to provide quality, motivation that can come

from intrinsic incentives (professionalism) or extrinsic incentives (organizational demands for quality). Clinicians choose to provide quality ( $q$ ) that is equal to a fraction ( $\lambda$ ) of their best possible quality ( $\theta$ ) where  $\lambda \in (0, 1)$  and  $q \in (0, \theta)$ .  $\lambda$  is a function of the motivation of clinicians ( $\lambda = \lambda(m)$ ) at the time that quality is chosen, and this motivation, in turn is driven by professionalism, organizational demands for quality and the presence of a professional peer. The baseline level of motivation for each clinician (a function of professionalism and organizational demands) is not directly observable but the Hawthorne effect increases the level of motivation by adding the presence of a professional observer. Thus, if  $\partial\lambda^2/\partial^2m < 0$  (which is likely if  $\lambda$  is continuous and bounded at 1) then the change in quality ( $\partial q/\partial m$ ) observed when the research team arrives must be decreasing with a greater baseline level of scrutiny.

Practically, this means that clinicians who face high levels of baseline motivation have little room to react to the additional scrutiny implied by the presence of a researcher, whereas those who are not otherwise motivated can easily change their behavior. The fact that the average clinician responds to the presence of another professional (latent professionalism), indicates that they are not fully motivated by either professionalism or organizational demands for quality. More importantly, if there are clinicians who are professional or who face organizational demands for quality, then their response to the arrival of a peer should be lower because their baseline motivation is higher.

## 2.5 Differentiating between intrinsic and extrinsic motivation

The reaction to the arrival of the research team does not allow us to differentiate between clinicians who are motivated by professionalism and clinicians who are motivated by organizational demands for quality. To differentiate between these two sources of motivation we need a type of input which is important to a professional but ignored or unobserved by the institutions that enforce demands for quality. For this, we examine the behavior of clinicians as they communicate with their patients. Specifically do clinicians (1) tell the patient his

or her diagnosis, (2) explain the diagnosis in common language, (3) explain the treatment provided, (4) explain whether or not to return for further treatment, and (5) give any health education related to diagnosis. Communication is an important part of training and professionalism, but it is not something that is routinely observed, tested or even brought up in supervision. Importantly, the data demonstrate significant differences between the behavior of clinicians for diagnostic quality and the behavior of clinicians for communication quality.

Figure 2 shows examples of three clinicians who represent three patterns of behaviors observed in the data. Clinician A exhibits high and basically constant diagnostic quality, but rapidly falling communication quality. Clinician A does not display latent professionalism for diagnostic quality, but he does display latent professionalism for communication quality. Clinician B provides low and falling levels of both diagnostic and communication inputs, displaying latent professionalism for both inputs. Clinician C, on the other hand, provides high and constant levels of both communication and diagnostic inputs. Clinician C is motivated to provide both of these inputs under normal circumstances and displays no latent professionalism for either. Importantly, the fourth potential pattern does not exist; there are no clinicians who display high and constant communication quality but low or falling diagnostic quality. Thus, clinicians who exert effort to communicate are automatically driven to provide diagnostic quality, though the inverse is not true.

If we examine only diagnostic quality, there are only two types of clinicians; clinicians C and A are similar to each other (because their baseline motivation is high) and different from clinician B (who has a low level of baseline motivation). Thus, communication reveals a second dimension of provider behavior and we use the data on the provision of this input to categorize clinicians according to the level professionalism in their normal activities. Here, we introduce the labels “potentially professional” and “not professional.” We do not use the term “professional” as a label because there may be some unobserved reasons why clinicians provide high levels of communication quality (to which we return later). However, clearly, clinicians who do not communicate with the patients are “not professional.” Thus, all truly

professional clinicians are labeled as “potentially professional,” and all clinicians labeled as “not professional” are not professional, but some unprofessional clinicians may be mis-categorized as “potentially professional.”

We use the following steps to make the objective assignment of clinicians into these categories. First we run a probit model for whether the clinician provided a given communication input. We include a clinician-specific intercept and clinician-specific coefficient for the number of observations since the team arrived. The first coefficient measures the average level of communication quality provided to all patients, and the second coefficient measures the change in communication quality over the period that the clinician is observed. A negative value for the second coefficient indicates that the communication quality is falling, suggesting that the clinician is communicating with his patients because he is reacting to the presence of a peer. We then examine the intercept and slope parameters for all clinicians and use the following rule to assign clinicians. Clinicians who exhibited both a flat (or positive) slope and an intercept that was above the median were assigned to “potentially professional.” All clinicians with a statistically negative slope (a fall in input provision while the team is present) were assigned to “not professional.” Assignments are made without reference to ability, cadre, organization or diagnostic quality.

## 2.6 Empirical Specification

To test for latent professionalism and the impact of organizational demands for quality on the behavior of clinicians we use the following empirical specification, which we will test in the following section. We model the probability that a clinician will provide an input that is required by protocol ( $\text{prob}(x_{ijk} = 1)$ ), as a function of an item-specific effect ( $\alpha_k$ ), illness characteristics ( $\vec{Z}_i\gamma_i$ ), the level of peer scrutiny at the time patient  $i$  is seen ( $s_i$ ), clinician-level random effects  $\epsilon_j$  (which reflect both ability and baseline motivation) and an additional error term. Peer scrutiny is the highest when the research team first arrives and therefore we proxy for scrutiny with the immediacy of the research team’s arrival,

$s_i = -1 * \{\# \text{ of consultations since the team arrived}\}.$ <sup>1</sup> We test the hypothesis that the reaction to peer scrutiny is a function of the degree of decentralization for each clinician,  $D_j$  and the classification into “potentially professional” (P) and “not professional” (N). Thus, we estimate:

$$\text{prob}(x_{ijk} = 1) = f\left(\alpha_k + \vec{Z}_i\gamma_i + \beta_1 N s_i + \beta_2 N D_j s_i + \beta_3 P s_i + \beta_4 P D_j s_i\right) + \epsilon_j + e_{ijk} \quad (1)$$

where  $\beta_1$  is the impact of peer scrutiny for not professional clinicians,  $\beta_2$  is the impact of peer scrutiny for not professional clinicians interacted with decentralization,  $\beta_3$  is the impact of peer scrutiny for potentially professional clinicians, and  $\beta_4$  is the impact of peer scrutiny for potentially professional clinicians interacted with decentralization. The average level of latent professionalism is measured by  $\beta_1$  for not professional clinicians and  $\beta_3$  for professional clinicians. The hypothesis that peer scrutiny has a smaller impact on clinicians who normally face high levels of motivation in the form of organizational demands for quality, translates into the hypothesis that  $\beta_2 < 0$  (or  $\beta_1 + \beta_2 = 0$ ) for not professional clinicians and  $\beta_4 < 0$  (or  $\beta_3 + \beta_4 = 0$ ) for potentially professional clinicians.

### 3 Results

In this section we examine the average levels of quality and latent professionalism for several categories of clinicians and then turn to regression analysis of the determinants of quality.

#### 3.1 Summary statistics

Table 1 shows the distribution of potential professionalism and diagnostic quality across levels of decentralization and the training (cadre) of the clinicians and professionalism itself. In addition, for each of these categories, Table 1 shows the results of three logit regressions

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<sup>1</sup> Alternative specifications, including the negative of the log of the number of previous consultations under scrutiny, and the inverse of the number of previous consultations under scrutiny, produce essentially identical results.



of whether or not a particular diagnostic item was used, including an intercept term and a slope term for the number of consultations since a peer arrived, for each of the types shown. Thus, we ran three regressions; one for level of decentralization including the categories of low, medium and high; one for cadre including the five cadres studied; and one for professionalism including the categories of potentially professional and not professional. “High Scrutiny Adherence” is the predicted percentage of diagnostic items provided for the consultation immediately after the research team arrives, when clinicians face the highest levels of motivation from the combined influences of professionalism, organizational demands for quality and peer scrutiny. This is a measure, therefore, of professional capacity: the best a clinician can do given his current level of training. “Fall in Adherence” is the change, from consultation to consultation, in the probability that a type of clinician will provide a diagnostic item. Since neither professionalism nor organizational demands are changing as the research team continues to observe consultations, this fall in quality reflects changes in the peer scrutiny-induced demand for quality and indicates the degree to which the clinician displays latent professionalism.

**Differences by Decentralization or the Organizational Demand for Quality** Clinicians who work in centralized facilities (low levels of decentralization) are supervised by officers who have little decision-making authority and therefore face lower effective demands for quality. The majority of clinicians working in such facilities is not professional (71%), but 21% of clinicians are potentially professional. Overall, clinicians in these facilities display lower levels of professional capacity (49% adherence) than clinicians in other types of facilities, and they demonstrate a statistically significant fall in quality as the research team continues to observe their consultations (0.5% for each additional consultation). Thus, the average clinician in such a facility displays significant levels of latent professionalism, suggesting that baseline motivation is low.

Clinicians in facilities with medium levels of decentralization have some decision-making

authority and are closer to the location in which decisions are made. Eleven percent are potentially professional and 37% are not professional.<sup>2</sup> The average level of professional capacity (high scrutiny adherence) is higher than for clinicians in facilities with low levels of decentralization. These clinicians exhibit a slightly smaller drop in quality with each consultation but the coefficient is not significant,<sup>3</sup> suggesting lower levels of latent professionalism and higher levels of baseline motivation.

Clinicians in facilities with high levels of decentralization work in a facility that retains the right to hire and fire all personnel, set wages and prices and choose the cadres of clinicians employed. This does not mean that the clinicians we studied possessed these authorities, but rather that they are not distant from this authority and therefore are subject to high demand for quality on a regular basis. This higher level of motivation is reflected in the facts that clinicians in these facilities have higher levels of adherence (56%) than all other clinicians and exhibit a smaller fall in adherence as the research team continues to observe their consultations (0.3% per consultation). Thus, these clinicians have lower levels of latent professionalism, because they face higher regular demands for quality. These clinicians are slightly more likely to be potentially professional than clinicians in facilities with low levels of decentralization but the difference is neither large nor significant.

**Differences by Cadre** The cadre of clinicians is listed in order of years of training, except nurses, who have varying levels of training. Clinicians with more training work in facilities that are more decentralized and exhibit higher levels of professional capacity (high scrutiny adherence). On the other hand, the degree to which adherence falls with the order of consultations is not significantly associated with years of training, suggesting that training increases the capacity of a clinician, but not the degree to which he uses his capacity on a regular basis. Medical Officers, with 5 years of university-level medical training, are more likely to be labeled “potentially professional” than other clinicians and no nurses are labeled

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<sup>2</sup>Many of these clinicians cannot be successfully assigned into either the not professional or potentially professional categories because we observed too few patients at each facility.

<sup>3</sup>Again, this is due to the low numbers of total patients observed.

as “potentially professional.”<sup>4</sup>

**Differences by Professionalism** Clinicians labeled as “potentially professional” work in facilities that are slightly more decentralized on average than clinicians who are labeled as “not professional,” but the difference is not large. The professional capacity (high scrutiny adherence) is higher for potentially professional clinicians and the fall in quality as the team continues to observe consultations is smaller and not significantly different from zero. Thus, potentially professional clinicians do not display significant levels of latent professionalism, whereas those who are not professional do.

### 3.2 Regression Analysis

Table 2 shows the results of four logit regressions that explain the diagnostic quality provided by clinicians. The dependent variable for each regression is whether the clinician provided a specific input required by national protocol ( $\text{prob}(x_{ijk} = 1)$ ). All regressions include observable patient characteristics ( $\vec{Z}_i\gamma_i$ , two age dummy variables and the number of presenting symptoms) as well as dummy variables for each item ( $\alpha_k$ , which controls for the type of illness reported).

Column one shows the coefficients for a logistic regression of quality as a function of clinician type (potentially professional or not professional). Column 2 shows the coefficients for a regression on clinician type interacted with clinician ability as measured with the vignette.<sup>5</sup> The regressions represented in columns 3 and 4 are random effect logit regressions and include clinician random effects. Column 3 examines the different responses of each type of clinician to the change in scrutiny implied by the arrival of a peer and the baseline demand for quality, measured by the degree of decentralization in the facility. Any systematic

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<sup>4</sup>Note that the definition of professional applies to clinicians, not nurses, so this finding suggests that nurses are not professional as clinicians, but draws no conclusion as to whether they are professional as nurses.

<sup>5</sup>The ability score is based on Item-Response Theory (Das and Hammer, 2005) and is discussed in Leonard et al. (2007). The score is highly correlated with the percentage of items required by protocol that are actually implemented.

differences between clinicians implied by decentralization or professionalism are absorbed in the clinician random effect; this specification concentrates on the different patterns in the response to scrutiny by decentralization and clinician type. Column 4 is a regression in which all clinicians are categorized as normal, and therefore represents the case in which we ignore the possibility of professionalism.

Columns 1 and 2 show that potentially professional clinicians practice at a higher level of quality than other clinicians (column 1) and that they practice at levels closer to their ability (column 2). Ability helps to explain the quality of clinicians who are not professional but the coefficient is much smaller, suggesting an untapped reserve of capacity for these clinicians.

Column three examines the response of clinicians to the arrival of a peer, exposing the degree of latent professionalism. The Hawthorne effect implies that peer scrutiny is highest immediately after the research team arrived, and falls with each additional consultation observed. Thus, scrutiny is represented by the immediacy of the arrival of a professional peer, or the number of consultations since the research team arrived times minus 1. A positive coefficient for the peer scrutiny coefficient suggests that clinicians increase their quality immediately after the research team arrives and then return over time to their normal levels of quality. This reaction exposes latent professionalism. Interacting peer scrutiny with the organizational demand for quality (the index of decentralization) tests whether clinicians who face high demands for quality have a larger or smaller latent professionalism than other clinicians. A negative coefficient for this interaction term suggests that clinicians in decentralized facilities exhibit less latent professionalism. Each of these variables (peer scrutiny and peer scrutiny X decentralization) is shown for both “potentially professional” and “not professional” types.

The results shown in Column 3 suggest that clinicians who are not professional increase their quality when they face peer scrutiny, but that those of these clinicians who work in decentralized facilities have a smaller reaction to peer scrutiny. Thus, the level of latent professionalism is smaller when clinicians face an organizational demand for quality and a

lack of organizational demand leads to untapped potential. On the other hand, the reaction of potentially professional clinicians (in any organization) to scrutiny is not significantly different from zero. Thus, there is no evidence of untapped professionalism among potentially professional clinicians.<sup>6</sup> Furthermore, the response to peer scrutiny does not vary with the degree of decentralization; changes in the organizational demands for quality do not lead to changes in the quality of care provided by potentially professional clinicians.

Column 4 examines the coefficients for peer scrutiny and peer scrutiny interacted with the organizational demand for quality (decentralization) under the assumption that all clinicians are the same. The coefficients for peer scrutiny and peer scrutiny interacted with decentralization are virtually unchanged in this specification. In this case, the fact that potentially professional clinicians are spread across facilities with different levels of decentralization means that there is no bias introduced by the assumption of homogenous types.

## 4 Discussion

The average clinician in our sample shows a significant level of latent untapped professionalism. When the research team arrives, these clinicians significantly increase the quality of care that they provide to their patients, even though nothing has changed in either their work environment or technical capacity. This gap between ability and practice suggests that significant improvements in the quality of care are possible by addressing the motivation of these clinicians. For evidence of the possible source of this new motivation, we examine two categories of clinicians who do not display latent professionalism. Clinicians who are professional and clinicians who work in organizations that demand high quality both show high levels of quality and less of a response to peer scrutiny. Their latent professionalism is lower because their baseline motivation is higher. Thus, both organizational demands for quality and professionalism result in higher quality.

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<sup>6</sup>Recall that the definition of potentially professional is not based on diagnostic quality, so this is not an empirical tautology.

Professionals are not unevenly concentrated in ‘better’ organizations. We find that professionally motivated clinicians are as likely to work in the public sector (centralized) as they are to work in the NGO or private sector (decentralized). In addition, a high demand for organizational quality does not appear to increase the quality of care provided by professionals. This finding is a confirmation of the definition of professional; those who provide high quality care whether they are paid to do so or not.

On the other hand, most clinicians are not professional and in this case, the demand for quality makes a big difference. Clinician who work in organizations that are decentralized and therefore flexible, responsive and autonomous, provide significantly better care, use more of their capabilities, and display less untapped professionalism. They are not professional, but their employer manages to convince them to provide effort.

These results rely crucially on our definition of potentially professional. The fact that organizations ignore communication in their assessment of the quality of care means that clinicians who provide high levels of diagnostic quality are not the same as clinicians who provide high levels of communication quality. We take this as evidence that the motivation to provide diagnostic quality is not exactly the same as the motivation to communicate. In addition, if a clinician is professional, it stands to reason that he will communicate with his patients, therefore, we are confident that our label “not professional” does not include professionals. However, it is possible that some clinicians are motivated to communicate with their patients for reasons that are not associated with professionalism. For example, some clinicians may work with highly educated patients who demand communication. Therefore, our definition of professional probably includes some clinicians who are not professional. Whereas we cannot confidently say that “20% of the sample is professional” we can say that professionals provide high levels of quality and are not responsive to organizational demands for quality or to the demand for professional behavior implied by the arrival of the research team.

**Policy Implications** This paper uses a proxy measure for effective organizations: the degree to which decision-making authority is decentralized to the facility level. Because this measure is a proxy for the broader set of organizational characteristics that would translate into high-powered incentives, we cannot conclude that decentralization would increase quality, only that effective organizations are both decentralized and manage to effectively demand quality from their employees. It is important to point out that the success of these organizations is not due to the greater capacity of their employees nor to the presence of large numbers of professional clinicians, but rather to their ability to get each clinician to work at levels closer to their ability. As such, this finding adds empirical weight to the argument that management, not simply training or medicines, must be addressed in order to improve health care in developing countries.

However, policies that address management and incentives should be carefully considered for the possibility that they would drive away the professional clinician. No one argues that health professionals should not be compensated generously for the important services that they provide, but paying them on the basis of outcomes or outputs is much more aggressive and suggests that professionalism and peer-group affinity are unimportant. For non-professional clinicians, rewarding increases in quality will most likely lead to improvements in quality, but for professional clinicians, explicit incentives do not improve quality and could cause them to leave the organization or practice. Commodifying professional activities may devalue the meaning of professionalism to the extent that new clinicians would be less likely to act as professionals. The NGOs that practice in Tanzania have managed to avoid discouraging professionalism at the same time that they encourage non-professionals. This is, in part, because they do not commodify activities. NGOs never pay bonuses or extract penalties that are tied to explicit markers of quality. They do pay bonuses and they can and do fire employees, but the workings of these mechanisms are not explicit. We believe these facts may be important in the new movement to pay clinicians according to outcomes and measurable inputs. In particular, it may be important to retain the understanding of

medicine as a profession, even when many clinicians clearly do not subscribe to this view.

In addition, our data has shown a large and untapped degree of latent professionalism in all sectors of the health care system. Although some organizations have succeeded in encouraging diagnostic quality, they have not produced the same results as professionalism because their clinicians do not communicate well with their patients. Perhaps, rather than abandoning the idea of professionalism because it has failed to produce high quality care, it is time to examine policies that encourage professionalism at the same time as they demand high quality care. Whereas organizational demands can increase the supply of some inputs, only professionalism leads to overall increases in quality.

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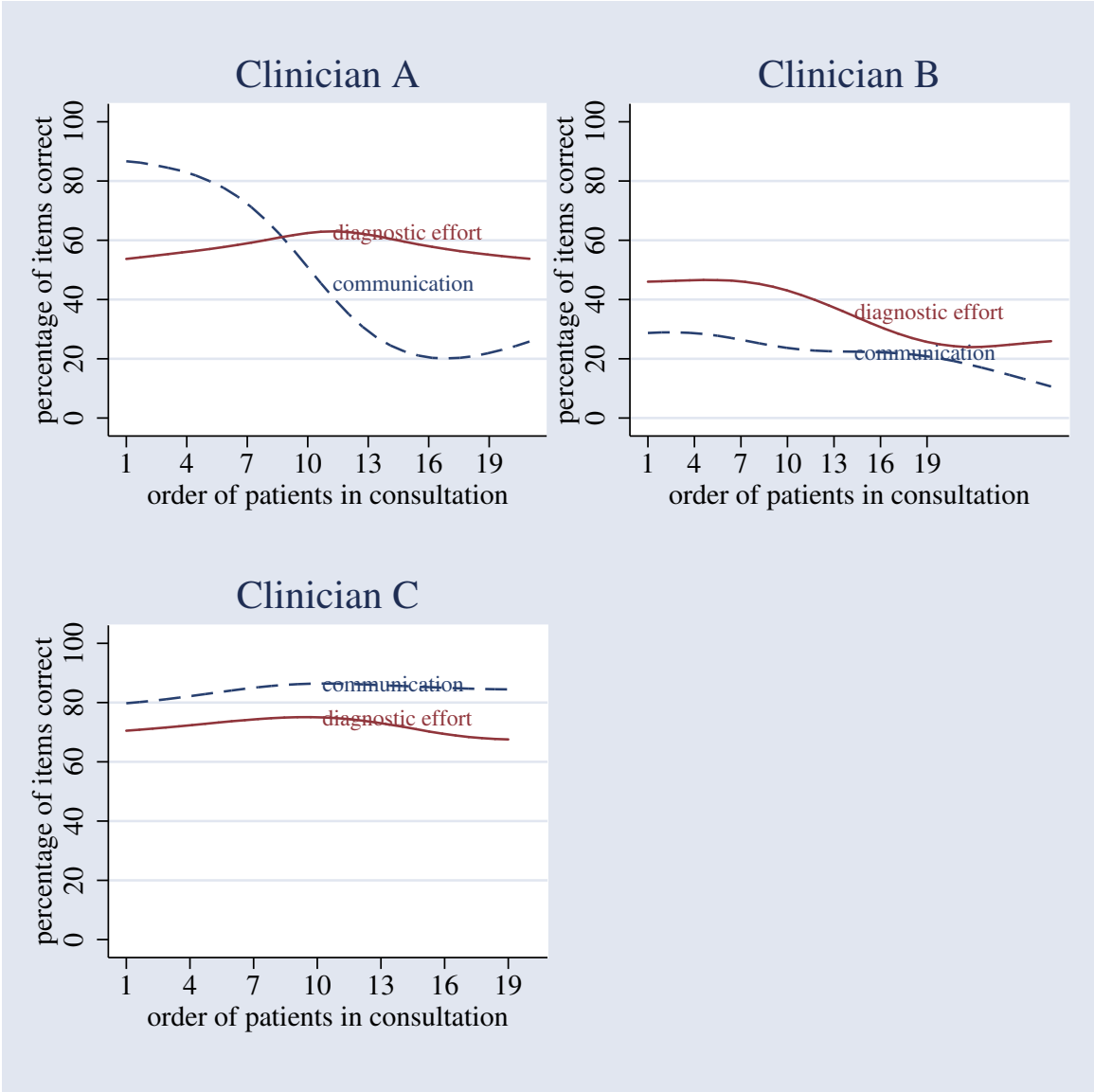
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Figure 2: Three Examples of clinician behavior for diagnostic quality and communication quality



The graph shows the provision of diagnostic quality inputs (solid line) and communication inputs (dashed line) for three clinicians from the sample. The lines are derived from scores controlling for patient characteristics, using a local average regression with a Gaussian kernel and a bin width of 4 consultations.

Table 1: Summary Statistics

	obs	Not prof. <sup>a</sup>	Potentially prof. <sup>a</sup>	Index of Decntrl. <sup>b</sup>	High Scrutiny Adherence <sup>c</sup>	Fall in Adherence <sup>c</sup>
Organizational demand for quality (Level of Decentralization)						
Low	52	37 71%	11 21%	0.04	0.488 [0.009]*	-0.005 [0.001]*
Medium	18	7 39%	2 11%	0.83	0.513 [0.023]*	-0.004 [0.002]
High	10	5 50%	3 30%	1	0.562 [0.021]*	-0.003 [0.002]*
Clinician Cadre						
MO	3	1 33%	2 67%	1	0.555 [0.038]*	-0.004 [0.005]
AMO	7	5 71%	1 14%	0.45	0.557 [0.028]*	-0.006 [0.003]*
Clinical Officer	42	25 60%	9 21%	0.32	0.508 [0.011]*	-0.004 [0.001]*
Clinical Assist	16	10 63%	4 25%	0.21	0.471 [0.017]*	-0.004 [0.002]*
Nurse	12	8 67%	0 0%	0.34	0.459 [0.021]*	-0.006 [0.002]*
Professionalism						
Potentially Prof.	16			0.32	0.535 [0.018]*	-0.002 [0.002]
Not Prof.	49			0.25	0.482 [0.010]*	-0.004 [0.001]*

a: Number of clinicians in each category and the percentage of all clinicians falling into each category

b: mean index of decentralization across all clinicians within a category

c: coefficient and standard error from a logit regression on whether or not an item was properly used. Each set of categories represents a different regression and each category with the set represents a dummy variable intercept term (High Scrutiny Adherence) and a slope with the order of consultations (Fall in Adherence).

Table 2: Determinants of Diagnostic Quality: Latent Professionalism, Professionalism and Organizational Demands for Quality

	dep var: whether the clinician provides a specific diagnostic input as required by protocol			
	(1)	(2)	(3)	(4)
Type				
not professional	-0.157 [0.113]			
potentially professional	0.235 [0.119]*			
Vignette-measured ability				
not professional		0.057 [0.025]*		
potentially professional		0.209 [0.041]*		
Peer Scrutiny (immediacy of the arrival of a professional peer)				
not professional			0.028 [0.004]*	
potentially professional			-0.002 [0.008]	
all clinicians				0.025 [0.004]*
Peer Scrutiny X decentralization (organizational demand for quality)				
not prof.			-0.019 [0.007]*	
potentially prof.			0.001 [0.016]	
all clinicians				-0.018 [0.007]*
patient characteristics			Included	
Item dummy variables			Included	
Constant	-1.009 [0.271]*	-1.093 [0.246]*	-0.89 [0.257]*	-0.915 [0.102]*
observations	12143	12143	12143	12143
# of unique clinicians			80	80

Standard errors in brackets. \* indicates significance at 5%

Column 1 and 2 are logit regressions, and columns 3 and 4 are random effect logit regressions with clinician random effects.