

**REPORT ON THE SITUATION OF
CONGENITAL ADRENAL
HYPERPLASIA IN VIETNAM
2008**

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CLAN

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Acronyms

AIDS	Acquired Immune Deficiency Syndrome
CAH	Congenital Adrenal Hyperplasia
CIF	Cost, Insurance, Freight
CLAN	CAH Living as Neighbours
EMLc	Essential Medicine List for Children
GDP	Gross Domestic Product
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
IIF	International Insulin Foundation
NCD	Non Communicable Disease
OTC	Over-the-Counter
PPP	Purchasing Power Parity
RAPIA	Rapid Assessment for Insulin Access
RCHI	Royal Children’s Hospital International
SARS	Severe Acute Respiratory Syndrome
VHI	Vietnam Health Insurance
VND	Vietnam Dong
WHO	World Health Organization

1. Executive Summary

The Rapid Assessment Protocol for Insulin Access has been used to improve health systems in resource poor settings for diabetes. In Vietnam as the protocol was being implemented for diabetes the opportunity was taken to collect data and clearly identify the barriers to medicines and care that people with Congenital Adrenal Hyperplasia face. This was done in order to affect sustainable change in addition to increasing the data on Congenital Adrenal Hyperplasia and its financial impact on the health system and people with this condition. Parts of the International Insulin Foundation's report on diabetes in Vietnam has been used as part of this report.

There is a need for the Vietnamese health system to develop models for managing chronic disease in order to address the potential human and economic impact of the rising trend of chronic diseases, which may overburden both the health system and households and therefore impact development.

The Rapid Assessment Protocol for Insulin Access is not a statistical assessment of the health system, but has as its aim to assess in a short time the situation with regards to diabetes care in a given country. Its aim is to get a picture of the health system in order to provide different stakeholders involved in diabetes in a given country recommendations for action.

This protocol was carried out in Hanoi, Ho Chi Minh City, Thai Nguyen Province and Dong Nai Province. The information presented in this report in no means presents the actual situation of Congenital Adrenal Hyperplasia throughout Vietnam. It however illustrates that even in the two main urban areas as well as two relatively wealthy and urban provinces many challenges exist.

CLAN's work has been crucial in developing services for Congenital Adrenal Hyperplasia in Vietnam. The work of CAH Living as Neighbours is based on 5 pillars:

1. Ensuring affordable access to medication
2. Education (of patients, families, health care professionals, policy makers and the international community)
3. Optimisation of medical treatment
4. Encouragement of family Support Groups
5. Reducing the financial burdens that result in poverty

This report will use these 5 pillars as a basis for its analysis.

1.1. Key Findings

The main finding from this research is the lack of availability of Hydrocortisone and Fludrocortisone used in the treatment of Congenital Adrenal Hyperplasia due to these medicines not being registered in Vietnam. These medicines have only recently been added to the World Health Organization Essential Medicine List for Children highlighting a lack of awareness of this condition on the international scene. Local authorities lack awareness of Congenital Adrenal Hyperplasia due to the many challenges that the Vietnamese health system faces.

Despite a donation programme for these medicines many families still faced difficulties accessing these medicines as well as high cost of medicines when they could be found. This led to poor adherence in turn causing high rates of admission. Even though well-trained healthcare workers were present in the main paediatric hospitals the lack of medicines meant they were helpless.

The structure of the Vietnamese health system means that Congenital Adrenal Hyperplasia is only treated in the 3 paediatric hospitals, one located in Hanoi and the other two in Ho Chi Minh City. Challenges exist as most children may be diagnosed in “birthing” and provincial hospitals and then be sent to these specialised facilities. This means that sometimes parents are unable to take advantage of existing insurance schemes as they access higher levels of the health system without proper referral. Even at these specialised paediatric facilities the necessary laboratory equipment is lacking and their outpatient departments are overburdened and do not have specialised outpatient consultations for Congenital Adrenal Hyperplasia.

In looking families’ knowledge this is quite low due to inadequate education from healthcare workers being overburdened during outpatient consultations and also a lack of knowledge on how to educate patients. In parallel many materials available are not adapted to the socio-cultural situation in Vietnam. Congenital Adrenal Hyperplasia clubs have been established in two of the three paediatric hospitals and patients and healthcare workers are extremely positive about the role they play. The main benefit of these clubs seems to be the social support and network they provide. However they only meet once a year.

1.2. Recommendations

In looking at the 5 pillars the recommendations for each of these are detailed.

1. Ensuring affordable access to medication

- Inform Vietnamese authorities of inclusion of Hydrocortisone and Fludrocortisone on World Health Organization’s Essential Medicines List for Children
- Advocate for registration of these medicines in Vietnam with the private sector, the Ministry of Health and key opinion leaders
- Advocate for registration of these medicines within the list for the Public Sector with the Ministry of Health, key opinion leaders and directors of the necessary health facilities
- Ensure that health facilities order these medicines

2. Education (of patients, families, health care professionals, policy makers and the international community)

- Develop materials that are adapted to the local socio-cultural situation
- Develop training courses for healthcare workers in paediatric hospitals
- Involve nurses more actively in patient education
- Organise training/awareness at “Birthing Hospitals” and in Provinces
- Use publications and reports to inform policy makers in Vietnam of the situation of Congenital Adrenal Hyperplasia
- Develop a Congenital Adrenal Hyperplasia research agenda in all countries where CLAN is active (comparative studies, economic, etc.)

3. Optimisation of medical treatment

- Develop links between the main paediatric hospitals and “Birthing” and Provincial Hospitals
- Improve newborn screening and identification of symptoms
- Develop specialised consultation for Congenital Adrenal Hyperplasia within the development of a paediatric chronic consultation and improve inclusion of laboratory testing
- Include psychological support within this consultation

4. Encouragement of family Support Groups

- Develop a new club at the third Paediatric Hospital
- Investigate ways of increasing the number of club meetings
- Involve club more actively in assisting families

5. Reducing the financial burdens that result in poverty

- Improvements in access to medicines, education of families and healthcare workers will indirectly address this
- Develop a patient bill of rights/guide on how to use the health system for children with chronic diseases
- Investigate development of insurance schemes at the three main paediatric hospitals for children with CAH
- Involve Vietnamese foundations in assisting with the financial burden

The main recommendation from this report are that the issue of access to medicines needs to be addressed as a priority.

2. Background

2.1. Method of Assessment – Rapid Assessment Protocol for Insulin Access

The International Insulin Foundation (IIF) was established by leading academics and physicians in the field of diabetes with the aim of prolonging the life and promoting the health of people with diabetes in resource poor countries by improving the supply of insulin and education in its use.

In order to achieve these objectives, a clear analysis of the constraints to insulin access and diabetes care is needed. The IIF's view is that increasing the supply of insulin through donations or other means, however generous, offers only temporary relief and that the root of the problems of insulin supply and diabetes care need to be identified and tackled. This led the IIF to develop the Rapid Assessment Protocol for Insulin Access (RAPIA). (1)

Past implementations of the RAPIA have lead to improved supplies of insulin, development of diabetes associations, improved education and development of Non Communicable Disease (NCD) policies.

The IIF was contacted by CAH Living As Neighbours (CLAN) to collaborate on the implementation of the RAPIA in Vietnam and include questions regarding Congenital Adrenal Hyperplasia (CAH).

The RAPIA (1) is structured as a multi-level assessment of the different elements that influence the access to insulin and care for people with diabetes in a given country.

The RAPIA is divided into 3 components:

- Macro – aimed at the Ministerial levels, Private Sector, National Diabetes Association, Central Medical Store and Educators
- Meso – Provincial Health Officers, "Health Care Settings" (Hospitals, Clinics, Health Centres, etc.) and Pharmacies/Dispensaries
- Micro – Carers (Healthcare Workers and Traditional Healers) and people with diabetes.

The RAPIA provides information in the categories of:

- Health service structure and functioning with regards to procurement of medicines, diabetes management
- Diabetes policies written and enacted
- Reported and observed practice for diabetes management
- Availability of insulin, syringes and monitoring equipment
- Existence of distribution networks for insulin

- Insulin supply-related knowledge and attitudes amongst people with diabetes and their carers.
- Other problems that hamper the access to proper insulin and care

The RAPIA is not a statistical assessment of the health system, but has as its aim to assess in a short time the situation with regards to diabetes care in a given country. Its aim is to get a picture of the health system in order to provide different stakeholders involved in diabetes in a given country recommendations for action.

In Vietnam the RAPIA was carried out in Hanoi, Ho Chi Minh City, Thai Nguyen Province and Dong Nai Province. Socio-economic data on these areas can be found in Appendix 1.

A total of 204 interviews (for diabetes and CAH, detail can be found in Appendix 2) were carried out in Vietnam in addition to reviewing government and facility statistics, publications and reports.

This report in no means presents the actual situation of CAH throughout Vietnam. It however illustrates that even in the two main urban areas as well as two relatively wealthy and urban provinces many challenges exist.

2.2. Vietnam

Vietnam is located in South-East Asia and borders Laos, Cambodia and China. (See map in Appendix 3) Its capital is Hanoi and is divided into 59 provinces, which are then divided into districts and communes. (2)

Vietnam has a population of 84.1 million people of which 72.9% live in rural areas. (3) Gross Domestic Product (GDP) per capita at Purchasing Power Parity (PPP) is US\$ 2,600 (2007 estimate) (2) or US\$ 638 (2005) in real terms. (3) The Government Statistics Office defined the official poverty rate at VND 213,000 (US\$ 13.00¹) in 2006 per month.

Over the next few years Vietnam will see an ageing of its population. In 2000 more than half the population was under 25 and it is estimated that by 2020 40% of population will be under 25 and 10% over 60 (4).

Vietnam is ranked 105 out of 177 on the Human Development Index² (HDI). (5) Over the past few years Vietnam in parallel to rapid economic growth which has led to a sizeable decrease in poverty levels also initiated pro-poor economic policies called “Doi Moi” in the late 1980s. (6) The result of this has been a decrease in the number of people living below the international poverty line from 58% in 1993 to 16% in 2004. (4) Poverty mainly affects rural population and minority groups. (4) Included in the Doi Moi policy was the aim to find alternative sources to government funding, including for the health sector. (7)

Many people are considered to be living just above the poverty line and are therefore at risk of falling below this level. (3) In Vietnam poverty affects rural areas to a larger extent than urban dwellers, with 90% of the poor living in rural areas. (3)

Life expectancy at birth is overall 71.07 years (68.27 for males and 74.08 for females). (2)

¹ For the purpose of this report the exchange rate of US\$ 1.00 = VND 16,333 will be used

² A combined measure of income, education and health

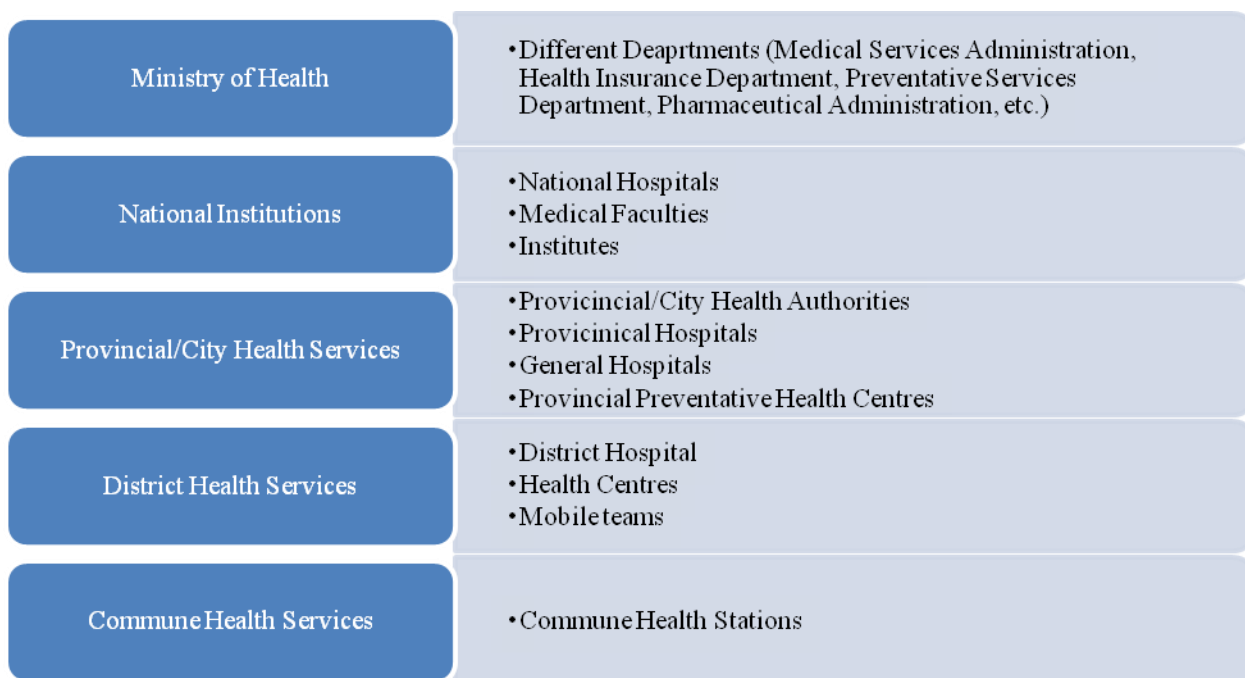
2.3. Vietnam's healthcare system

The Ministry of Health is the national authority with regards to the provision of health services. Provincial and District Health authorities and the Commune People's Committee are responsible for the development and implementation of health strategies in Vietnam. (8)

Despite having a strong central level, local government plays an important role in the provision of many services including health. Administration of health services is the responsibility of a health bureau at provincial and district level. The provincial health bureau administers provincial facilities and oversees the delivery of healthcare through district hospitals and communal health centres.

The structure of the health system mirrors the administrative structure of the country as detailed in Figure 1.

Figure 1 – Structure of the Health System in Vietnam



Over the past few decades Vietnam's health system has tried to move away from one that was centralised to a more decentralised model.

The Ministry of Health is responsible for developing national strategies and programmes as well as for the functioning (budget and manpower allocation) for the national institutions. The Central level also plays a supervisory role for the national institutions and the Provincial level.

At the Provincial level the Provincial People's Committee is responsible for manpower, budgeting and policy and planning. At the provincial level there are services for prevention, maternal and child health, family planning and control of communicable diseases (Tuberculosis, Leprosy, Trachoma). Management at the two lower levels is done by the District and Commune People's Committees. At the District levels similar preventative services are offered. In addition mobile units may exist for delivery of healthcare in remote areas. At the Commune level,

healthcare delivered by the Commune Health Station is focused on hygiene, vaccinations, antenatal care, safe delivery and health education.

Despite trying to devolve care to lower levels of the health system, care is mainly provided in hospitals. In Hanoi National Hospitals exist for each type of condition, e.g. National Cancer Hospital, National Hospital of Endocrinology, etc. In cities health care is delivered mainly through hospitals (specialised or general) in the public sector or private clinics. Each Province has a Provincial hospital and the level of facility below this is a Health Centre in the Districts. There are a total of 903 Hospitals in Vietnam and 6.2 doctors per 100,000 population. (9) More details on facilities and human resources can be found in Appendix 4. Children will mainly be cared for at hospitals. The challenge for CAH is that children are born in “birthing” hospitals and then will need to be referred to paediatric hospitals if they are ill.

The referral system has many problems with patients jumping to higher levels without being directly referred. Patients with insurance are controlled with referral letters. Patients without insurance, as long as they pay there is no problem where they seek their healthcare. Children are often not cared for at Health Centres due to fear of treating children they will often go straight to hospital.

Hospitals have 3 main sources of income:

- Government budget
- Fee income directly from patients
- Fee income from Health Insurance

Therefore hospitals actually are keen to attract and keep patients as this is an important source of income.

By 2000 around 60% of health spending was undertaken by provinces. Out of pocket expenditure is still the main source of income for the health system. 30% of this is paid in the form of user fees and the remainder being spent on medicines and medical supplies. The share of income from Health Insurance has progressively been increasing.

The driving force behind Vietnam’s health strategy has been prevention, delivering health services to the community, involving all of society in improving healthcare, expanding coverage of health insurance system, adding value to the role of traditional medicine and involving the private sector. (6)

Following the health reforms the Vietnamese government implemented 3 broad based measures to reduce the cost of care. (10) The first of these in 1994 was the introduction of user fees at commune health centres. Following this the government introduced a series of exemption criteria aimed at the poor. The final measure was the introduction of a social health insurance scheme in 1993. This scheme, funded by the government, provided cover for Civil servants, state enterprise workers, the military and Communist party officials, and private firms with more than 10 employees who were required to enrol their workers. To date the majority of subscribers to this scheme are school children who are enrolled by their school, with the children’s parents paying the cost of the contribution.

Different health insurance schemes are present in Vietnam. Care and medicines for children under the age of 6 are free and children attending school are covered through one insurance

scheme. Other sections of the population, retired government employees, members of farmers groups, etc. are also covered through other schemes.

2.3.1. Health Financing

In 2004 Vietnam spent 5.5% of its GDP on health which was equivalent to US\$ 49.8 at PPP (11) and it is estimated that in 2006 the World Health Organization (WHO) benchmark of US\$ 45 (in real terms) was attained. (4) More information on healthcare spending in Vietnam can be found in Appendix 5. This data from the WHO shows that 72.9% of health expenditure is private expenditure and of this 88% is out-of-pocket expenditure.

Funding for health services has been devolved to the provinces. The State Budget Law of 2004 increased this budgetary autonomy and provides the provinces with two types of grants “salaries and wages” and “all other operations and maintenance”. These grants are determined based on population size, disease burden and needs. (6) User fees are determined by each Province. Decrees 10 (2002) and 43 (2006) set about creating a structure whereby hospitals became operated like state operated companies. (4) In order to assist health facilities, especially hospitals to increase revenue, Decree 10 was implemented by allowing them to save resources and also by expand their elective health services. For example, government budget and user fees contributed respectively 42 percent and 36 percent to the funding sources for hospitals in 2005, while the Health Insurance contributed only 16 percent.

The Vietnamese government launched compulsory and voluntary health insurance schemes. These are administered by Vietnam Health Insurance (VHI) under the authority of the Ministry of Health. The VHI is the coordinating organisation with regards to the compulsory and voluntary health insurance schemes. It is managed by different government institutions: (7)

- Ministry of Health
- The ministries responsible transport, communications, oil and coal
- 61 provincial people’s committees

The government in its strategy of managing the health system combines reliance on market mechanisms in parallel to government intervention through subsidies to specific target groups. The three schemes that currently exist are: (6)

1. Compulsory coverage: this scheme insures all active and retired workers from the public sector and salaried workers in the private sector (for companies of 10 or more workers).
2. Voluntary coverage: This is the scheme that covers school children (per capita contribution collected by schools) and the Farmer Voluntary Insurance Scheme where farmers pay 30% of their premium and the provincial government covers the remainder
3. Full subsidies by the government: Under this scheme there are reward schemes for merit, free health cards for the poor, etc.

Under the current regulations, compulsory participation is applied to all active workers and retired people in the public sector, as well as salaried workers in the private sector regardless the size of enterprises. In addition, some groups of people, such as foreign students in Vietnam, advanced aged people (90 years old and over), and veterans and dioxin victims, are also included in this scheme. In particular, the poor have also been included to the compulsory scheme since 2005. (12)

In order to increase access to healthcare for the poor the Vietnamese Government passed Decision 139 (2002) for a Health Care Fund for the poor due to the failure of fee waiver programmes. (4) This fund covers 14.3 million people and has increased utilisation of Healthcare for the poor, but

some problems exist with its deployment. (4) For people covered by this scheme the government pays the insurance contribution of VND 50,000 (US\$ 3.06) per person per year. In addition for children under 6 the government reimburses the cost of care to the facility and Primary Healthcare services free for the elderly. For those contributing to the Insurance scheme contributions will vary from a minimum of VND 30,000 (US\$ 1.84) to VND 160,000 (US\$ 9.80) per year and are based on the province where they live. For those who have their Health Insurance paid for from their salary 3% is taken as their contribution with employers paying 2% and employees paying 1%.

People using Health Insurance will register at a given hospital. Some schemes have Health Insurance covering everything up to VND 100,000 (US\$ 6.12) anything above that patient has to pay 20% of total. Table 1 and

Table 2 details the different contributions to the Health Insurance Schemes.

Table 1 – Average contribution to compulsory Health Insurance Scheme (12)

VND (US\$) per year	2000	2001	2002	2003	2004	2005
Compulsory participants	135,570 (8.30)	150,451 (9.21)	162,964 (9.98)	217,214 (13.30)	227,589 (13.93)	286,354 (17.53)
The poor	30,916 (1.98)	20,161 (1.23)	21,752 (1.33)	30,741 (1.88)	43,907 (2.69)	42,366 (2.59)

Table 2 – Current required contributions to the voluntary Health Insurance Scheme (12)

Participants	VND (US\$)	
	Urban	Rural
Location or association-based	160,000 - 320,000 (9.80 - 19.59)	120,000 - 240,000 (7.35 - 14.69)
Pupils and students	60,000 - 120,000 (3.67 - 7.35)	50,000 - 100,000 (3.06 - 6.12)

Members of the voluntary Health Insurance are also entitled to both inpatient and outpatient cares at all health care levels. For the outpatients, VHI will cover 100 percent of medical cost of less than VND 100,000 (US\$ 6.12), and only 80 percent of medical cost of more than VND 100,000 (US\$ 6.12). The reimbursement rate for inpatients is 80 percent for the cost of less than VND 20 million (US\$ 1,224.52) per case. In addition students will also receive 17.4% of the total collected premium for health promotion and first-aid activities.

The benefit packages provided to the participants of the compulsory Health Insurance Scheme include inpatient and outpatient services at all health care levels, laboratory exams, x-ray, and other diagnostic imaging procedures. Some expensive high-tech health services, such as open-heart surgery, are also covered by the compulsory Health Insurance Scheme.

There is also a list of reimbursable drugs, which is comparable with those in some developed countries.

At the end of 2004, about 18 million people were covered by VHI. After the issuance of the Decree 63/2005 and supplementary regulations, the number of participants in the VHI substantially increased to 23.4 million (or equivalently the coverage rate increased from 22 percent to 28 percent of the whole population). In 2006, the total number of VHI members

reached 30.5 million, in which 11.2 million (or about 37 percent) were poor people (12) The government aims to have universal Health Insurance coverage by 2010. (13)

Sometimes people with Health Insurance still incur costs that need to be paid. Health Insurance has been found to decrease out-of-pocket expenditure by only 30-60% depending on type and level of care. (13)

Wagstaff (10) in looking at the economic consequences of health shocks in Vietnam found that urban households were more negatively impacted than rural households. Even households with health insurance experienced increased expenditure on health costs following a health shock.

Other studies on the impact of Health Insurance on out of pocket payments have shown no effect. In 1998 it was estimated that out of pocket expenditure in Vietnam represented 80.5% of total health expenditure. Of this the largest item of expenditure was medicines. Out of pocket expenditure represented 12.6% of non-food expenditure in Vietnam. (14) (4) (See

Appendix 6 for more details)

2.3.2. Health Indicators

Vietnam's health indicators, such as life expectancy and infant mortality, are comparable to countries considered middle income countries such as Brazil (HDI = 70), Turkey (HDI = 84) and Algeria (HDI = 104). Vietnam has also been successful in implementing preventive programmes, control of communicable diseases and reaching good health outcomes for its population. (15) For example under 5 mortality rate declined from 42% in 1999 to 27.5% in 2005 (4)

To date Vietnam has been not affected to a large scale by HIV/AIDS with the epidemic being confined to certain specific groups such as injecting drug users where the prevalence was 32.2%. Vietnam's health system is facing an increasing challenge from HIV/AIDS with more than 100 new infections per day and a doubling of the number of people living with HIV between 2000 and 2005 from about 122,000 to 263,000. (3) Together with HIV/AIDS, Severe Acute Respiratory Syndrome (SARS) and Avian Flu present new challenges to the Vietnamese health system. In parallel there has been a re-emergence of certain Communicable Diseases such as Japanese Encephalitis, Dengue Fever and Tuberculosis. (4) NCDs are also emerging as a challenge to Vietnam's health system.

2.3.3. The Challenge of Non Communicable Diseases in Vietnam

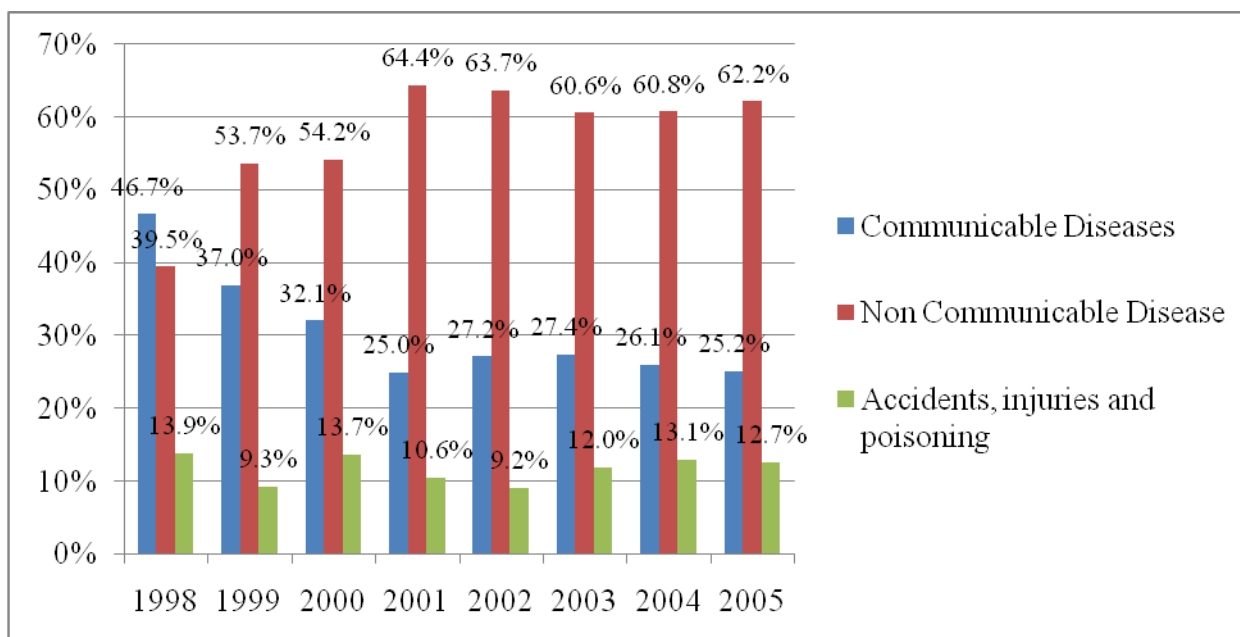
"The Vietnamese health system with its vast experience and ability to effectively deal with communicable disease is still limited in its capacity and experience to prevent Non Communicable Diseases" (4)

Vietnam faces a double burden of disease and the challenge of malnutrition and over nutrition. For example in 2005 malnutrition in children under the age of 5 was 25.2% in parallel to 1.3% of children under 5 being overweight. (4) Rates of NCDs are increasing in both adults and children. For example asthma affects 10% of children in Hanoi and 16.7% in Ho Chi Minh City (4)

As can be seen in

Figure 2 the burden of NCDs in Vietnam has been increasing steadily and in 2005 represented 62.2% of the total disease burden. (16)

Figure 2 – Increasing burden of NCDs in Vietnam 1998-2005 (16)



Besides an increasing burden of disease due to NCDs, these conditions also represent a large cause of mortality with 47.1% of all deaths in 2002 caused by a NCD. In looking at causes of death by age group, excluding Trauma, the burden of NCD deaths is the highest in all age categories except for children under 4 years of age, as detailed in Table 3. (16)

Table 3 – Causes of death in 2002 (16)

Causes of death (2002)	Perinatal	CD	NCD	Trauma	Elderly 70+	Other
Overall	2.8%	12.4%	47.1%	10.8%	23.3%	3.8%
Male	2.6%	14.7%	50.2%	13.7%	15.2%	3.6%
Female	3.1%	9.7%	43.2%	7.1%	32.9%	4.1%
Less than 1	58.2%	18.1%	14.6%	2.5%		6.7%
1-4		38.5%	22.4%	25.8%		13.4%
5-9		29.6%	29.9%	39.4%		1.2%
10-24		9.9%	24.9%	56.5%		8.7%
25-59		16.2%	59.0%	19.5%		5.2%
60+		9.5%	48.8%	3.2%	36.1%	2.4%
Poor	5.0%	19.9%	34.6%	12.2%	20.4%	7.8%
Middle	2.4%	11.6%	49.8%	9.5%	23.0%	3.8%
Rich	2.1%	9.2%	51.1%	11.0%	24.9%	1.8%

The WHO estimates that diabetes represented 2% of total deaths in 2002 with NCDs accounting for 66%. (17) More details of this data can be found in Appendix 7.

Very little is known about NCDs in children and few studies exist looking at CAH epidemiology.

2.4. Implementation of RAPIA in Vietnam

Vietnam's economic development and parallel improvements in health means that in the future more children with chronic conditions will be surviving.

Implementing the RAPIA in Vietnam including questions on CAH had as its aim to clearly identify the barriers to medicines and care that people with CAH in Vietnam face in order to affect sustainable change in addition to increasing the data on CAH and its financial impact on the health system and people with this condition. Following this initial assessment the information provided will allow specific projects to be developed to address problems identified in order to improve diabetes care and access to medicines for this condition in a sustainable manner. It will also help develop a health system capable of tackling the growing challenge of chronic diseases.

Past implementations of the RAPIA have lead to the following improvements for diabetes:

- Improved access to insulin and other medicines for diabetes
- Improved purchasing measures and decreased prices for insulin and medicines for diabetes
- Development of diabetes associations
- Development of national policies for diabetes and non communicable diseases
- Funding for diabetes projects
- Improvement in care for people with diabetes
- Increased awareness within the country where the RAPIA was implemented and internationally about the problems of diabetes

This is the first implementation of the RAPIA in Asia and inclusion of non-diabetes related questions and this will help to see if the lessons learnt from implementations in sub-Saharan Africa and Latin America are valid in the Asian context and for another chronic endocrine disorder.

There is a need for the Vietnamese health system to develop models for managing chronic disease in children in order to address the potential human and economic impact of the rising trend of chronic diseases, which may overburden both the health system and households and therefore impact development. The implementation of the RAPIA will result in concrete recommendations for the health system in Vietnam to ensure that the negative effects of globalisation and economic development are not jeopardized by increasing levels of chronic conditions. (18)

3. CAH in Vietnam

Based on one newborn screening study carried out by Nguyen and Pham the estimated prevalence of CAH in newborns was of 1 in 5,200 in Ho Chi Minh City. (19)

This rate is quite high compared to other studies detailed in

Table 4.

Table 4 – Prevalence of CAH in newborn screening programmes from different countries

Country	Prevalence	Reference
India	1 in 2,575	(20)
Kuwait	1 in 9,000	(21)
Taiwan	1 in 14,822	(22)

From the cohort of children with CAH interviewed for this project the average age at diagnosis was 5 months, with a maximum at 4 years of age. One mother had been diagnosed before giving birth. On average these children had CAH for 2.1 years with a maximum of 7.9 years. Other data from Armstrong et al. (19) show that the median age at diagnosis was 7.1 days and median time to correct gender assignment was 7.8 days (maximum 10 days) with two females being incorrectly assigned gender at birth. One parent interviewed for this project was still not sure of the gender of her child 15 days after birth.

From discussions at the three main paediatric hospitals in Vietnam (National Hospital of Paediatrics, Children’s Hospital No. 1 and Children’s Hospital No. 2) where most children with CAH are likely to be treated, it is clear that the number of children diagnosed with CAH has increased over the past few years. Healthcare workers stated that this rapid increase in numbers of patients with CAH was linked to the increase of knowledge and awareness of CAH.

Table 5 – Data on numbers of children with CAH at the three main paediatric hospitals in Vietnam

Facility	Total number of children with CAH	Newly diagnosed children in the last 12 months	Newly diagnosed cases as a percentage of total cases
National Hospital of Paediatrics	400	120	30%
Children’s Hospital No. 1	90	20	22%
Children’s Hospital No. 2	30	5-8	17-27%

Between 2004 and 2007 the National Hospital of Paediatrics saw 47, 51, 41, 40 new cases CAH. (23)

From the families interviewed only one had their child diagnosed before the onset of symptoms. Healthcare workers identified adrenal crisis and newborn screening as the main ways of presentation. In discussions with healthcare workers approximately 30% were referred to them following newborn screening programmes.

Even though many healthcare workers interviewed stated that more young children with CAH were surviving what was striking was the lack of older children with CAH. The eldest child with CAH was reported as being aged 12-13 and that over 90% of children with CAH were aged under 15.

Armstrong et al. identified the following proportions of types of CAH in Hanoi. (24)

Table 6 – Types of CAH present in cohort of patients followed at National Hospital of Paediatrics (24)

Gender	Simple Virilising CAH	Salt-wasting CAH	Other types of CAH	Total
Male	27	116	4	147 (58%)
Female	50	58	0	108 (42%)
Total	77 (30%)	174 (68%)	4 (2%)	255

3.1. Morbidity

A study found that age at surgery ranged from 4.5 months to 13 years (average 2.5 years) (24) 20% of families interviewed for this research had a child that had surgery. 1 girl interviewed had been operated on twice. One hospital reported a case that was found extremely late and a girl was reassigned her gender as a boy.

On average the children interviewed were admitted to hospital at least twice. The largest number of admissions was 6 in a child who had CAH for 1.9 years. The main reasons for admission in children already diagnosed were vomiting, weight loss and dehydration which can all be linked to lack of adherence to treatment.

4. Vietnam's medicine supply

The annual Vietnamese pharmaceutical market was estimated at about VND 5,526 billion (US\$ 425 million) in 1997 or about US\$ 5.20 per capita in sales. Of this, only VND 1,385 billion or 25% represents the market for locally produced drugs, the remaining 75% of the market is accounted for by imports. It is estimated that essential drugs account for 60% of total sales of medicines. (8) In 2000 expenditure on medicines increased to US\$ 9 per person and as a total represented 41% of expenditure on health. (4) Current estimates show the market to be worth US\$ 1.15 billion with double digit growth from 2008-2012. (25) By 2012 Vietnam's Pharmaceutical Market will have reached US\$ 1.85 billion (1.05% of GDP).

Of the total market 40% of sales are for hospitals with the remainder at pharmacies in the private sector. Of this 60% of sales at pharmacies 80% of this is for Over the Counter (OTC) medicines.

Purchase of medicines does not only represent a financial burden for individuals, but also for facilities. For example a General Hospital in Hanoi with a total had a total budget 100 billion VND (US\$ 6,122,574) medicines represented the largest item of expenditure representing 38% of total budget followed by 18% on Human Resources. (Personal Communication)

All medicines registered in Vietnam will not necessarily be present in the Public Sector. The Ministry of Health has developed lists of medicines available at the different levels of the health system. This list is also used for the Health Insurance to reimburse these medicines.

Products without registration can be imported with special authorisation due to:

- Special demands for rare diseases
- Special requests from hospitals

There is no centralised purchasing of medicines in Vietnam. Selection of medicines is decided at a facility level by a Medicines Board and is based on recommendations by doctors in

collaboration with pharmacists. Facilities in planning their needs will use historical orders from the previous year and plan 10-15% more. This plan is submitted to the managing health authority (Ministry of Health or Provincial Health Authorities) for approval. Following this the tender is advertised. As each hospital prepares its own tender this limits the bargaining power it can have with distributors and wholesalers. Decisions on which medicines to purchase are made based on a grading scale that takes into account the price of the medicine versus its source and perceived quality. Hospitals will plan tenders every 6 months to 1 year. The Ministry of Health sets out the regulations for the tendering process, but does not intervene in these.

In assisting with tenders the Ministry of Health prepares a guide price list for most medicines. Vietnam uses reference prices from Thailand, Malaysia, Cambodia and Laos and also the CIF price from the medicines registration file as indicator for this price. This price list is only used as a reference by facilities when preparing their tenders.

In looking at prices for medicines for diabetes and comparing them to prices quoted on the International Drug Price Indicator most prices quoted by the Ministry of Health are substantially higher than those from the International Market. (26) This information can be found in

Appendix 8.

The reform of the health system led to increasing the role of private pharmacies in drug distribution. In addition in Vietnam self-medication is extremely high, especially in unisured (4), with 90% of drug dispensing found to be without prescription and the customer deciding themselves which drug to buy. This same work found that most medicines are sold under their trade names and not generic versions. (27)

Discussions with Clinicians, Pharmacists and patients revealed a low level of confidence in generic medicines.

5. Access to medicines for CAH in Vietnam

The issue of access to medicines for CAH is complex in Vietnam and problems that patients face are directly linked to different factors both outside and inside Vietnam. Firstly, both Hydrocortisone and Fludrocortisone have only just been added to the WHO's Essential Medicines List for Children (EMLc) in 2008. (28) The WHO now recognises that "fludrocortisone and hydrocortisone are both essential medicines for children in the management of congenital adrenal hyperplasia and adrenal insufficiency, and included them on the EMLc". (28)

As Vietnam uses the WHO Essential Medicines List as a guide and these medicines were not present on this list they were not included in Vietnam's purchases of medicines.

In addition to this international factor, these medicines were not registered with the Ministry of Health in Vietnam. This means that these medicines cannot be imported and sold in Vietnam.

Besides oral Hydrocortisone and Fludrocortisone, injectable Hydrocortisone is needed. Some formulations of injectable hydrocortisone were available, but it was not clear of these formulations were appropriate for the treatment of CAH in children. The types of Hydrocortisone registered in Vietnam are detailed in Appendix 9.

In a quick survey of pharmacies in Hanoi and Ho Chi Minh City 71% and 33% of private pharmacies surveyed had Hydrocortisone for injection 100mg at an average price of VND 25,570 (US\$ 1.57) and VND 17,833 (US\$ 1.09). It was not clear if these formulations were appropriate for children with CAH. The price from Public Sector tenders is detailed in Table 7.

Table 7 – Public tender prices for Injectable Hydrocortisone 100mg

Type	VND (US\$)			Brand Premium		
	Average price	Maximum Price	Minimum Price	Avg.	Max.	Min
Generic	VND 6,909 (US\$ 0.42)	VND 9,817 (US\$ 0.62)	VND 4,000 (US\$ 0.24)	2.3	3.2	3.4
Brand	VND 15,880 (US\$ 0.97)	VND 19,000 (US\$ 1.96)	VND 13,320 (US\$ 0.82)			

During the survey in Ho Chi Minh City 1 pharmacy in private sector had 10mg Hydrocortisone tablets priced at VND 3,700 (US\$ 0.23) per tablet. Families interviewed stated that Fludrocortisone was sometimes available, but since March 2008 difficulties were reported.

In Hanoi most medicines were provided by the National Hospital of Paediatrics via a donation from CLAN. This donation was also given to Children’s Hospital No. 1 in Ho Chi Minh City.

Previous research on medicines used in CAH by Armstrong et al. (24) shows that only 60% of people interviewed used Fludrocortisone, whereas in an ideal situation this would be 100%. Also the use of Prednisolone in CAH is no longer recommended in the West due to side effects, but is still an effective way of ensuring survival if no other alternatives are available.

Table 8 – Use of different types of medicines for CAH (24)

Medication (used by percentage of families)	Dosage frequency (daily as a percentage of total)			
	Once	Twice	Thrice	Not specified
Hydrocortisone (96%)	2	80	16	2
Fludrocortisone (60%)	75	25	0	-
Prednisolone (8%)	50	25	25	-

6. Care for CAH

Children with CAH will be seen mainly at one of the three Paediatric Hospitals, National Hospital of Paediatrics (Hanoi), Children’s Hospital No. 1 and Children’s Hospital No. 2 in Ho Chi Minh City. Referrals to these hospitals are often delayed due to children not being diagnosed early on or parents delaying bringing their children to hospitals.

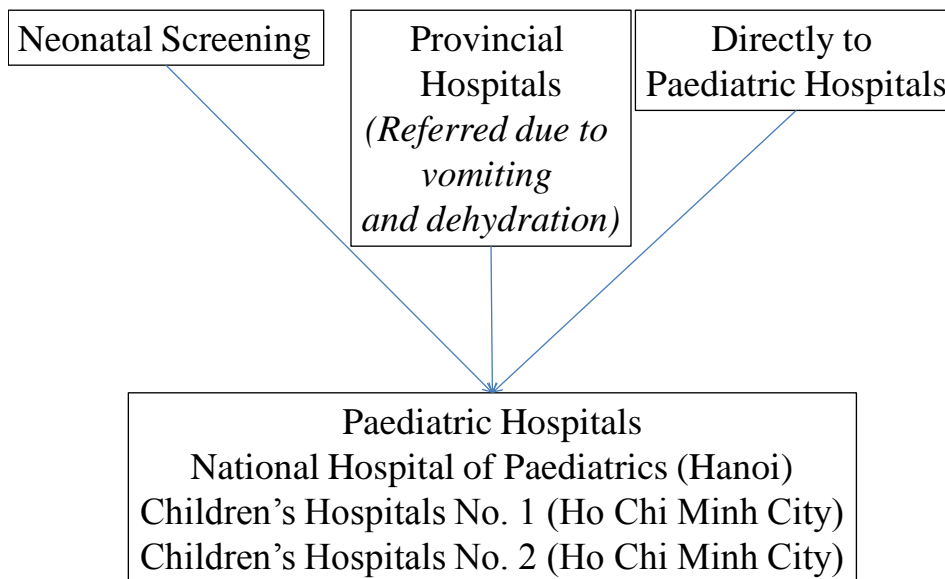
Care for CAH in the provinces is not available as there is no capacity and access to medicines is even more problematic than in Hanoi and Ho Chi Minh City. (See Section 5) This also means that travel time and cost add to the burden both financial and social of the families.

As inpatients children with CAH will be seen in specialised units. When they are seen as outpatients they are seen with all patients in a general consultation.

33% of families interviewed went to one facility before being referred to one of the main paediatric hospitals. The remainder went directly to one of the main paediatric hospitals meaning that some forfeited their insurance coverage as they did not have the proper referral documentation. In discussions with healthcare workers they stated that 50% of children with CAH went directly to one of the main paediatric hospitals.

On average children had 7 consultations per year, with the maximum being 1 consultation per month and other only going once a year.

Figure 3 – Theoretical path of a child with CAH in Vietnam



At both the National Hospital of Paediatrics and Children’s Hospital No. 1 support has been given for the training of doctors and nurses with regards to CAH. At Children’s Hospital No. 2 levels of care were comparable to the other facilities despite no support for training.

The main challenge for clinicians is lack of adherence due to the unavailability and cost of the medicines for CAH treatment.

7. Diagnostic tools and infrastructure

Newborn screening is not implemented throughout Vietnam. The main challenge here is that most mothers will give births in General or “Birthing” hospitals. This means that children need to be screened by staff at this facility and then sent to Paediatric Hospitals for care.

The Ministry of Health has an essential list of laboratory tests and the levels of the health system where they should be present. Plasma 17-hydroxyprogesterone (17-OHP) is not included in this list.

Two of the three main paediatric hospitals did not have the means to carry out the main test for CAH the 17-OHP. These facilities either sent patient samples or had patients go directly to an external private laboratory. This sometimes meant one trip to Ho Chi Minh City for the test and then another for the consultation. Based on interviews children will usually have a 17-OHP test every 1-2 months. Ion tests were available at all these facilities.

8. Costs

Studies have found that poor adherence to treatment is often linked to cost of treatment. (29)

From the results of the RAPIA on diabetes cost of treatment was seen to be one of the main challenges. (30) Armstrong et al. (24) found that for 59% of families interviewed found that financial difficulties were the main burden they faced. This work found the following prices for the medicines.

Table 9 – Prices paid for CAH medications per tablet (24)

Type of tablet (presentation)	Lowest price US\$	Highest price US\$	Ratio Highest:Lowest
Hydrocortisone	0.19	0.23	1.2
Fludrocortisone	0.19	0.31	1.7
Prednislone	0.13	0.31	2.4

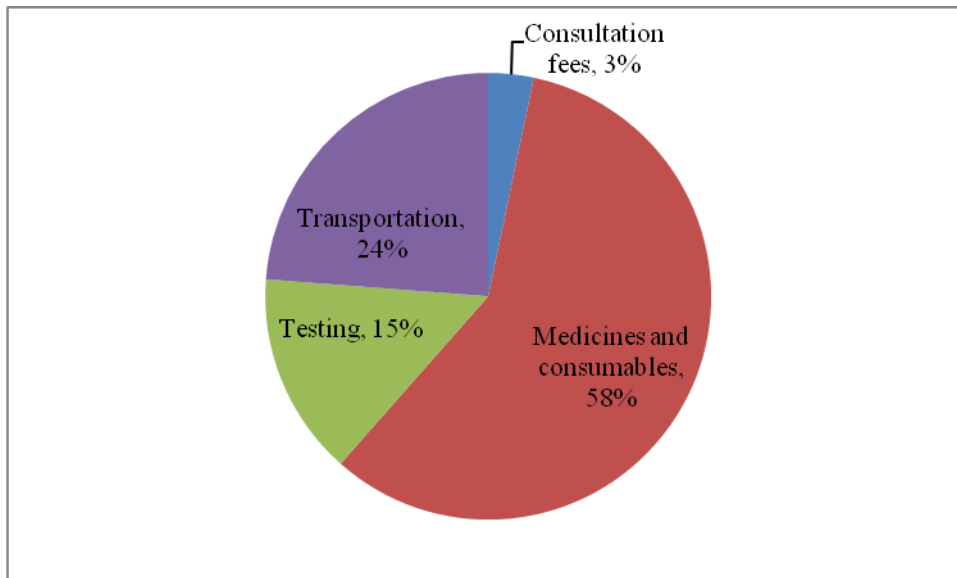
From the research carried out during the RAPIA the following costs were identified.

Table 10 – Costs for CAH care identified during RAPIA

Aspect of CAH care VND (US\$)	Consultation fees or payment for care, including inpatient costs	Hydrocortisone (per tablet)	Fludrocortisone (per tablet)	Travel (per visit)	17 OHP (per test)	Ion test (per test)
Minimum	Free	Free	Free	VND 0 (US\$ 0)	VND 12,000 (US\$ 0.73)	Free
Maximum	VND 6,000,000 (US\$ 367.35)	VND 12,000 (US\$ 0.73)	VND 12,000 (US\$ 0.73)	VND 1,000,000 (US\$ 61.22)	VND 160,000 (US\$ 9.80)	Free
Average	VND 765,000 (US\$ 46.84)	VND 4,033 (US\$ 0.25)	VND 4,643 (US\$ 0.28)	VND 169,154 (US\$ 10.36)	VND 104,571 (US\$ 6.40)	Free

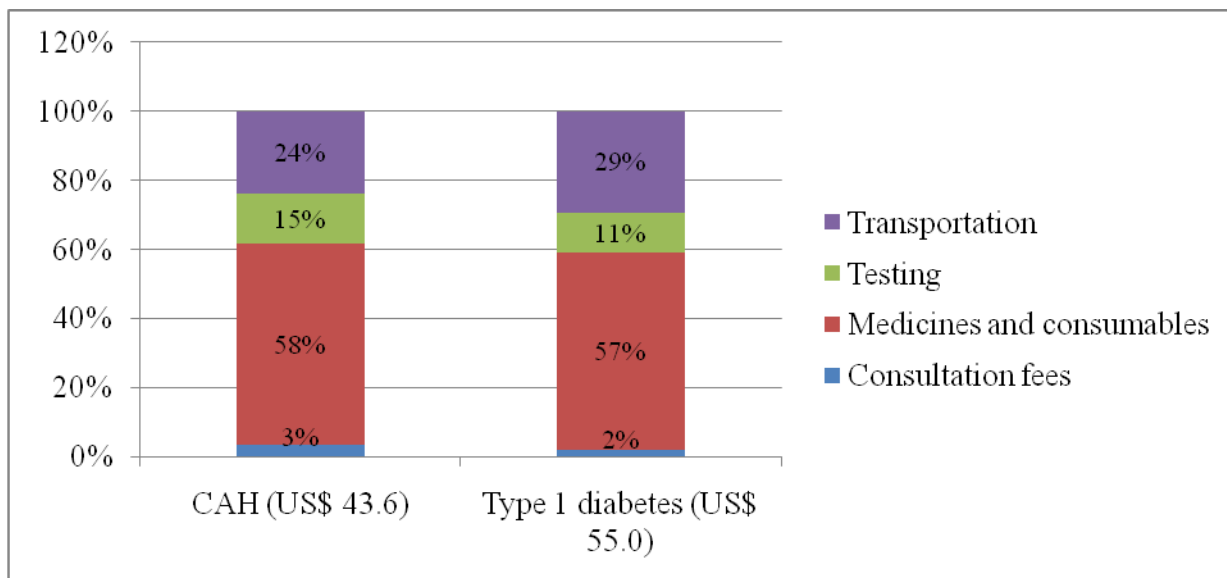
Medicines represent the largest item of expenditure as detailed in Figure 4. The total cost per month of caring for a child with CAH (excluding any inpatient care) is US\$ 43.6. This represents 63% of GDP per capita.

Figure 4 – Proportion of different costs of CAH care



In comparing this data with the data for Type 1 diabetes the burden of each item is very similar.

Figure 5 – Comparison of costs between CAH and Type 1 diabetes



Based on observations it would seem that an additional burden for families with children with CAH is the number of admissions for children with CAH, which seems to be higher than for those with Type 1 diabetes. On average this cost parents VND 1,297,142 (US\$ 79.42).

9. Healthcare workers and training

Most healthcare workers will have no formal training in CAH. Most of the training is “on the job” training with junior doctors and nurses learning from their more senior colleagues.

Most nurses mentioned that there was no inclusion of material on CAH in their basic training. Doctors stated that nurses’ knowledge of CAH is better than for diabetes.

10. Community involvement

Two CAH Clubs have been established at the National Hospital of Paediatrics and Children’s Hospital No. 1. These clubs give parents the opportunity to talk and share their experience as well as increase their knowledge of CAH.

Only two families interviewed had attended the CAH Club meetings. These meetings were viewed as extremely useful as they enabled families to:

- Share information
- Help other families
- Get information
- Share feelings
- Support
- Show families that they are not alone

These clubs help address to other concerns noted by Armstrong et al. (24)

1. Emotional problems (15%)
2. Special care requirements affecting parents’ work (15%)
3. Rumours and discrimination (8%)

In parallel to these CAH specific organisations, other civil society organisations exist that help support different communities or people in Vietnam with different forms of disability. At a National level there is the National Fund for Vietnamese Children, which funds health, education and social projects that help children. At a local level one example is the “The Sponsoring Association for Poor Patients”. This association established in 1993 in Ho Chi Minh City has various activities aimed at poor patients. These include: (57)

- Smile for the young – providing surgery for children with harelips
- Eye surgery for poor patients
- Providing wheelchairs
- Providing hearing aids
- Free meals for inpatients
- Helping people get health insurance

11. Patient education

The facilities visited provided patient education verbally only. Most of the education focuses on complications, hydration and what to do when child vomits.

Due to healthcare workers being over burdened during outpatient clinics education is only given when patients are inpatients. Some materials are available for information of parents, but have been translated and not adapted to meet local needs with regards to socio-cultural issues.

Overall there are low levels of information and education and no inclusion of psychosocial issues.

12. Adherence issues

Poor adherence is mainly the result of lack of access to medicines in Vietnam and when they are available their cost.

Once these become more readily available issues of education with regards to CAH's chronic nature will need to be addressed both for healthcare workers and families with CAH.

13. Traditional Medicine

In Vietnam there are two types of Traditional Medicine. One is based on University Education leading to a recognised medical degree and the other is more based on traditional values with little or no formal training. With the formal Traditional Medicine there are close links to "modern" medicine and often patients will be managed with both traditional and modern medicines.

Based on discussions with patients and healthcare workers the use of Traditional Medicine outside of major conurbations seemed more common. Formal traditional medicine is fully integrated into the Health System.

Traditional medicine is usually not used for children and any health problem with children is referred to modern medicine.

14. Policy environment

No specific policy exists with regards to CAH in Vietnam. Overall Decision No. 35/2001/QĐ-TTg (2001) "Approving the strategy for protection and care of the people's health 2001-2010" includes general themes on improving the health of people and children in Vietnam that could include CAH.

The main Policy aspect that is key for CAH is getting the medicines for this condition approved for sale in Vietnam and also included on the list of medicines available in public health facilities.

15. Other Issues

One serious problem is that of gender determination. One mother interviewed during this work did not know if her child was a boy or girl. This leads to many social problems and worries about the future especially marriage.

Another concern parents had is if the child with CAH is their first child will other children they have also be affected by CAH. Other issues are parents missing work to take children to their consultations and parents having to sell household goods or plots of land in order to pay for treatment. This data was not available for CAH, but data for diabetes is included as Appendix 11.

For children with diabetes one hospital has included psychological support for parents and children. This is not done for CAH and shows that the social issues of CAH are not dealt with.

Even though 80.8% (2) of the Vietnamese population state they have no religion Buddhist beliefs still impact the way they lead their lives. Babies born with "defects" can be viewed as a punishment on parents. This causes many families as was stated to keep "CAH personal".

16. Existing initiatives and collaborations

Many existing initiatives and collaborations can be built on in order to improve the management of CAH in Vietnam.

At the National Hospital of Paediatrics and at Children's Hospital No. 1 is CLAN. CLAN has been working in Vietnam since 2004 by improving the situation for families in Northern Vietnam who are living with CAH by providing free access to hydrocortisone and fludrocortisone tablets for all patients and the establishment of a CAH Support Group in Hanoi. In the past year CLAN has extended its work to include children with Type 1 diabetes and has an agreement with Insulin for Life to provide insulin in Hanoi and Ho Chi Minh City. In 2008 CLAN employed a Diabetes Specialist Nurse to train nurses in diabetes care and education at the National Hospital of Paediatrics. CLAN's work is based on 5 pillars, described at the beginning of this report.

Since 1995 the Royal Children's Hospital International (RCHI) has had links with the National Hospital Paediatrics in Hanoi. At the National Hospital of Paediatrics, RCHI, has helped develop the health services plan and staff training plan. This training plan includes:

- Training of multi-disciplinary teams
- Training for nurses
- Child protection
- Community links
- Parent and patient advocacy
- Counseling skills

Other RCHI projects in Vietnam include:

- Train the trainer projects:
 - Advanced Paediatric Life Support
 - Paediatric nurse training curriculum
 - Hospital Infection control program
- Prevention of blindness in the newborn
 - Resulted in establishment of Retinopathy of Prematurity screening and treatment programs in Hanoi and Ho Chi Minh City
- Hue cardiovascular training project
 - Establishment of a Cardiovascular Centre at Hue Central Hospital
 - 112 doctors, nurses, managers to be trained over 5 years

Much work is being done to improve diabetes care and this may be able to indirectly CAH, especially children.

17. Discussion

In the past the RAPIA has served as a catalyst for change and raised the profile of diabetes with government authorities, clinicians and people with diabetes, it is hoped that this can also be done for CAH. Through previous work of the IIF (31; 32) 11 key elements are needed to create an environment that is able to address diabetes. These are:

1. Organisation of the Health System
2. Data Collection
3. Prevention
4. Diagnostic tools and infrastructure
5. Drug procurement and supply
6. Accessibility and affordability of medicines and care

7. Healthcare workers
8. Adherence issues
9. Patient education and empowerment
10. Community involvement and diabetes associations
11. Positive policy environment

For this report it has been decided to use CLAN's 5 pillars in order to provide this organisation recommendations that fit into its framework of action. That said there is much overlap between these two frameworks.

It is important to keep in mind that each of these recommendations cannot be implemented in isolation. For example, an increase in awareness of CAH through prenatal screening will have ramifications on the number of people attending consultations and needing medication. These recommendations are specific to CAH, however for feasibility and rational use of the resources in Vietnam, these can and should be applied to all NCDs in children. In addition they can build on existing collaborations and develop new areas of cooperation.

18. Recommendations

5 Pillars	Findings	Recommendations
1. Ensuring affordable access to medication	<ul style="list-style-type: none"> Hydrocortisone and Fludrocortisone are not registered in Vietnam and only available through donations and unofficial channels 	<ul style="list-style-type: none"> Inform Vietnamese authorities of inclusion of Hydrocortisone and Fludrocortisone on EMLc Advocate for registration of these medicines in Vietnam with both the private sector, the Ministry of Health and key opinion leaders Advocate for registration of these medicines within the list for the Public Sector with the Ministry of Health, key opinion leaders and directors of the necessary health facilities Ensure that health facilities order these medicines
2. Education (of patients, families, health care professionals, policy makers and the international community)	<ul style="list-style-type: none"> Lack of socio-culturally adapted materials for patient education Social issues are not addressed Only inpatient education as in outpatient consultations healthcare workers do not have time 	<ul style="list-style-type: none"> Develop locally suited examples with practical examples of how to manage a child with CAH Include social issues in patient education and information (Link with Point 4)
	<ul style="list-style-type: none"> Knowledge of healthcare workers is good, but cannot relate this to families Increased awareness has lead to more children being diagnosed No formal training in CAH Need for training in “Birthing Hospitals” and in Provinces to identify CAH patients 	<ul style="list-style-type: none"> Develop training courses for healthcare workers in paediatric hospitals Involve nurses more actively in patient education Organise training/awareness at “Birthing Hospitals” and in Provinces
	<ul style="list-style-type: none"> Lack of awareness of CAH within Vietnam with policy makers Lack of data 	<ul style="list-style-type: none"> Use publications and reports to inform policy makers in Vietnam of the situation of CAH Link with recommendations from Point 1 Develop CAH research agenda in Vietnam

5 Pillars	Findings	Recommendations
	<ul style="list-style-type: none"> • CAH is not on the International agenda and overlooked • Lack of data 	<ul style="list-style-type: none"> • Use publications and reports to inform policy makers in Vietnam of the situation of CAH • Link with recommendations from Point 1 • Publish an article in a well-respected Medical Journal on the issue of chronic diseases in children and link with Type 1 diabetes and asthma • Develop links with ESPE, APPEs, etc. and publicise CLAN's reports and work in these organisations • Develop CAH research agenda in all countries where CLAN is active (comparative studies, economic, etc.)
3. Optimisation of medical treatment	<ul style="list-style-type: none"> • Links between paediatric and “Birthing Hospitals” is weak 	<ul style="list-style-type: none"> • Develop links between these institutions (not only a benefit for CAH, but all sick neonates)
	<ul style="list-style-type: none"> • Late identification of CAH 	<ul style="list-style-type: none"> • Improve newborn screening and identification of symptoms
	<ul style="list-style-type: none"> • No specialised consultation for CAH at paediatric hospitals 	<ul style="list-style-type: none"> • Develop specialised consultation for CAH within the development of a paediatric chronic consultation • Include psychological support within this consultation
	<ul style="list-style-type: none"> • High number of admissions 	<ul style="list-style-type: none"> • Improve availability of medicines (Link with Point 1)
	<ul style="list-style-type: none"> • Poor availability of laboratory tests 	<ul style="list-style-type: none"> • Investigate feasibility of having testing at main paediatric hospitals or establish a more effective mechanism to get these tests done in the private sector
4. Encouragement of family Support Groups	<ul style="list-style-type: none"> • CAH Clubs exist in two of the three paediatric hospitals 	<ul style="list-style-type: none"> • Develop a new club at the third Hospital
	<ul style="list-style-type: none"> • CAH Clubs only meet once a year 	<ul style="list-style-type: none"> • Investigate ways of increasing the number of club meetings
	<ul style="list-style-type: none"> • CAH Clubs seen as extremely useful by families 	<ul style="list-style-type: none"> • Involve club more actively in assisting families
	<ul style="list-style-type: none"> • Social issues are not addressed by healthcare workers 	<ul style="list-style-type: none"> • Clubs should play a strong role in assisting with social problems that families may face

5 Pillars	Findings	Recommendations
5. Reducing the financial burdens that result in poverty	<ul style="list-style-type: none"> • Medicines and transportation two largest items of expenditure 	<ul style="list-style-type: none"> • Implementation of Point 1 should assist with the issue of cost of medicines • Better access to medicines and improved education of families and healthcare workers should equal better managed children, which in turn will mean less consultations and therefore a decrease in transportation costs
	<ul style="list-style-type: none"> • Lack of use of insurance either due to: <ul style="list-style-type: none"> ○ Going straight to higher levels of health system ○ Lack of knowledge on what families can expect from health system 	<ul style="list-style-type: none"> • Develop a patient bill of rights/guide on how to use the health system for children with chronic diseases • Investigate development of insurance schemes at the three main paediatric hospitals for children with CAH • Involve Vietnamese foundations in assisting with the financial burden

Appendices

Appendix 1 – Socio-economic data on areas where RAPIA was implemented (33)

Area	Population				Incidence of Poverty
	Total	0-14 years old	15+ years old	65+ years old	
Dong Nai	1,990,678	673,832	1,316,846	88,013	11%
Hanoi	2,675,166	646,151	2,029,015	164,929	16%
Ho Chi Minh	5,034,058	1,203,022	3,831,036	263,512	5%
Thai Nguyen	1,045,906	330,974	714,932	51,167	43%

Appendix 2 – Number of interviews carried out during the RAPIA

	Macro	Meso	Micro	Total
Hanoi and North	6	45	58	109
Ho Chi Minh City and South	4	31	60	95
Total	10	76	118	204

Appendix 3 – Map of Vietnam (2)



Appendix 4 – Facilities and healthcare workers in Vietnam (2006) (9)

Type of facility	Number of facilities	Number of beds
Hospitals	903	131,500
Regional Polyclinics	847	9,300
Medical facilities in communes and precincts	10,672	46,100
Healthcare workers	Number	Per 10,000 population
Doctors	52,800	6.2
Nurses	55,400	6.5
Midwives	19,000	2.2

Appendix 5 – Healthcare spending in Vietnam (11)

Indicator	Value (year)
Total expenditure on health as percentage of GDP	5.5 (2004)
General government expenditure on health as percentage of total expenditure on health	27.1 (2004)
Private expenditure on health as percentage of total expenditure on health	72.9 (2004)
General government expenditure on health as percentage of total government expenditure	5.0 (2004)
External resources for health as percentage of total expenditure on health	2.0 (2004)
Social security expenditure on health as percentage of general government expenditure on health	16.9 (2004)
Out-of-pocket expenditure as percentage of private expenditure on health	88.00 (2004)
Private prepaid plans as percentage of private expenditure on health	2.9 (2004)
Per capita total expenditure on health at average exchange rate (US\$)	30.0 (2004)
Per capita total expenditure on health at PPP	184.1 (2004)
Per capita government expenditure on health at average exchange rate (US\$)	8.1 (2004)
Per capita government expenditure on health at PPP	49.8 (2004)

Appendix 6 – Total household expenditure for inpatient stay compared to monthly per capita non-food expenditure 2002 (16)

	Inpatient care spending insured person	Inpatient spending for patient with exemption or reduction in fees	Inpatient spending entirely out of pocket	Monthly non food expenditure
	(VND, US\$ and % of GDP per capita at PPP)			
Overall	874,000 53.51 2.1%	631,000 38.63 1.5%	1,265,000 77.45 3.0%	128,000 7.84 0.3%
Poor	476,000 29.14 1.1%	438,000 26.82 1.0%	769,000 47.08 1.8%	44,000 2.69 0.1%
Middle	546,000 33.43 1.3%	542,000 33.18 1.3%	1,003,000 61.41 2.4%	77,000 4.71 0.2%
Rich	1,138,000 69.67 2.7%	1,194,000 73.10 2.8%	1,817,000 111.25 4.3%	219,000 13.41 0.5%
Ratio				
Overall	6.8	4.9	9.9	1.0
Poor	10.8	10.0	17.5	1.0
Middle	7.1	7.0	13.0	1.0
Rich	5.2	5.5	8.3	1.0

Appendix 7 – Top ten causes of death (all ages) (17)

Causes	Total deaths	Deaths as a percentage of total	Communicable (CD) or Non Communicable (NCD) Disease
<i>All causes</i>	515,000	100%	-
Ischaemic Heart Disease	66,000	13%	NCD
Cerebrovascular Disease	58,000	11%	NCD
Chronic Obstructive Pulmonary Disease	41,000	8%	NCD
Lower Respiratory Infections	26,000	5%	CD
Tuberculosis	19,000	4%	CD
Perinatal Conditions	18,000	4%	CD
Diabetes	12,000	2%	NCD
Road traffic accidents	12,000	2%	NCD
Stomach Cancer	12,000	2%	NCD
Diarrhoeal diseases	10,000	2%	CD
<i>Non Communicable Diseases (from Top 10 causes)</i>	201,000	39%	NCD

Appendix 8 – Comparison of suggested tender price from Ministry of Health in Vietnam and International Price (30)

Name	Price per unit (tablet or unit of insulin) US\$	International Price (International Drug Price Indicator) Median Price US\$	Ratio
Glicazide 80mg	0.0625	0.0448	1.40
Insulatard Novolet 3ml cartridges	0.0169	0.0150	1.12
Metformin 500mg	0.0624	0.0180	3.47
Metformin 850mg	0.1387	0.0210	6.60
Mixtard 30 Novolet 3ml cartridges	0.0169	0.0150	1.12
Mixtard 30 Penfill 3ml cartridges	0.0153	0.0150	1.02
SciLinM 30/70 40IU 10ml	0.0110	0.0088	1.25
SciLinN 40IU 10ml	0.0110	0.0081	1.35
SciLinR 40IU 10ml	0.0110	0.0088	1.25

Appendix 9 – List of types of hydrocortisone registered in Vietnam

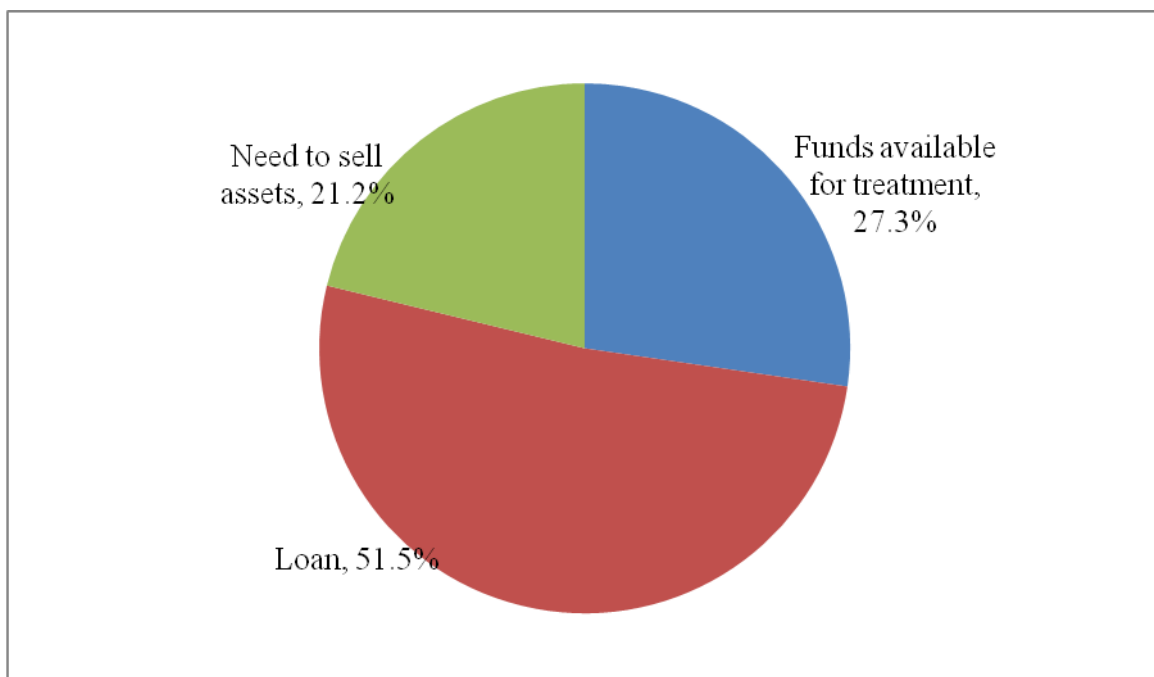
Description	Name	Formulation	Manufacturer
Hydrocortisone natri succinate	Hydrocortisone	100 mg	Bidiphar
Hydrocortisone Inj 100mg	Hydrocortisone	100mg	Bidiphar
Hydrocortisone	Fosancort		CTCPDTW Medipharco
Hydrocortisone 125mg	Hydrocortisone	125mg	Gedeon-Richter
Hydrocortisone	Hydrocortisone	125mg	Jelfa
Hydrocortisone Inj 100mg	Hydrocortisone	100mg	Leurquin France
Hydrocortisone Inj 100mg	Solu-Cortef	100mg	Pfizer
Hydrocortisone	Solu-Cortef Inj	100mg	Pfizer
Hydrocortisone Inj 100mg	Hydrocortisone Inj	100mg	Rotex
Hydrocortisone- Natri	Hydrocortisone	100mg	Rotexmedica
Hydrocortisone	Hydrocortisone	125mg	Zelfa S.A

Appendix 10 – Specific objectives of Decision No. 35/2001/QĐ-TTg (2001) “Approving the strategy for protection and care of the people’s health 2001-2010”.

- Health-related targets to be achieved by the year 2010:
 - o The average life expectancy: 71 years
 - o The ratio of maternal death reduced to 70/100,000 live births.

- The mortality rate of children aged under 1 reduced to below 2.5% of live births.
- The mortality rate of children under 5 children reduced to below 3.2% live births.
- The percentage of newborns weighing under 2,500 grams reduced to below 6%.
- The percentage of malnourished children under-5 reduced to below 20%.
- The average height of adolescents to reach 1.60 meters or higher.
- To have 4.5 medical doctors and 1 university pharmacist for every 10,000 people.
- To reduce the morbidity and mortality rates due to epidemic diseases.
 - To eliminate widespread epidemics.
 - To minimize the morbidity and mortality rates due to cholera, typhoid, hemorrhagic fever, malaria, plague, Hepatitis B, encephalitis and sexually transmitted diseases
 - To maintain the results of the polio and infant tetanus eradication
 - To restrain the increasing rate of HIV/AIDS infection.
- To prevent, control and manage NCDs such as cardiovascular diseases, cancer, accidents and injuries, diabetes, occupational diseases, mental diseases, poisoning, suicide and diseases caused by unhealthy lifestyles (drug addiction, alcoholism, obesity etc.)
- To enhance equity in the access to and use of health care services, particularly medical examination and treatment services.
- To improve the quality of medical examination and treatment, functional rehabilitation and health improvement at all medical levels.
- To apply all scientific and technical advances so as to develop the Vietnamese health system to the level of advanced countries in the region.

Appendix 11 – Sources of funding for diabetes care (34)



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