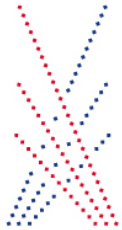

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The Dance of Power and Trust- Exploring Micro-Foundational Dimensions in the Development of Global Health Partnership

Abstract

The global health system has significantly evolved over the last 30 years, particularly since the UN Millennium Declaration in 2000. The transformation in global healthcare partnerships has been most visible in the area of neglected tropical diseases. Numerous strategic partnerships between different actors, including pharmaceutical companies, global and national health institutions and philanthropic organisations and disease specific foundations populate the landscape of neglected tropical diseases. Our research uses a rich longitudinal case study portraying 'social change' involving a tripartite public-private partnership formed to co-develop an affordable drug, for the treatment of malaria in Sub-Saharan Africa. By adopting a micro-foundational perspective, we analyse the strategic choices made by the Product Development Team in developing this drug and note the dynamic interplay between trust and power in underpinning the strategic choices by the Product Development Team as it co-evolved and adapted to institutional changes.

Keywords: Micro foundational perspective, Neglected diseases; Malaria; Public-Private Partnership Drug Development; Strategic Choice

1. **Introduction**

The global health system has significantly evolved over the last 30 years, particularly since the UN Millennium Declaration in 2000. The UN Millennium Declaration was translated into eight Millennium Development Goals, three of which were directly related to health, including; (a) reducing child mortality; (b) improving maternal health; and (c) combating HIV/AIDS, malaria and other diseases (see www.who.int/mdg). The Millennium Development Goals were in essence, quantified and time-bound targets, which were to be achieved by 2015. This resulted in a critical focus on the functioning of the institutional arrangements that underpinned activities such as the development of and access to lifesaving drugs and other available disease prevention measures.

Traditionally the institutional arrangements included key actors, such as the World Health Organisation (WHO) and national Health Ministries that exert influence at national and global levels with norms and expectations that governed the nature of relationships amongst them. Since the Millennium Declaration, this institutional arrangement and the nature of relationships have undergone a significant transition with the emergence and influence of new partnerships such as Rollback Malaria, TB Alliance and Global Alliance for Vaccines and Immunizations. Furthermore, private global health foundations such as the Bill & Melinda Gates Foundation, Ford Foundation, W. K. Kellogg Foundation, Robert Wood Johnson Foundation, and Rockefeller Foundation have provided further impetus to this stream of global healthcare alliances. The emergence of new actors and changes in the institutional arrangement is argued to have profound impact in the area of drug development for neglected tropical diseases (NTD)[1]. However, the emergence of new actors and changes in the institutional arrangement of the global health system since the Millennium Declaration has created conducive conditions, primarily in form of funding incentives, for the involvement of pharmaceutical companies in undertaking R&D activities for the development of drugs for neglected diseases.

Notwithstanding these developments, complexities underpinning the development of drugs for neglected diseases, remain underexplored in contemporary organisation and management research. In this context, our study contributes by offering a more detailed understanding of the complexities in the development of new drugs for neglected diseases by analysing the strategic choices that key actors made in this long drawn process. We do this with a longitudinal research design, which tracks the development of an anti-malarial drug–CHALDAP, which was conceptualized by a group of university scientists in early 1980s. Developed under a public-private partnership between a UK pharmaceutical company (henceforth called UK Pharma), the WHO TDR[2], and the UK's Department for International

[1] Neglected diseases are the tropical infectious diseases that primarily affect population in tropical and sub-tropical countries. Low income and high debt, poor sanitation and lack of access to healthcare characterizes these countries. These socio-economic conditions contribute in the transmission and proliferation of vector borne diseases, including malaria, dengue, chagas' disease, lymphatic filariasis and leishmaniasis. According to the WHO, these vector borne infectious diseases account for almost 17% of the global burden of all infectious diseases and considered as the leading cause of mortality, disability and poverty in tropical countries in tropical countries, where almost 73% of the population lives on less than US$2 per day and 51% of the population lives on less than US$1.25 per day (see for instance Chen and Ravallion, 2008; Hotez and Kamath, 2009).

[2] TDR is the Special Programme for Research and Training in Tropical Diseases, is hosted at the WHO and apart from the WHO, it is also sponsored by United Nations Children's Fund (UNICEF), the United Nations Development Fund (UNDP) and the World Bank.

Development (DFID), CHALDAP was approved by the UK Medicines and Healthcare Product Regulatory Authority (MHRA) in 2002 but was subsequently withdrawn in 2008.

Based on the above rationale, the focus of this paper is to explore the micro-foundational dimensions in managing unique and idiosyncratic relationships in a social change context through multiple strategic global health partnerships. Thus, the overarching objective of the paper is to analyse the strategic choices made by the key actors of the PDT in a public-private partnership (PPP). Using a micro-foundational perspective, we untangle the dynamic relationship of trust and power between the PDT and partners that essentially shaped the development of the strategic partnership. Our research uses a rich longitudinal case study portraying 'social change' involving a tripartite PPP formed to co-develop CHALDAP, an affordable drug, for the treatment of malaria in Sub-Saharan Africa. We specifically utilise a micro-foundational lens to capture the interplay between trust and power, as the critical underpinning of the strategic choices.

We contribute to the literature by offering a micro-foundational, fine grained and deeper understanding of the key strategic choices the PDT made during the 18 years period, within a technological and social change context. We do this by adopting a processual approach and analysing critical events that shaped the developmental process of this drug (Pettigrew, 1987; Pettigrew, 1997; Langley et al., 2013; Yates, 2014). We find that dynamic interplay between trust and power and how this underpinned the strategic choices the PDT made as it attempted to co-evolve and adapt to institutional changes.

The remainder of the paper proceeds as follows. The next section provides a brief historical overview on drugs developed for the treatment of malaria, particularly in tropical and sub-tropical countries, as a case of social change. Section 3 outlines the study's guiding theoretical framework focusing on micro-foundations of inter-organisational relationships that is critical in providing insights into how certain actors exercised their strategic choices and made concomitant changes to the resources and project teams in response to changes operating at multiple levels. This is followed, in section 4, by an overview of our research design, which includes the description of the data collection process and the methodology used for the analysis. Section 5 and 6 show our results presented across key themes emerging from our longitudinal design, followed by the final section with a conclusion and implications of our study.

2. Overview of Malaria and its Treatment- a Case of Social Change

Malaria is considered as one of the most fatal infectious diseases in the world, which affects nearly five times as many people as Tuberculosis, HIV-AIDS, measles and leprosy combined together (Bremen, 2001, Ranford-Cartwright, 2004). It is most widely prevalent in countries in Africa, particularly in Sub-Saharan Africa where almost 90% of malaria cases are reported and 92% of deaths from malaria occur (Lang & Greenwood, 2003; Craft, 2008; World Malaria Report, 2016). Over 90% of death burden is in under-five age group[3]. Although, the type of malarial parasite[4] and the climate of the region determine the intensity and length of

[3] World Malaria Report (2016).

[4] Malaria is caused by one of the four species of an intracellular protozoan parasite. Plasmodium vivax, Plasmodium malariae, Plasmodium ovale and Plasmodium falciparum are the four species of the protozoan parasite and vectors for malaria. These species vary in geographical distribution, microscopic

transmission, high mortality in Sub-Saharan Africa is often attributed to prevailing social and economic conditions (Keusch et al., 2013; Teklehaimanot & Mejia, 2008). Sub-Saharan Africa is amongst the most impoverished region in the world and malaria, in this region, is considered by many to be the cause and consequence of poverty (Trouiller & Olliaro, 1999, Lang, 2003, Craft, 2008). Therefore, the burden of malaria is concentrated largely on the poor. Hence, Keusch et al. (2010) suggest that malaria should not be seen merely as a medical problem rather considered as a complex ecological whole wherein humans, mosquitos and parasites are interconnected.

In terms of social change, the historical evolution of the treatment of malaria has been categorized under three major periods (Alilio et al.; 2004; Keusch et al., 2010). The first period pertain to nineteenth century until the early 1950s. The discoveries of the malarial parasite in 1880 and the malarial transmission cycle in 1887 (Harrison, 1974; Lucas & Gills, 1998) underpinned the commercial development of quinine based anti-malarial drugs in 1918. The syntheses of chloroquine in 1946 heralded a global approach to fight malaria (Loeb et al., 1946). However, within a few years, resistance to quinine and chloroquine was observed in Colombia and Cambodia-Thailand border (Payne, 1987; Petersen et al., 2011).[5] It is important to highlight that the discovery and development of anti-malarial drugs during this period was driven by the needs of the European colonial powers to protect their respective national and economic interests in various colonies (Bockarie, et al., 1999; Alilio et al., 2004; Keuch et al., 2010)[6].

The second period, between 1950s and early 1980s, was characterized by rapid proliferation of multilateral initiatives to coordinate and control malaria. The Global Malaria Eradication Programs[7] (which was the most prominent initiative) was discontinued in 1969, when it was recognized that the malarial parasite had developed resistance to the chemical dichlo-diphenyl-trichloroethane (DDT) because of its overuse. Also by late 1970s, particularly after the end of Vietnam War, the R&D for new anti-malarial drugs also came to a standstill. Notwithstanding the global burden attributed to NTDs, between the years 1975 and 1999, just 13 drugs were developed for the treatment of neglected diseases (Trouiller et al., 2002). Dearth of new drugs for neglected diseases during this period is due to lack of funding and resources and lack of interest of the pharmaceutical companies (Lang, 2008; Trouiller et al. 2002; Pedrique, 2013). In fact, between 1975 and 1999 only 4 out of a total of 1400 new drugs developed and commercialized for all disease categories, were for the treatment of malaria

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appearance and clinical manifestation. Plasmodium vivax and Plasmodium. falciparum are the most common most commonly responsible for greatest disease burden. Plasmodium falciparum is most prevalent in Sub-Saharan Africa. In this paper, the type of malaria we refer to is one that is caused by Plasmodium falciparum.

[5] Various WHO reports highlight that quinine is still used as either first line or second line therapy for severe malaria in many parts of the world, mostly in Sub-Saharan Africa.

[6] See Alilio et al., (2004) for information on specific malaria research and control initiatives in undertaken in Africa from late nineteenth century till mid twentieth century. They note that by the mid twentieth century, Britain had spent approximately £ 1million in its colonial territories to research and control malaria.

[7] The first global effort to eradicate malaria was initiated in 1955. The Global Malaria Eradication Program was initiated in 1955 in the backdrop of eradication of malaria in the United States by the use of DDT. The experts in the WHO considered DDT as the 'silver bullet' in fight against malaria (see Najera, 2011; Whittaker, 2014). Interestingly African countries, which were under malaria endemic, were excluded from the Global Malaria Eradication Program on the grounds that it was "premature to carry operations in locations with bad roads, large rural populations and precarious health systems" (Fee, 2016: 20).

(Trouiller & Olliaro, 1999). The pharmaceutical industry was largely disengaged with R&D of drugs for NTD, including malaria, since these drugs did not offer any significant return on investment (Veeken & Pecoul, 2000; Craft 2008). Lack of new drugs for treatment and rapid resistance to existing drugs for controlling malaria and raging socio-political conflicts created conditions for resurgence of the malaria endemic in Sub-Saharan Africa during the 1980s and 1990s.

The third period was characterized by humanitarian crises resulting from malaria during 1980s and 1990s brought the disease to the global attention leading to many multilateral initiatives.[8] These initiatives highlighted the recognition from various actors in the global health system for the necessity for funding R&D for new anti-malarial drugs and coordination of various efforts to control malaria. Roll Back Malaria (RBM), launched in 1998[9], was perhaps the most prominent of the initiatives. Greater participation of philanthropic organisations contributed to the emergence of Public Private Partnerships (PPPs) as the most effective approach to develop anti-malarial drugs (Moran et al., 2005 Keusch et al., 2009). The formation of PPPs underpins the collaborative nature of innovation of new drugs for NTDs including malaria (Moran, 2005; Nwaka, 2005; Jakobsen et al., 2011). Notwithstanding the significance attached to the PPPs as the most viable vehicle to develop new drugs for the treatment and control of NTDs (Kaplan & Liang, 2004; Stolk, 2013; WHO Report, 2004) and the steady increase of the formation of PPPs for the purpose (Ngoasong, 2009; Liese et al., 2010; de Vrueh & Crommelin, 2017), there is still insights on the effectiveness and functioning and decision-making dynamics within these inter-organisational arrangements (see for instance Kelly et al., 2015; Muir et al., 2016; Citrin et al., 2017). It is this social change context then that makes our study important and interesting, as we set out to explore the micro-foundational dimensions in managing unique and idiosyncratic relationships through multiple strategic global health partnerships.

3. Theoretical Framework

3.1 Micro foundations of innovation

Micro-foundations research aims at unpacking or 'decomposing' macro-level constructs by paying attention to the actions and interactions of members at various organizational levels (Baer et al., 2013; Foss & Pedersen, 2014). The fundamental argument that underpins micro foundational thinking is that, macro phenomenon, such as innovation and collaborations, are caused by micro level mechanisms, including human agents, structures and processes (Felin and Foss, 2005). In understanding the "roots of the phenomenon", Felin & Foss (2005: 452) argue that micro-foundations allows a better understanding and explanation for the emergence of and changes in a macro level phenomenon. Thus, the micro foundational approach emphasises the essence of multi-level analysis in organisational and management research.

Recent studies on micro foundations of organisational innovation recognise the significance of human capital, particularly so-called knowledge workers who contribute in generating new ideas or knowledge (Rothaermel and Hess, 2007; Felin and Hesterly, 2007). Grigoriou and Rothaermel (2014: 568) in their study identified two categories of individuals, namely "productivity stars", who are essentially knowledge or idea producers, and "relational

[8] Alilio et al. (2004) listed six specific malaria focused multilateral initiatives that were initiated between 1992 and 1999.

[9] The landscape of global health system, specifically in the context of malaria, underwent the most significant change in 1998 with the launch of Roll Back Malaria Partnership (RBM). RBM was conceived by global institutions, including the WHO, United Nations Children's Fund (UNICEF), United Nations Development Fund (UNDP) and the World Bank and aimed to halve malaria death by 2010 and halving it again by 2015 (Narasimhan and Attaran, 2003).

stars", who apart from possessing solid knowledge base are also great collaborators who succeed in establishing and brining benefits from networks of knowledge. The two types of individuals that are most prominently acknowledged in the literature have drawn insights from changes in the biopharmaceutical industry. Star scientists are attributed to drive innovation in the industry by via strategic partnerships (Zucker et al., 1998; Gulati & Higgins, 2003; Hess & Rothaermel., 2011; Anderson & Hardwick, 2017).

However, a closer review of this body of literature reveals that most studies that have explored aspects of micro foundations of innovation in collaborative context have ignored the cross-border aspects. In fact those which have paid attention to cross border context such as, Angwin, Paroutis & Connell (2015); Paruchuri & Eisenman (2012) and Tarba, Ahammad, Junni, Stokes & Morag (2017) are far and few between. Even those with cross border focus do not provide significant insights on the how the nature and content of actions and interactions between individuals shape the development of such partnerships. Our study is an attempt to fill this gap.

3.2 Relational Micro Foundation Factors in Multiple Global Relationships

The success of inter-organisational relationship quality depends to a large extent on relational factors such as trust, commitment and satisfaction (Ring & Van de Ven, 1994; Vieira, Winklhofer & Ennew, 2008; Athanasopoulou, 2009; Crosby, Evans & Cowles, 1990; Villena, Choi, and Revilla, 2015; Malik, Ngo & Kingstott, 2018;). The extant literature considers the inherent relationship between trust and control as one of the distinctive features of inter-organisational relationships (Das & Teng, 2001; Seppanen, Blomqvist & Sunqvist, 2007; Vanneste, 2017). Despite this stream of research, there is a limited understanding of how power, trust and an organisation's technical and research capabilities influence performance outcomes in inter-organisational relationships (Goles, 2002; Levina & Ross, 2003). Strong relationship quality (Goles, 2002; Lee & Kim, 1999) can reduce the high degree of information asymmetry that exists between the contracting parties and avert potential failure in an inter-organisational relationship (Arino, de la Toore & Ring, 2005; Frest et al., 2011).

3.3 Power, Trust and Organisational Capabilities

In this paper, we provide an indication of how relational factors of power and trust and organisational strategic choices of investing in certain technical and managerial capabilities can affect the quality of the relationship between the contracting parties. The extent of information asymmetry between key actors can have a positive or adverse effect on the quality and performance of relationship. Borrowing from the literature on inter-organisational relationships between software development service providers and their firms seeking to develop software products, issues of trust, power imbalance, and cultural distance between the collaborating or contracting parties has been noted to adversely influence relationship quality (Trang, Barnett & Tho, 2003). Conversely, a high level of relationship quality between the partners is often seen as an excellent predictor of their success (Lee & Kim, 1999).

Building on the resource-based view of a firm (Wernerfelt, 1984), technical capability architectures in inter-organisational relationships is seen as critical for sustained relationship quality and firm performance (Caniels & Gelderman, 2005; Croom, 2001; Day, 2000; Doney & Cannon, 1997; Goles, 2002; Plakoyiannaki & Tzokas, 2002). Trust between partners in inter-organisational relationships is noted as a key factor affecting sustained relationship performance (La Londe & Cooper, 1989). Trust has a negative association with opportunistic behaviour and maintaining the cost of negotiation, wherein low levels of trust can lead to termination of the relationship. Other studies have suggested that power plays an important and contingent role than trust does in managing relationships. It depends on the type of power in a relationship such as dispositional, coercive, or expert power to variously impact in both

positive and negative ways in a relationship. Some academics have argued that power can serve as a functional equivalent of trust (Bachmann, 2001; Hardy, Phillips & Lawrence, 1998; Das & Teng, 2000; de Rond & Bouchikhi, 2004). In line with this contingency view of power, power affects in numerous ways in different relationships such that each actor in a relationship can implement different impacts of power (Dahl, 1957) such that specific types of power can impact particular associations in particular settings (Bacharach & Baratz, 1969; Dahl, 1957). For example, facilitative conceptions of power can impact significantly by changing one's own and others' interests in a relationship (Ball, 1975; Clegg, Courpasson & Phillips, 2006). Analysing expert power in German inter-organisational third party firms, technical competence, or expert power, has the potential to reduce the negative effects of dispositional power (Glunk, Wilderon & Oglive, 1996). Tregaskis (2003), for example, found that learning through a firm's network offers affordances of knowledge or expert power in inter-organisational relationships.

4. Research Design

4.1 Methodology

Our research uses a rich longitudinal case study pertaining to the collaborative development of a new anti-malarial drug, CHALDAP. We carried out the research between 2008 and 2009, immediately after the PPP was terminated after almost 18 long years of existence. We relied on several data sources, namely, (a) qualitative data generated from face to face semi-structured interviews with key individuals, associated with the development of CHALDAP; and (b) secondary sources including internal documents, particularly the minutes of the meetings; technical committee reports and white papers released by the WHO on anti-malarial drugs; journal and newspaper publications and press releases on CHALDAP and press releases and other corporate documents from various other stakeholders. In total we interviewed 5 key informants, four of who were associated with the drug development programme all throughout its lifetime whereas the forth individual was associated from 1995 till 2002. These interviews took place over three phases between September 2008, few months after the partnership was terminated, and October 2009 and totaled approximately 30 hours. In the first phase, we interviewed the scientists including the Head of the PDT and collected and studied various reports and minutes of the PDT's meetings from 2001-2008. In Phase two, we interviewed three senior members, one of whom represented the WHO TDR and two members belonged to the pharmaceutical company. In Phase three we further interviewed scientists, the representative from WHO TDR and one member of the pharmaceutical company. Thus, over the three longitudinal phases we interviewed representatives of all three key partners involved in the development of CHALDAP. Rich information from the secondary sources, particularly white papers and policy documents pertaining to global malaria policy by the WHO and RBM were used to complement and corroborate information gathered from the primary sources.

In essence, we followed guidelines set out for a naturalistic inquiry (Lincoln and Guba, 1985) and used both first and second order analysis (Turner and Rindova, 2012). Consistent with this approach, we first wrote the case history (Yin, 2003; Eisenhardt, 1989) and then identified twelve critical events that provided the context for the strategic decisions by the PDT. Figure 1 depicts the twelve key events. In the process, we created "thick description" of the (inter) organizational and institutional changes and the strategic choices made within the changing environment. Table 1 provides a breakdown of the twelve events, identification of the strategic choices and micro-foundational dimensions.

(Insert Figure 1 and Table 1 here)

4.2 Case history

Our study focuses on an exemplary case study, tracking the co-development of CHALDAP. The collaboration for development of CHALDAP was informally initiated in 1992 between researchers based at an UK university and Dr HJ[10] who at the time was heading the 'Diseases for Developing World' Division in a UK based pharmaceutical company (Henceforth called as UK Pharma II). At that time, UK Pharma II was only one few companies which still had some interest in the development and marketing of drugs for neglected diseases. With the encouragement from Dr HJ, the scientists undertook further tests in Kenya to gather evidence regarding effectiveness of CHALDAP as compared to existing anti-malarial drugs. The partnership between UK Pharma II and the UK University, was formalized in 1996. Next year, the scientists and Dr HJ approached the WHO-TDR, which decided to join as a partner. Subsequently in 1998-99, the UK Government's Department of International Development (DFID) joined the partnership as the fourth partner.

By mid-2001, the PDT had completed all the necessary clinical tests and submitted the documents for approval from the UK Medicine and Health Regulatory Authority (MHRA). CHALDAP was approved in 2002 and was granted marketing license in the UK, and subsequently the PDT decided to register the drug in different Sub-Saharan African countries. CHALDAP was priced at US $ 29 cents for adults and US $ 18 children for a course of treatment, well below the US $1 that WHO considered as threshold price for any anti-malarial drug to be affordable to a wider population in Sub-Saharan Africa. However, in 2002-03, the WHO reviewed the global malaria policy and recommended all treatment for malaria should be combinational therapy, preferably containing an artemisinin derivative (ACT). The PDT had not anticipated the change in policy and tried to convince the WHO and Roll Back Malaria (Henceforth RBM) to allow CHALDAP to remain as a treatment option for malaria. Unable to convince the authorities, the PDT decided to add an artemisinin derivate to comply with the policy changes.

Around same time concerns were raised within the WHO and RBM regarding the safety of CHALDAP, particularly relating to its usage in the regions where glucose-6-phosphate dehydrogenase (G6PD) deficiency was prevalent. Coincidently G6PD is considered relatively common in a population exposed to Malaria in Africa (Beutler et al., 2007). In this context, queries were raised regarding how the PDT designed and undertook Phase III trials for CHALDAP before submitting documents for approval from UK MHRA. On July 1-2 2004, RBM and another division within the WHO called Essential Drugs and Medicines department convened a technical consultation to assess the risks (and benefits) associated with CHALDAP. The findings of the report was leaked to a UK newspaper in June 2005, three months before the report was finally made public in September 2005. The report concluded that information regarding safety of CHALDAP was too limited to warrant its widespread and unregulated use. The PDT rejected the findings of the report and unanimously decided to continue the development of CHALDAP in combination with an artemisinin derivative (called CHALDAP Plus). The Phase III studies for CHALDAP Plus took place in 2006-07 and it involved two trials. One trial was designed to establish efficacy of CHALDAP Plus by comparing it against an ACT and another trial was designed to establish the efficacy of CHALDAP Plus by comparing it against CHALDAP. Both the trials showed significant reduction in hemoglobin levels in patients with G6PD deficiency. On Feb 29, 2008, the PDT decided to terminate development of CHALDAP Plus and withdrew CHALDAP from the market.

[10] Details withheld for confidentiality reasons.

5. Findings and Discussion

Child (1997) defines strategic choice as "the process by whereby power holders within organizations decide upon courses of strategic actions" and the choices and actions are to be made "through initiatives within the network of internal and external organizational relationships – through pro-action as well as reaction" (Child 1972: 2). Thus, strategic choice and particularly resulting actions are a *"political phenomenon*" (Child 1997: 46). We adopted micro foundational lens to analyse the strategic choices, which are results of interaction between individuals and decision makers (Felin and Foss, 2005; Barney and Felin, 2013). We particularly focused our attention on 'trust' and 'power dynamics' to analyse the strategic choices made by the PDT in response to (a) changes within and between the organizations which we present in section 5.1; and (b) policy changes in the institutional field context which we present in section 5.2. We find that the strategic choices between 1992 and 2000 predominantly pertained to the formation of the partnership and adaptations to changes at intra and inter-partner dynamics whereas strategic choices from 2002 – 2008 were related to CHALDAP and its composition and changes PDT had to make as a consequence of policy changes by the WHO.

5.1 Strategic Choices in forming of CHALDAP and maintaining partnerships

1.Informal relationship between UK University scientists and Head of Tropical Diseases, Pharma II

A chance meeting between the two UK university researchers and Dr HJ at a WHO organised conference in 1992 led to an informal partnership between scientists and Dr HJ's team in Pharma II. The scientists had started their research in mid 1980s and were investigating the failure of Fansidar[11]. The scientists convinced Dr HJ that a combinational drug containing chlorprognuanil and dapsone, will have relatively short half-lives[12], and could provide better results against malaria resistance. The three actors recognized that the informal relationship was mutually beneficial as, "Dr HJ did not have enough budget to carry out in-house research and we were pragmatic…we had to work with a Pharma company to further develop the idea" (Scientist 2). This event highlights highlight the high levels of trust and lack of any dispositional power between the scientists and Dr HJ. Interestingly, HJ did not make any commitments, either to fund the clinical trials or establishment of any formal partnership at a later date. However, he ensured that sufficient amount of compounds of chlorproguanil and dapsone were available for clinical trials.

2. Formalization of partnership between UK Uni and Pharma II

The clinical trials that took place in Kenya and South Africa, provided evidence that the combination of chlorproguanil and dapsone was more effective as compared to existing SP based anti-malarial drug. The positive results led to the formation of the partnership in 1995 between the UK University and Pharma II to co-develop CHALDAP. The formation of the partnership reflected the quality of relationship and trust amongst the university scientists and Dr HJ and his team of scientists. In essence, high degree of trust and expert power contributed in the formalization of the relationship.

[11] Fansidar, which contained sulfadoxine and pyrimethamine, was introduced in late 1970s but by early 1980, the first signs of resistance emerged in refugee camps in Thailand and the end of the decade it was rendered ineffective (Hurwitz et al. 1981; Gatton et al., 2004

[12] Drugs with shorter half-life's require more frequent administration to maintain the correct plasma concentrations, therefore potentially presenting more problems if levels of adherence and compliance are unreliable, but longer-lasting drugs can increase the development of resistance due to prolonged periods of low drug concentration.

3. Involvement of the WHO-TDR as third partner

Within UK Pharma II the Dr HJ's used to head the Tropical Disease Team, which for the administrative purpose, was located within the International Business division. Interestingly, almost a year after the partnership was formed, CHALDAP project did not have allocated budget and Dr HJ had exhausted his existing budget to set up studies for use of albendazole for treatment of another neglected disease lymphatic filarial infections. In fact, his divisional head refused to provide any additional support to undertake developmental activities for CHALDAP and he was advised to "go find funds from somewhere else….as they were not keen to take the risk on their own" (UK Uni Scientist 1). This event in essence, highlights lack of trust on the nature of the product, CHALDAP being a combinational drug, which were uncommon until early 2000, rather than on Dr HJ himself. This also highlights asymmetric power dynamics between the Tropical Disease division and the International Business division, wherein the Tropical Disease division had significantly less resources to simultaneously develop two cheaper drugs.

Dr HJ approached the WHO-TDR, which in 1994-95 had undergone an internal review that concluded "although it has done well in developing capacity in developing countries but it has to also put aside some resources for 'translational research', developing products from funded basic research" (Representative of WHO-TDR). WHO-TDR, which was actively setting up specific product development units, decided to join the collaboration between UK University and UK Pharma II. The projected price of the drug, which the PDT calculated to be approximately $1USD per dosage, was central to the decision of WHO-TDR to join the CHALDAP partnership. The partners agreed that the cost of CHALDAP development would be shared between UK Pharma II and WHO-TDR on a 50:50 basis. The company would undertake pharmaceutical development whereas the WHO-TDR would fund and organize the necessary clinical work for registration of CHALDAP. A PDT was constituted to drive the product development process and manage the collaboration. The PDT met for the first time in September 1997 (Lang, 2003).

4. Involvement of the DFID as the fourth partner

In 1997 the new elected Labour Government established Department for International Development, a new independent ministry, headed by a Cabinet level minister with the responsibility for international aid and development. The 1999 G8 summit took place in Birmingham, UK with a specific focus on communicable diseases. The summit concluded by endorsing the formation and objectives of RBM, which was to reducing the levels of malaria-related mortality by 2010. During the summit, the CEO of UK Pharma II met with Ms Clare Short, Secretary of State for International Development and briefed her about his company's efforts to develop drugs for NTDs. In this context he specifically mentioned about CHALDAP. Involvement of DIFD not only raised the profile of Dr Horton's tropical disease division within UK Pharma II but also enhanced the profile of the CHALDAP product development programme within WHO-TDR (Lang, 2003). In essence, joining of the DFID, which was the first instance when the UK Government actively provided partnership funding to any drug development programme, immensely contributed in bolstering the Tropical Disease division within UK Pharma II.

5. Merger of UK Pharma II with UK Pharma I – formation of UK Pharma

The merger between UK Pharma II and UK Pharma I was announced in January 2000. The merger presented the most critical challenge to the CHALDAP PDT for two reasons. The first challenge pertained to lack of clarity regarding the new company's approach to tropical diseases in general and CHALDAP programme in particular. Unlike UK Pharma II, which was only one of the few pharmaceutical companies at that time to have a dedicated tropical disease research unit, albeit within the International Business division, UK Pharma I was not particularly known for drugs for tropical diseases[13]. But the new CEO of UK Pharma decided that the company would increase its focus on tropical diseases and dedicated a new campus in Spain for that purpose.

The survival of CHALDAP programme within the new setting was attributed to two factors. First, the CHALDAP PDT had already made significant progress and was in the process of submitting documents for registration with MHRA. Second, and more importantly it had gained institutional legitimacy owing to the involvement of DIFD as one of the partners. However, Dr HJ had to leave UK Pharma after his Tropical Research Division was integrated within the mainstream R&D. The person who replaced Dr HJ was part of his group and his involvement ensured continuity of the CHALDAP collaboration. Notwithstanding the concerns CHALDAP PDT had when the merger was announced, it opened the doors for the CHALDAP PDT to access expertise of UK Pharma's personnel involved in pre-clinical, clinical and regulatory affairs. Dr HJ remained involved with the CHALDAP PDT as an advisor.

6. Registration of CHALDAP

By late 2001 the CHALDAP PDT had completed and documented all the required clinical work. The registration dossier was submitted in early 2002 with the UK MHRA, the drug regulatory authority in the UK and it received approval by the end of 2002. Once the PDT received approval from UK MHRA, they decided to license it in 23 African countries. The PDT also decided that a course of CHALDAP would be available at US 29 cents for adults and US 18 cents for children, well within the $1 USD. The total cost in developing the drug was approximately US$ 5 million (Lang, 2003). The CHALDAP PDT also decided that the WHO-TDR would undertake post-marketing surveillance[14] (also known as Phase IV clinical trials) in 2003-04.

[13] Although Pharma I did not have had any significant presence in NTD category, Wellcome Trust had ongoing research partnerships with TDR (see for instance Morel, 2000). It inherited Malarone, an antimalarial drug, when it acquired Wellcome plc in 1995. Malarone was considered to be most expensive anti-malarial drug, priced at $42 USD for adult treatment course when it was introduced in 1996 (see Shretta et al., 2001).

[14] Post marketing drug surveillance refers to the monitoring and evaluation of drugs taken by individuals under a wide range of circumstances over an extended period of time after the drug is available in the market. These surveillances are undertaken to also detect previously unrecognized positive or negative effects that may be associated with a drug. The majority of post marketing surveillance concern adverse drug reactions (ADRs) monitoring and evaluation (see WHO, 2002) -

5.2 Strategic Choices and Changes in the Institutional environment and New Malaria Treatment Guidelines

7. Formation of Roll Back Malaria (RBM) Partnership

By mid-1990 malaria used to account for almost a million deaths in Sub-Saharan Africa, 70% of which used to be either children or pregnant women (see Snow et al., 2001; Rowe et al., 2006). The WHO came under severe criticism from the international community for its failure to play a central role in controlling malaria in the region (See Yamey, 2004; Snow et al., 2001; Rowe, 2006). At the same time, there was a growing recognition that tackling malaria would need a concerted global effort from global and national bodies (Narashiman and Attarn, 2003). It was under this backdrop that the WHO, World Bank, UNDP and UNICEF partnered to establish the RBM partnership, the first major effort against malaria in almost four decades[15], with an overarching goal to reduce world's malaria burden by half by 2010 (Nabarro and Tayler, 1998; Balter, 2000). The WHO-TDR representative informed us that to oversee the implementation of RBM activities, personnel from an existing division within the WHO called Control of Tropical Diseases (CTD)[16] were moved to RBM. Dr David Nabbarro, who was previously associated with the DFID, was selected to lead the RBM partnership.

8. New guidelines for Malaria Treatment

By early 2000, there was a growing perception, particularly amongst public health experts, that even after the formation of RBM, there was no significant progress towards controlling malaria[17]. The situation in Sub-Saharan Africa[18] had worsened because the existing anti-malarial drugs became completely useless due to resistance in the malarial parasite. In this context, The WHO announced a new guideline for the treatment of malaria, particularly in the areas where malaria was a resistant existing drug. The new policy called for use of combination drugs to control malaria but the combination drug must contain artemisinin.

The change in policy had two significant implications for CHALDAP, which was in the process of registration and expected to be available in African countries. First, CHALDAP was developed as a combination drug, but the changes in the guidelines meant that it was to considered as a mono therapy and not combinational therapy because dapsone not an anti-

[15] No coordinated global effort to control or eradicate malaria was initiated after the abandonment of the Global Malaria Eradication Program in 1969.

[16] WHO-TDR was conceived in 1974 with the objective of undertaking two independent objectives: (a) to coordinate and support scientific research aimed at developing new or improved techniques approaches to diagnosis, patient care, treatment and control of tropical diseases; and (b) to strengthen research capacity and capabilities in endemic countries. The Division of Control of Tropical Diseases was established in January 1990 by bringing together separate control activities for different diseases under one roof with a mandate to develop strategies at global, regional and country levels to control tropical diseases (WHO; Tropical Diseases, 1990)

[17] Between 1997 and 2002, 35 areas in Africa experienced Malaria epidemics (Source: World Health Organization Communicable diseases 2002: Global Defence Against the Infectious Disease Threat (Geneva, 2002), 174.)

[18] Between 1998-2003, some of the countries in Sub-Saharan Africa were in the midst of civil wars, which had a significant implication on widespread malaria epidemic in that reason (Act Now, Malaria Report, 2003).

malarial drug[19]. And second, CHALDAP did not have an artemisinin compound. Hence, as per the new guideline, without addition of an artemisinin compound, it could not be made available in Sub-Saharan Africa. The changes in the WHO's guidelines came as a complete surprise to the CHALDAP PDT, even though WHO-TDR, the research arm of the WHO, was one of the key partners in the CHALDAP development programme. Apart from definition of what constitute as a combination therapy and mono-therapy, the WHO's Technical Committee was categorical in stating that CHALDAP could be only available as an ACT. This event capture the increase and strengthening of dispositional and coercive power, which consequently adversely affected the relationship quality and trust between the actors

9. ***Initiation of CHALDAP Plus***

The CHALDAP PDT, tried to convince the WHO and RBM to reconsider their recommendations regarding malaria treatment but did not succeed. The CHALDAP PDT were hesitant to convert CHALDAP into an ACT because CHALDAP was already a combination drug and adding artemisinin would complicate it. But with not option available, CHALDAP PDT decided to convert CHALDAP into an ACT by incorporating artesunate, an artemisinin derivative. This event highlights the changing dynamics within the WHO, wherein RBM, whose role was to implement control initiative, virtually deciding which specific type of drugs it would like to be made available to it.

10. Technical consultation meeting convened by the WHO – RBM

CHALDAP was granted approval by the UK Medicines and Healthcare Product Regulatory Agency (MHRA) in 2003 and it was made available in the market though local private pharmacies in almost 23 countries in Africa. In this backdrop on July 1-2, 2004, the WHO and RBM convened a meeting with another WHO division called Essential Drugs and Medicines (EDM) department to assess risks and benefits of using CHALDAP in Africa. It is estimated that approximately 20-25% of population in Sub-Saharan Africa are considered to be G6PD deficient (see Nikoma et al., 2009). In this context, the technical committee raised questions on whether and how screenings were done for G6PD when the clinical trials for CHALDAP development took place. In fact, the PDT did not "do G6PD specific screening before enrolling patients in the clinical trials" (Dr HJ) WG, who was the representative of WHO -TDR, asserted that:

"any specific screening of patients was not necessary and in real life it was not possible also. We discussed that in the PDT. In these countries, at least 20% of patients are G6PD deficient. Unless we miraculously randomly took these patients and we didn't get any of them G6PD deficient! I refuse to believe that when you are enrolling 1000 patients there won't be somewhere near 20% would be G6PD deficient." (Representative, WHO-TDR)

The meeting of the technical committee posed a critical challenge to the CHALDAP PDT regarding whether CHALDAP PDT should continue or terminate the development of

[19] The WHO's Technical Consultation report, 2001 delineates the difference between combination therapy and mono therapy. It defined combination therapy as 'two or more blood schizontocidal drugs with independent modes of action and different biochemical targets in the parasite…In the context of this definition, multiple-drug therapies that include a non-antimalarial drug to enhance the antimalarial effect of a blood schizontocidal drug are not considered combination therapy' (p. 7).

CHALDAP *plus*? The PDT meeting on July 8, 2004 focused entirely on this issue. The CHALDAP PDT, wanted assurance from the WHO-TDR and WHO and RBM on whether there is support for development of CHALDAP *plus.* Interestingly, they received that assurance from the representative of WHO-TDR. The notes from the minutes of that meeting read as follows:

> *'…JL[20], speaking on behalf not just of TDR but the entire WHO, wishes to convey the interest of WHO to the continued development of CHALDAP plus. All interested groups in WHO (including RBM) see CHALDAP plus as potentially a valuable addition to the armory of anti-malarial drugs (ACT in particular) if safety and efficacy is demonstrated. TDR was fully behind the continued development of CHALDAP plus'* (MoM, 08.07.04)[21]

The continued support from the WHO and its divisions confounded the members of the PDT but they decided to continue the development of CHALDAP Plus. The view amongst the members of the CHALDAP PDT was that people within WHO and RBM viewed CHALDAP as an irritant when drive for malaria control and eradication had become ACT centric.

11. Leaking of the Technical Committee's report in The Sunday Times

On 12 June 2005, report of the Technical Committee was leaked to The Sunday Times. The article, under the title 'Health experts warn over 'dangerous' malaria drug' warned British public about UK Pharma's plans to make CHALDAP available in 34 countries in Africa. The experts leaked the findings of technical committee report because they were worried that not much research had been done on CHALDAP before it was being rolled out. The expert who leaked the report also criticized UK Pharma and by extension CHALDAP PDT for not making CHALDAP available in the UK. He says, "It strikes me as strange that if it is such a good drug, why they aren't offering to the 2000 people a year treated for malaria in Britain?" (MD in Sunday Times, June, 2005). The members of the CHALDAP PDT refuted these assertions and informed us that the reason why CHALDAP was registered with the UK MHRA was because it one of the most reputed regulatory authorities and the people in the UK do not suffer from the same type of malaria in Africa[22]. One of the scientists from the UK university and member of the PDT highlighted this incident as an "illustration of the immense politics and harassment" they faced due to their involvement in CHALDAP development.

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[20] The representative from WHO-TDR, who was associated with CHALDAP development since WHO-TDR became partner in 1996-97, left the organisation after he and his colleagues in CHALDAP PDT failed convince WHO and RBM to let CHALDAP be available in the market as a mono therapy. He became a leading figure in setting up MMV and remained member of the CHALDAP / CHALDAP *plus* PDT as representative of MMV, which had provided funding for development of CHALDAP *plus.*

[21] Notwithstanding the unequivocal assurance from the representative of the WHO-TDR, the CHALDAP PDT remained concerned about WHO-TDR's ambiguous position on issues relating to further development of CHALDAP *plus*. In the next meeting that took place on 07.09.2004, the PDT further sought a 'definitive and united lead' on WHO-TDR's position. But this time WHO-TDR did not provide them with any specific assurance (Minutes of Meeting, 07.09.2004).

[22] Chin and WelUK Pharma IIy (2004) suggest that historical evidence point to Plasmodium vivax as the most likely cause of malaria in the UK. CHALDAP, was developed for treatment of malaria caused by Plasmodium falciparum, which is prevalent in Sub-Saharan Africa.

In September 2005, almost fifteen months after the technical committee was set up and three months after the content of the report was leaked by one of the members, the WHO published the report that concluded:

> *'CHALDAP should be used only when there is a confirmed diagnosis of malaria. The potential risks associated with CHALDAP use in areas where G6PD deficiency is prevalent outweigh the benefits if the drug is used for presumptive treatment. In areas where G6PD deficiency is prevalent and a reliable clinical or laboratory diagnosis of anaemia and a test for G6PD deficiency cannot be obtained, a suitable alternative to CHALDAP should be used. If there is no suitable alternative, CHALDAP should be used taking into account all the associated risks…. The information on the safety of CHALDAP is still too limited to warrant its widespread, unregulated use'* (Report of the Technical Consultation Convened by WHO, 2005: 23)

The CHALDAP PDT, immediately convened an emergency meeting and strongly refuted the conclusion:

> *'The PDT partners were UNANIMOUS in the view that the report is premature, that it contains major scientific flaws, that it is selective in its use of published literature, and that many of its recommendations are unsupported by the data…'* (MoM 27/28.09.05)

The PDT concluded that the report of the Technical Committee as well as leaking of the content of the report was an attempt to sway public opinion.

> *'(PDT) AGREED THAT the WHO-RBM report on CHALDAP, the leak of the draft Report from WHO to the Sunday Times and resultant rumors have had major impact on the public perception of the CHALDAP PDT project'* (MoM, 27/28.09.05)

The major concern for the PDT was WHO's continued ambiguous position on the future of the development of CHALDAP *plus*. Considering lack of clarity, PDT decided to continue the development of CHALDAP plus, as previously scheduled. This incident reflects, at one end lack of transparency and trust of RBM towards the CHALDAP team and on the other end demonstrates use of media in influencing public interest.

12. Termination of CHALDAP and CHALDAP plus programmes

By the end of 2005, the Phase II study of CHALDAP *plus* was complete and the PDT received had provisional approval for Phase III trials from the WHO-ERC[23]. The Phase III studies took place in 2006-07 and involved two trials. Although in both the studies CHALDAP *plus* was found to be as effective as the current ACT, a reduction in the hemoglobin levels of patients with G6PD deficiency was observed.

The findings of the two studies were discussed in the PDT meeting that took place on Feb15, 2008. In the lights of these data:

> *'PDT was an agreement that CHALDAP plus could not be deployed in Africa for widespread public health use. The product would carry a contra-indication in G6PD deficient patients and all patients would need to be tested. This is not practical. The*

[23] All research involving human participants that is supported by the WHO undergoes final review by the WHO-ERC (Ethics Review Committee). The ERC does not accept proposals directly from the investigators. Proposals are submitted to the ERC by WHO responsible technical officers from technical departments who work closely with the Principal Investigator and are in charge of that particular project.

> *PDT agreed to the proposal from UK Pharma and MMV that development of CHALDAP plus should cease and that the product should not be registered…'* (MoM: 15.02.08)

Accordingly on Feb 29, 2008, UK Pharma issued a press release to inform the termination of CHALDAP plus projects. The press release stated:

> *"…on the basis of the data available from both the trails, UK Pharma and MMV have decided to terminate further development of CHALDAP plus. UK Pharma has also commenced a product recall process at pharmacy level in Kenya, for CHALDAP, this being the only market with recent sales of the product…"* (UK Pharma Press Release, 29.02.2008)

The final meeting of the PDT took place on April 2, 2008. The Scientist from UK University who had led the PDT throughout its existence chaired it. He thanked all the individual members of the PDT as well as respective organisations for their support for the collaboration and the members of the PDT appreciated his leadership in driving the PDT to achieve the objectives it set out to achieve. The collaboration was dissolved at the end of the meeting.

6. Conclusion and Implications

In this paper, we aimed to explore the micro-foundational dimensions in managing unique and idiosyncratic inter-organisational relationship. The backdrop of the co-development of CHALDAP, an anti-malarial drug specifically developed for the Sub-Saharan Africa, represents an illustration of an attempt to contribute to social changes in the region. The complex relationship between malaria and poverty in the region, in particular, is long recognized in the global public health domain (see Sachs and Malaney, 2002; Teklehaimanot and Mejia, 2008). Global health partnerships are a distinctive feature of the domain of global health system and yet, there has been limited studies on how such partnerships develop over time. In the paper, we analyze the strategic choices made by the key actors of the PDT in a public-private partnership (PPP). Using a micro-foundational perspective, we untangle the dynamic relationship of trust and power between the PDT and partners that essentially shaped the development of the strategic partnership. We find that the interplay between trust and power, underpin the strategic choices the PDT made as it aimed to gained legitimacy due to numerous changes at intra-organisational, (with partner organisations), inter-organisational (between partner organisations) and institutional (changes in institutional structure and changes in global policy) levels.

The historical development of CHALDAP captures the influence of (inter and intra) organizational and institutional factors on strategic choices adopted by the PDT. In general, we identified two sets of strategic choices the PDT pursed during the existence of the CHALDAP development programme. The first set of strategic choices entails forming strategic alliances or collaborative relationships with different institutions, as response to changes within the partner organisations (Oliver, 1991). Although the relationship between the two scientists and Dr HJ was initiated informally, the formalization of the partnership materialized when evidence suggested that CHALDAP could be a viable stopgap option for the treatment of Plasmodium falciparum malaria. The formation of collaboration, a strategic choice, was underpinned by existing situation within UK Pharma II wherein Dr HJ's division, essentially undertaking R&D activities, albeit for tropical diseases was not part of the mainstream R&D division. The organisational configuration captures lack of significance attached to developing drugs for tropical diseases by the pharmaceutical industry in early 1990s (Trouiller et al., 2002).

The strategic decision to approach the WHO-TDR in 1996 was a result of lack of availability of resources by UK Pharma II as previously agreed when the collaboration between the UK University and UK Pharma II was formalized in 1995. From the point of view of the WHO-TDR, forming the partnership with the UK Uni – UK PHARMA II, was essential following the internal review within the WHO-TDR, which identified its lack of success in converting basic research into applied research or viable products. Joining of WHO-TDR in the partnership not only provided funding to the fledging CHALDAP programme but also legitimized its existence (Dacin, 2008). Involvement of UK DFID in 1998 reflects the changing political environment particularly in the UK specifically, where there was a greater desire to engage with problems associated with the disease and poverty, in developing countries in general and Sub-Saharan Africa in particular (Bayne, 2008). Legitimization of the partnership, gained through external affiliation with DFID, was one of the most critical factors why CHALDAP development programme survived, when UK PHARMA II and GW merged to form GSK in 1999-2000 (Suchman, 1995). The significance of DFID's involvement with CHALDAP programme has to be seen in the context of departure of Dr HJ, the champion of the project within UK Pharma II.

The second set of strategic choices we identified relate to decisions the CHALDAP PDT took in response to changes in the policy and guidelines for the treatment of malaria by the WHO and RBM. The focus of the global community on criticality of malaria epidemic in Sub-Saharan Africa resulted in the formation of Roll Back Malaria partnership in 1998. RBM was the first malaria focus global initiative since the termination of Global Malaria Eradication programme (GMEP) in 1969. Unlike GMEP, which had presumed to find in DDT the solution to eradicate malaria, RBM had almost tool due to paucity of development of anti-malarial drugs (Trouiller and Olioro, 1997) and acute resistance to existing anti-malarial drugs. By the time CHALDAP was developed and about to be registered, artemisinin, a plant based compound derived from the Chinese Materia Medica, emerged as the 'silver bullet' for the treatment of malaria. In the backdrop of severe criticism for lack of success in controlling malaria since the formation of RBM and emerging positive results of effectiveness of artemisinin against malaria, the WHO issued new guidelines in 2002 for the treatment of malaria. The new guidelines, established ACTs as the preferred choice for the treatment of malaria and thus CHALDAP, by then the cheapest anti-malaria drug, effectively became useless. The establishment of ACT as preferred in the absence of any ACT drug at the time, is an illustration of the role played by the researchers involved in studying artemisinin in shaping the institutional field (Greenwood and Suddaby, 2006; Fligstein, 2001). The proponents of ACTs, were institutional entrepreneurs who were 'interest driven, aware and calculative' (Greenwood and Suddaby, 2006: 28) and who successfully established a new paradigm so far as treatment of malaria was concerned (Maguire et al., 2004). The intense and acrimonious interaction between the CHALDAP PDT and WHO and RBM, resulting in setting up of the technical committee in 2003-04 and leaking of the report and WHO-TDR not undertaking phase IV studies present the picture of malaria field as a 'socio-political arena' and new paradigms do not emerge in socio-political vacuum (Fligstein, 1996). The decision to convert CHALDAP into an ACT was an attempt by the PDT to co-evolve with the changing institutional context (Lewin and Volberda, 1999). Although the decision to convert CHALDAP into an ACT could be viewed as a linear development in the backdrop of new malaria guidelines, the events during that period suggest otherwise.

The global health system has undergone significant changes over the last three decades. The changes have been most prominent in the domain of neglected disease with the emergence of new institutional actors, philanthropic organisations, who have not only provided valuable resources to develop new drugs for the treatment of such diseases, but also shape and control

the coordination of efforts to control neglected diseases. Yet, the field of neglected diseases has been neglected in contemporary organisational and management research although developments in the pharmaceutical and biotechnology sector have been widely discussed and debated (Malbera and Orsenigo, 2015; Grabowski, 2011). Our paper on the development of CHALDAP, perhaps, one of the first public-private collaboration to develop a new anti-malarial drug, is an attempt to fill that gap in literature. In analysing the historical development of the CHALDAP drug development programme, we integrated insights from strategic choice theory in a co-evolutionary perspective to explain how and why the drug development programme evolved over time. Our study focuses on the strategic choices the CHALDAP product development team made over a period of almost 16 plus years, thus covered multiple level of analysis, combining (inter) organizational, personal and institutional perspectives. The capacity to co-evolve, it is assumed, would provide increased levels of strategic choice to organizations, and yet in this instance we note that was not the case. Instead, we observe that gaining legitimization was central for the CHALDAP PDT to co-evolve (and prosper). The CHALDAP programme succeeded when the PDT formed multiple partnerships with each partnership legitimizing the concept of combining chlorprognuanil and dapsone to develop a new anti-malarial drug and yet, to some of the members of the PDT claimed that association with a pharmaceutical company was one of the reasons for its downfall.

In summary then, what seems to be evident here is that typically when it comes to the like of the above discussed partnership, which often assumes an informal organisation and is based on high levels of trust and expert power- it gets affected by formal and dispositional power. What can also be observed and genetalised through this case study is that whilst initial cross-partner relational and technical resources help in the interim, going forward the formation of inter-organisational formalised rules and governance mechanisms without concomitant investments in strong technical (expert power) capabilities and a greater reliance on administrative capabilities leads to compromises in levels of trust and exercise of dispositional and coercive power. As a proposition therefore, one implication is to support growth of inter-organsiational relationships with expert-power based investments or technical capabilities and foster informal mechanisms for sharing of such knowledge and capabilities rather than having to rely on formal structures and control and reward systems. Further, we can also conclude that from a strategic choice perspective, the role of active and developmental human agency is critical in enabling such an environment as it is these choices that the key actors/stakeholders exercise to alter the dominant logic and maneuver the political system and processes for an effective relationship quality.

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Appendix

Figure 1

Figure 1: Timeline of the twelve key events in the evolution of CHALDAP Collaboration – 1992 - 2008