

THE GLOBAL IMPROVEMENT OF CHILDHOOD CANCER CARE IN THE PHILIPPINES



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Two-thirds of children with cancer in the Philippines are diagnosed at advanced stages, and abandonment of treatment is high at 80%. Thus, survival rate is <20%. A public awareness campaign and community mobilization which started in 2006 organized initiatives which led to the establishment of a national hospital referral network, training programmes for doctors and nurses, and a government programme to make chemotherapy drugs accessible to poorer patients. Results to date showed reduction of late diagnosis to 30%, decrease in treatment abandonment rate to 10%, and increase in survival rate to 78%. Active involvement of government is critical to sustain the gains achieved thus far.

It is now well established that advances in cancer diagnosis and treatment have now made long-term survival and cure a reality for many children with this disease. This is particularly true in developed countries where survival rates for children with cancer reach as high as 80% to 90% (1, 2). Unfortunately, in developing countries where the majority of childhood cancer is being diagnosed, less than 20% of those children survive (3).

In the Philippines, 75% of all cancers occur after age 50 years, and only about 3% occur at age 14 years and below (4). If the current low public awareness on cancer prevention persists, it is estimated that for every 1,800 Filipinos, one will develop cancer annually (4). Cancer now ranks third as the leading cause of morbidity and mortality in the country after communicable diseases and cardiovascular diseases (5). At present, most Filipino cancer patients seek medical advice only when symptomatic, or at advanced stages of their cancers. For every two new cancer sites diagnosed annually, one will die within the year (4).

Childhood cancer in the Philippines

The country is densely populated and the average life expectancy of its population is 68 years. Children under 15 account for 36% of the population. Child mortality is moderately high and a relatively high proportion of younger children are under the recommended weight standards (6).

Cancer incidence data for the country are derived from two population-based cancer registries: Rizal and Manila (7),

which both cover about 14% of the childhood population. The crude rate for childhood cancer in the Philippines is 103 annual new cases per million children, which allows prediction of a minimum of 3,500 new cases of childhood cancer (7). This is the equivalent of almost 10 children who will be diagnosed with cancer each day.

Leukaemia accounted for almost 50% of the total incidence of childhood cancer in the Philippines. Lymphoma appeared unusually low (<10%), but in agreement with other registries in Southeast Asia (7). Certain features are similar to those in other Asian populations (i.e. low incidence of Wilms' tumor, Hodgkin's disease and Ewing's sarcoma), in contrast to relatively high incidence rates for retinoblastoma, and low rates for neuroblastoma and non-Hodgkin's lymphoma (8, 9, 10).

The National Capital Region hosts 15% of the population and has the highest services present (2). These include 168 secondary and tertiary hospitals, 43 primary hospitals, 32 DoH outpatient clinics and scores of private clinics. There are nine radiotherapy centres, three of them in government hospitals. There is no government cancer institute, but there are two comprehensive oncology departments and three children's hospitals, two public and one private. In 1998, 7 out of 13 paediatric surgeons, and 6 out of 9 paediatric oncologists in the Philippines were in Metro Manila (10).

Unfortunately in the Philippines, although multidisciplinary management is available and could potentially cure 80% of cases, only about 10% to 20%

actually attains long-term survival (11). In our experience for many years, two-thirds of patients are in advanced stages of their cancer at the time of diagnosis. This is because childhood cancer in the Philippines is not detected early enough for a cure to be possible.

Obstacles to early diagnosis and effective treatment

Obstacles to early detection and effective management of childhood cancer in the Philippines are the following: 1) subtle signs are not recognized promptly by frontline physicians at the primary levels of care; 2) patients and/or parents delay medical consultations, or when diagnosed will not opt for treatment, and; 3) for those who seek medical attention, there is no appropriate cancer treatment facility in the locality, or the parents do not know where to go to seek treatment. Due to financial reasons, those who are positively diagnosed to have cancer are not treated adequately with only one in five patients receiving gold standard treatment, mostly as paying patients (11).

Thus, for the majority of paediatric patients with cancer in the Philippines, no treatment is given, or patients are initially treated but end up abandoning the treatment due to: 1) geographic inequity with cancer treatment facilities heavily concentrated in major cities, far and inaccessible to many patients, and 2) economic inequity when the majority cannot afford the costly treatment. There is a huge gap between the rich and the poorer patients. The cost of chemotherapy drugs and other supportive medicines remains the main barrier for the poorer service patients.

Three main reasons can account for these dismal observations. First, two-thirds of patients come to medical attention when the disease has reached an advanced stage such that a cure is no longer possible, or require very aggressive and expensive treatments that are available only in hospitals in cities. Second, more often than not, families will opt not to undergo further treatment, or to receive palliative or supportive care for their patients due to financial constraints. And third, out of the 20% to 30% of children diagnosed at an early stage, a significant percentage (80%) are unable to continue follow-up visits or hospitalization (11).

The paediatric oncologists, numbering only about 39 all over the country, as well as a greater number of haematologists, are fully aware of these conditions facing Filipino cancer victims under their care. Hopelessness usually prevails in many affected families. Additionally, stakeholders are not effectively mobilized to ensure that strategies to control childhood cancer are targeted at those

who are most in need, and major stakeholder groups were not considered in the development of effective cancer control strategies. This includes encouraging and pushing government to implement measures addressing issues of inequities of and poor access to cancer care.

The Philippine National Cancer Control Program

The Philippine Cancer Control Program (PCCP), which started in 1988, is an integrated approach utilizing primary, secondary and tertiary prevention in different regions of the country at both hospital and community levels. The goal is to establish and maintain a system that integrates scientific progress and its practical applications into a comprehensive programme that will reduce cancer morbidity and mortality in the Philippines. The six pillars of the PCCP are: 1) epidemiology and research; 2) public information and health education; 3) prevention and early detection; 4) treatment; 5) training; and 6) pain relief (4).

Unfortunately, there is hardly any strategy directed specifically for childhood cancer. The PCCP is primarily focused on the top adult cancer sites whose major causes are known (where action can therefore be taken for primary prevention), such as cancers of the lung/larynx (anti-smoking campaigns), liver (vaccination against hepatitis B virus), cervix (safe sex), and colon/rectum/stomach (healthy diet) (4). No strategy for early detection of childhood cancer had been included in the national programme, nor are there plans on how effective treatment in children could be implemented.

This is probably because of the unfortunate notion that childhood cancer is a small proportion of the total data and therefore considered unimportant – a notion that is no longer tenable when viewed within the broader global context, and in how the disease affects the whole family in terms of major psychosocial disruptions, the broader economic issues of the disease, the prevailing human rights which should be accorded to children with this tragic malady, and the potentially high cure rates of cancer in children than in adults.

In 1996, the Asian Development Bank (ADB) working with the Department of Health (DoH) undertook the Philippine Adult Health Project, which assessed prevention and control efforts for cancer in the Philippines (12). The audit confirmed that mortality from cancer had increased substantially over time and was likely to continue increasing. Significant shortcomings in six areas were identified: 1) existing data and data gaps; 2) programmatic efforts, gaps and problems; 3) medical education; 4) policy issues; 5) treatment guidelines and problems; and 6) quality control of testing

and screening services (13).

Recommendations were made for each of these areas with an urgent call for immediate implementation of all of the recommendations within five years. Effectively and efficiently implemented, these recommendations could prevent the huge toll of premature death, disability and costs from cancer that will otherwise be forthcoming (12). Disappointingly, no significant changes have occurred in these areas. Whatever activities were implemented did not curb the advance of cancer in the country, or at the most, were only successful in few places mainly in Metro Manila.

The My Child Matters programme at PCMC

A demonstration project was implemented at the Philippine Children's Medical Center (PCMC) in 2006, as part of the Sanofi Espoir Foundation and UICC My Child Matters (MCM) programme, and in partnership with the International Network for Cancer Treatment and Research (INCTR). The goal was to create public awareness about the curability of childhood cancer, particularly childhood leukaemia, and implement community mobilization campaigns. It focused public attention to address delays in diagnosis and high treatment abandonment rates that were mainly responsible for poor survival rates of childhood cancer in the Philippines postulated to be at 10% (14). The ultimate objective was to improve survival rates of leukaemia, the most common type of childhood cancer in the Philippines, to at least 50% in five years. The strategy was to: 1) train frontline physicians in early cancer detection; 2) develop capabilities for satellite treatment units outside of Metro Manila; and 3) address affordability issues of chemotherapy mainly responsible for high treatment abandonment rates.

Consequently, during the last ten years, PCMC mobilized stakeholders for a national public awareness campaign targeting early detection and effective treatment of childhood cancer. First, using a network of alumni from two paediatric oncology training centres (i.e. PCMC and the Philippine General Hospital), an initial referral network of 13 hospitals in five regional catchment areas was established. These paediatric oncologists led activities aimed at increasing early detection. Partnership with the tri-media was forged for a massive national public awareness

Figure 1: Location of hospitals in the Philippine Childhood Cancer Network



campaign. As a result, late stage diagnosis decreased to 30% from 70% when patients are seen for the first time in these hospitals.

The PCMC Cancer Center

In 2008, the Department of Health (DoH) designated PCMC as the national end-referral cancer centre for children, later providing funds thereof for the construction of a cancer centre facility. PCMC renovated an existing ward to establish quickly an operational Pediatric Cancer and Hematology Center which was launched in 2010. In 2011, the DoH's National Center for Pharmaceutical Access and Management (NCPAM) partnered with PCMC and MCM in the implementation of its Acute Lymphoblastic Leukemia Medicines Access Program (ALLMAP), which provided for free chemotherapy drugs to indigent patients, funds for the establishment of a data registry, and for the training of health-care professionals directly involved in childhood cancer management. In June 2012, the participating hospitals in the MCM referral network expanded to 24 government and privately-owned hospitals from the original 13, which are now all recipients of the NCPAM's ALLMAP. By 2014, the network further expanded to 37 hospitals geographically distributed all over the country (Fig. 1).

This national chemotherapy drug access programme

jointly implemented by DOH-NCPAM and PCMC focused on three major areas: 1) chemotherapy drug selection, forecasting, procurement and distribution (in collaboration with the Philippine International Trade Corporation, or PITC); 2) training of professionals involved in the multidisciplinary treatment team in each partner hospital in the national network, and; 3) collection of data that can guide further planning and strategy development.

DOH-NCPAM ALL Medicines Access Program

The Department of Health – National Center for Pharmaceutical Access and Management (DOH-NCPAM) had been created pursuant to RA No 9502, otherwise known as the “Cheaper Medicines Act of 2008”. The Center led in ensuring a policy environment conducive to universal access to quality essential medicines by improving health outcomes using policy instruments and setting strategic directions. It contributes to improving access to quality essential medicines by: 1) improving the supply side access to quality essential drugs; 2) ensuring rational use of drugs by prescribers, dispensers and patients, and; 3) institutionalizing transparency and good governance in drug pricing and procurement (15).

To support its mandate of providing affordable drugs, it implemented the Medicines Access Program (MAP), particularly for catastrophic diseases. One of these is drug support for Acute Lymphoblastic Leukaemia (ALL), otherwise known as the ALLMAP. In 2010, ALLMAP provided free chemotherapy drugs to indigent patients in 12 DoH-retained hospitals.

In 2012, it partnered with the Philippine Children’s Medical Center designating it as the lead collaborating hospital in order to improve implementation efficiency and enhance capacity of all hospitals receiving NCPAM drug support for the treatment of childhood cancer (15). The ALLMAP is now the largest source of affordable (even free) chemotherapy drugs for paediatric cancer patients, thereby reducing inequities of care due to financial reasons. By improving access to chemotherapy drugs by poorer patients, it reduced abandonment of treatment by patients and increased survival rates. At the Philippine Children’s Medical Center, treatment abandonment rate decreased from a baseline of 80% to 10%, and increased survival rate from a baseline of 16% to 78% (16).

The Philhealth Z-package

A medical catastrophe, like cancer, is a condition or disease state that can lead to disability or death. When combined with an economic catastrophe, wherein the cost of care is

too high so that patients affected are pushed into poverty, a catastrophic illness results. Thus, a catastrophic illness is defined as both medically and economically catastrophic (17).

Yearly, the Philippine Health Insurance Corporation, or Philhealth, pays about PhP 7 billion in premium payments for catastrophic diseases categorized as Types C and D (17). However, support value remains low. Thus, in line with its goals of financial risk protection for all Filipinos, Philhealth developed an initial set of benefits that comprehensively cover catastrophic conditions. The package is called “Z benefit” because if illnesses are classified from A to Z, those illnesses that push patients into prolonged hospitalizations and very expensive treatments would be the last letter, or the Z illnesses (17).

In July of 2012, Philhealth launched the “Z benefit” for catastrophic illnesses that will not just cover hospital expenses, but also ensure totality of care and attainment of better health outcomes. Initially, the cases identified under the “Z benefit” are childhood lymphocytic leukaemia, breast and prostate cancers. The package costs for the complete treatment of these cases are PhP 210,000 for ALL, and PhP 100,000 each for breast and prostate cancers. These diseases were initially selected based on identified conditions that have high or acceptable survival rates after treatment with locally-validated protocols. Complete course of chemotherapy for three years is provided for ALL, including essential laboratory tests, and blood product support. This increased the support value for the treatment of childhood leukaemia from the regular benefit package of only PhP 45,000 yearly.

Philhealth initially partnered with selected reference and contracted government hospitals nationwide to provide the Z benefits. Reference hospitals provide technical services such as the development of a registry hub called the Z Benefit Information Tracking System (ZBITS) to collect patient information, monitor the registered Type Z cases, monitor costs, and set standards of care. On the other hand, contracted hospitals are any Level 3 and 4 hospitals that have signed performance commitment and contract to provide total quality care for the Type Z conditions. The Philippine Children’s Medical Center was designated reference hospital for childhood ALL, with initially 19 contracted government hospitals (17).

PCMC and MCM assisted Philhealth in the crafting of the benefit package and the implementing guidelines. Requirements for this national insurance reimbursement were: 1) use of any of PSPO-determined standard treatment protocols; 2) presence of basic structures in collaborating

hospitals for accurate diagnosis, and safe administration of chemotherapy, and; 3) effective management of treatment side effects.

In both the NCPAM's ALLMAP and the Philhealth's Z-package, PCMC was contracted to establish and implement training programmes for capacity-building of collaborating hospitals for accurate diagnosis and effective treatment of childhood cancer. Aside from addressing the financing problems of patients to sustain treatment, current developments provide opportunities to further address gaps and weaknesses remaining in improving standards of care in as many hospitals as possible by upgrading competence of professionals in the following areas: paediatric oncology nursing, histological diagnosis, clinical pharmacy for safer drug handling and preparation, and paediatric surgery.

Training programmes for cancer health-care professionals

Prior to the 1990s, the care of children with cancer in the Philippines was provided by medical oncologists and haematologists mainly trained in adult patients. Childhood cancer can only be diagnosed accurately and treated effectively in three major cities where the specialists and facilities are available. Paediatricians who wanted exposure and experience in cancer chemotherapy and management entered a two-year adult medical oncology training programme which started to accept them in 1986 at the University of the Philippines–Philippine General Hospital (UP–PGH).

The development in the Philippines of paediatric oncology as a distinct subspecialty in paediatrics accelerated in the early 1990s with the return to the country of three paediatricians who trained in paediatric haematology-oncology in advanced centres abroad (i.e. US National Cancer Institute, the Children's Hospital of Los Angeles, and The Children's Hospital in Sydney, Australia). These three paediatric oncologists, together with two pioneering senior paediatricians who trained in the United States in the 1970s, provided clinical services to patients organized around a post-residency training programme. A three-year clinical fellowship programme in paediatric haematology-oncology started at the UP–PGH in 1991, followed by the PCMC in 1992. Since then, both training hospitals have produced 39 graduates to date, and many of them are now practising in the provinces outside Metro Manila.

At PCMC, chemotherapy provider training courses for nurses started in 2006 and have trained a total of 1,691 nurses so far. This became the impetus for PCMC to later develop a two-year nurse residency in general paediatrics

and a one-year nurse clinical specialization in paediatric oncology nursing, which was implemented in 2013 with the approval of the training programme by the Philippine Professional Regulatory Commission's Board of Nursing. Graduates were certified by PCMC as nurse specialists. Likewise, PCMC amended the training curriculum of its professional subspecialty society-accredited residency training programmes in paediatric pathology, paediatric surgery and paediatric radiology to include and integrate the basic concepts in paediatric oncology for their graduates to be an effective member of the multidisciplinary cancer treatment team.

In the second half of 2012, PCMC and MCM started training and accreditation of nurses as certified chemotherapy providers in all collaborating hospitals in the NCPAM's ALLMAP and Philhealth's Z-package, back-to-back with training on the storage, safe handling and preparation, and disposal of chemotherapy drugs for clinical pharmacists. These were identified as the immediate training needs, while PCMC is conducting an assessment of baseline capabilities in those hospitals in pathology, tumour surgery, imaging studies and radiotherapy to become the planning basis for the next training steps. Discussions are ongoing on the determination of baseline infrastructure and equipment, which could be the basis for proposal to DoH on hospital facility upgrades, particularly government hospitals where the majority of poorer patients go for consultations and treatment.

The current training programmes have provided an effective foundation for the development of paediatric oncology in the Philippines (18). The leadership role now actively played by the paediatric haematologists-oncologists remains critical for improvements in childhood cancer care in the Philippines to continue. These positive trends will ultimately result in the near future in cancer survival rates in the country to be comparable to that in advanced centres elsewhere.

Results

Public information campaigns have raised community awareness and understanding of childhood cancer and created public expectations that in turn have increased the demand for health care. The intended result was for parents to act promptly in seeking medical consultations so that early diagnosis and clinical interventions can result in a favourable disease outcome, which is curing cancer. Since most of these patients were from the poorer sectors of society, this exerted a significant burden on public hospitals which are likely to be unprepared to provide the appropriate

Figure 2: Theoretical model of childhood cancer health care



services, or can do so only with limited and often inadequate resources. Access to care will therefore be a great challenge to majority of patients.

Within ten years of the MCM programme, national public awareness campaigns brought down the number of late diagnoses to 30%–40% from a baseline of 70% (16). The current national referral and treatment network of 39 paediatric oncologists in 37 hospitals made subspecialty care nationally available, particularly to poorer patients outside of Metro Manila, reaching an annual average of 2,553 patient beneficiaries to date from a baseline of only about 1,000 (16). Treatment abandonment rate was brought down to 10%–20% from a baseline of 80%, and the currently available survival rate for childhood leukaemia based on hospital-based data from participating hospitals improved to 78% from a baseline of only 16%–20% (16). To further expand services to as many places in the country without paediatric oncologists, PCMC has now increased the number of clinical fellows entering first year in the training programme to four from an initial of two, which together with one from the UP-PGH are expected to provide in the next ten years for an adequate number necessary for the manpower need of the country for paediatric oncologists who will practice in underserved areas outside the major cities.

Thus, the framework shown in Figure 2 depicts this situation through the demand-supply model. The degree to

which access to care is achieved depends on the gravity of the barriers encountered by patients in trying to access health-care services in hospitals. Targets for interventions therefore must consider variables that address dismantling these barriers to health-care access.

A wider array of targets beyond that of the traditional biomedical approach of interventions specific only to the disease itself is necessary by considering other determinants of health. Hence, the community's social and physical environments are affected by cultural, political, policy and social support. Paying attention to these underlying environmental forces with appropriate community activation will result in outcomes defined by the community, i.e. attainment of quality of life.

Furthermore, the situation (i.e. condition) in which communities find difficulty in accessing services for diagnosis and management of childhood cancer will result in dissatisfaction (i.e. the state), which communities will respond to with appropriate actions (i.e. the response). The ultimate goals of community responses are to achieve better outcomes that impact on the attainment of surviving cancer with quality of life. Driving forces (e.g. poverty and economic difficulties of cancer victims) exert pressure on the health conditions (e.g. not able to access care) which will result in the current undesirable state (e.g. many present at the late stages of cancer and many will not be adequately treated). The impact is low survival rates for childhood cancer in the

Philippines. Response refers to the appropriate reaction of government, institutions, groups or individuals to the undesirable impact in order to prevent, mitigate, ameliorate or adapt to the changes in conditions.

In Figure 2, the public's response on the basis of knowledge and understanding of childhood cancer created the demand for health care. The ability to satisfy this demand depends on the dismantling of barriers to access of cancer-related services, and the ability to supply these services in public hospitals. The government, institutions and groups of individuals must react to this demand in order to deliver the necessary services required in order to achieve the desired outcomes (i.e. responsive service, increase compliance to treatment, decrease in treatment abandonment rate, best clinical outcomes) that will have meaningful and significant impact (i.e. improved survival rates, optimal quality of life) to childhood cancer victims. The subsequent implication is community empowerment that will result in the desired reactions of government and institutions to the prevailing problem of childhood cancer in the Philippines so that improvements in survival rates and quality of life can be ultimately attained.

Finally, the inputs that are defined by the characteristics of the health-care delivery system must be improved to attain the desired results in childhood cancer care, such as 1) the physical facilities and equipment; 2) availability and skills of

the multidisciplinary professional team; 3) utilization of standardized treatment protocols; 4) presence and objectives of childhood cancer policies, and; 5) provisions for chemotherapy drugs and financial support structures. Equally important as inputs are the following: 1) knowledge of existing or potential barriers to the delivery of health-care services, and; 2) characteristics of the population at risk defined by their demography and epidemiology. In all of the above, government involvement is critical for our current results to be sustainable. This is now the direction that is being taken in our efforts for global improvement of childhood cancer care in the Philippines.

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References

- Eden T. 2006. The burden of childhood cancer. In: *Childhood Cancer: Rising to the Challenge*. Geneva: International Union Against Cancer (UICC)
- Steliarova-Foucher E, Hery C, Pisani P. 2006. The burden of childhood cancer. In: *Childhood Cancer: Rising to the Challenge*. Geneva: International Union Against Cancer (UICC)
- Steliarova-Foucher E, Stiller C, Kaatsch P et al. 2004. Geographical patterns and time trends of cancer incidence and survival among children and adolescents in Europe since the 1970s (the ACCIS Project): an epidemiological study. *The Lancet* 364: 2097-2105
- Ngelangel CA, Wang EHM. 2002. Cancer and the Philippine Cancer Control Program. *Japan J Clin Oncol* 32 (suppl 1): S52-S61
- DOH-HIS. 1992, 1996. *Philippine Health Statistics 1991, 1995*. Manila: Health Intelligence Service - Department of Health
- World Health Organization. 2002. *Population Health and National Health Accounts*. [Internet] Available at: www3.who.int/whosis/ [Accessed 13 May 2013]
- Laudico AV, Esteban DB, Tabafunda TM. 1998. Philippines, Manila and Rizal Cancer Registry, 1983-1992. In: *International Incidence of Childhood Cancer*, vol II, IARC Scientific Publications No. 144, ed. Parkin DM, Kramarova E, Draper GJ et al, 211-215. Lyon: IARC Press
- Laudico AV, Esteban DB, Parkin DM et al. 1989. *Cancer in the Philippines*, vol 1. Lyon: International Agency for Research on Cancer
- Laudico AV, Esteban D, Ngelangel CA et al. 1993. *Cancer in the Philippines*, vol 2. Manila: Philippine Cancer Society, Inc.
- Laudico AV, Esteban DB, Reyes L, Liquido L. 1998. *Philippine Cancer Facts and Estimates*. Manila: Philippine Cancer Society, Inc.
- My Child Matters Philippines. 2011. *Report of Childhood Cancer Philippine Network of Collaborating Hospitals*. Unpublished data from collated reports, Philippine Children's Medical Center, Quezon Avenue, Quezon City
- Havas S, Ngelangel CA. 1996. Evaluation of the cancer control efforts in the Philippines. *Philippine J Intern Med* 34: 115-118
- Havas S, Ngelangel CA. 1997. Assessment of cancer control efforts in the Philippines Part II: Recommendations for Change. *Philippine J Intern Med* 35: 219-222
- Ribeiro RC, Steliarova-Foucher E, Magrath I et al. 2008. Baseline status of pediatric oncology care in ten low-income or mid-income countries receiving My Child Matters support: a descriptive study. *Lancet Oncology* 9: 721-729
- DOH-NCPAM. 2010. *The DOH National Center for Pharmaceutical Access and Management*. [Internet] Available at: http://uhmis2.doh.gov.ph/doh_ncpam/ [Accessed 09 November 2013]
- My Child Matters Philippines. 2013. *Report of Childhood Cancer Philippine Network of Collaborating Hospitals*. Unpublished data from collated reports, Philippine Children's Medical Center, Quezon Avenue, Quezon City
- Philhealth. 2012. *Philhealth's Z Benefits for Catastrophic Illnesses Launched*. [Internet] Available at: <http://www.philhealth.gov.ph/news/2012/Z-benefits.html> [Accessed 10 October 2013]
- Lecciones JA. 2013. The development of paediatric oncology in the Philippines. In: *Cancer Control 2013: Cancer Care in Emerging Health Systems*, International Network for Cancer Treatment and Research, ed. Magrath I, 116-119. UK: Global Health Dynamics