

# Clinical Nurse Coordinators: A New Generation of Highly Specialized Oncology Nursing in Jordan

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**Summary:** Despite the important role of nurses in a pediatric oncology team, the marginalization of nursing is common, especially in developing countries. At the King Hussein Cancer Center (KHCC) in Jordan, the position of the clinical nurse coordinator (CNC) was created in the pediatric neuro-oncology and ocular oncology services to empower the role of nursing. Our advanced nursing practice is based on the domains of the Strong Model of Advanced Practice, which are direct patient care, support of systems, education, research and publications, and professional leadership. There is strong involvement of the CNC in clinical care, patient education, follow-up, and interdisciplinary collaboration, which has resulted in improved survival, reduced morbidity, and increased compliance of patients and also their successful reintegration into society. The coordination of twinning initiatives and telemedicine activities has helped ensure the quality of treatment and supported research initiatives in the services. Such a positive impact has led to a significant increase in the recruitment of CNCs at KHCC. We propose that the role of nursing be strengthened in developing countries to improve the level of care provided to patients and their families.

**Key Words:** clinical nurse coordinator (CNC), Jordan, strong model of advanced practice, pediatric oncology nursing

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In the past few years, the mortality rates associated with infectious diseases have decreased in many developing countries, making cancer the leading cause of death in children. In these countries, many children with cancer have no effective access to treatment. The need to provide quality treatment for pediatric oncology patients in developing countries has helped raise public and governmental awareness to childhood cancers.<sup>1–3</sup>

Implementing treatment protocols and place of treatment improve the survival rates of children with cancer.<sup>4,5</sup> Nurses play an important role in the pediatric oncology team, interdisciplinary approach to treatment, and adherence to protocol guidelines, and their role has evolved over

the last 3 decades.<sup>6,7</sup> Nurses contribute effectively to direct comprehensive care, support of systems, patients and staff education, research, publications, and professional leadership.<sup>8–10</sup> The role of nursing is especially important in subspecialties such as neuro-oncology and ocular oncology, which require an interdisciplinary and holistic approach.

In many developing countries, even the most curable childhood cancers still have poor outcomes. In addition to factors such as poverty, transportation, and compliance,<sup>1–3</sup> marginalization of nursing in the healthcare system, a common practice in many developing countries, might negatively affect survival rates. The position of the clinical nurse coordinator (CNC) was created at the King Hussein Cancer Center (KHCC) to model that of the nurse practitioner in developed countries in order to improve the overall care for patients.

The death of King Hussein from cancer in 1999 led to the creation of a unified front between the government and the public, resulting in the establishment of KHCC in November 2002 ([www.khcc.jo](http://www.khcc.jo)). KHCC is the first comprehensive cancer center in the Middle East for adults and children. It has a 121-bed capacity and accepts more than 2600 new patients per year. There are 28 beds reserved for the approximately 230 new pediatric oncology patients treated every year. At its inception, KHCC had only 4 pediatric oncologists, each being assigned a service (leukemia, neuro-oncology and ocular oncology, solid tumors, or lymphoma).

These oncologists had to establish standardized best clinical care guidelines for each disease in their respective services. They were also involved in several administrative and hospital committee duties necessary to establish a new institution. Because it was necessary to maintain the high standard of treatment and care aimed for by KHCC despite the clinical and administrative burden on the oncologists, empowerment of nursing at KHCC was essential.

In developed countries, nursing is a vital part of the multidisciplinary team that treats children with cancer. To empower the nursing staff and facilitate their professional growth in Jordan, an advanced nursing practice program was created based on the Strong Model of Advanced Practice.<sup>9,10</sup> The paper discusses how we fulfilled the domains of this model in our setting and how CNCs are positively impacting the pediatric oncology services at KHCC.

## METHODS

The neuro-oncology program at KHCC was officially launched in February 2003, followed by the ocular oncology program in March 2003. The first step in setting up these programs was to establish and approve best treatment guidelines for each disease. This was followed by recruiting

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the first CNC (D.O.) in May 2003. She received her primary training in oncology nursing and education by the nursing training and education office at KHCC. Because there was no defined curriculum for advanced pediatric oncology nursing training in Jordan, the disease-specific orientations in pediatric neuro-oncology and ocular oncology were taught by the practicing pediatric oncologist. As the service expanded from 8 to 80 new cases per year, 2 more CNCs were recruited and trained to maintain the high quality of care provided.

The role of the CNC continued to gradually evolve and expand and became highly specialized for the first time in Jordan. This development was guided by the Strong Model of Advanced Practice, developed by Ackerman, Norsen, Martin, Weidrich, and Kitzman in 1996 at the Strong Memorial Hospital and the University of Rochester Medical Center in Rochester, NY.<sup>9,10</sup> This model defines the advanced practice nursing role and comprises 5 domains of practice: (1) direct patient care, (2) support of systems, (3) education, (4) research and publications, and (5) professional leadership. The fulfillment of each of the domains varies with individual position and depends on the needs of the population served, the practice setting, and individual advanced practice nurse interests and strengths.

Although most advanced practice nurses begin as clinical experts, they progress from being novices to experts as delineated in the model. The nursing within the advanced practice role evolves from novice, through advanced beginner and competent and proficient, to expert, as described by Benner in 1984.<sup>11</sup>

CNCs at the neuro-oncology and ocular oncology services at KHCC have applied each domain of the Strong model to their setting in the following manner.

### Direct Patient Care

This is the most visible domain of the model and key to the role of the CNC in pediatric neuro-oncology and ocular oncology services (Fig. 1). It is subdivided into the following:

#### Patient Assessment and Evaluation

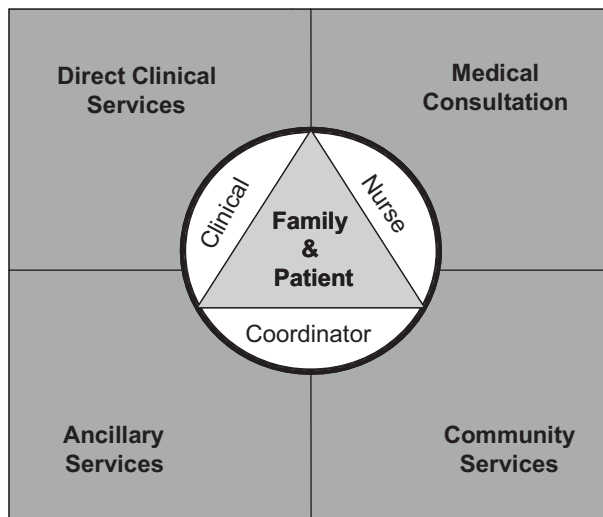
The CNC assists in the evaluation of new patients, treatment of established outpatients, and close follow-up of inpatients and also collaborates with the team to optimize the treatment plan for patients. In addition, the CNC checks chemotherapy orders for outpatients and inpatients and documents the toxicities resulting from treatment.

#### Patient and Family Education

The CNC provides disclosure of the disease and treatment, supportive care, and allocation of resources available in the community for patients and their families. The CNC also explains to patients and families the need for siblings screening and long-term follow-up and also discusses long-term effects of the disease.

#### Case Coordination

On admission, patients are informed that they should contact the CNC for their needs and are assured that the CNC is their advocate in the hospital and community. The CNC makes periodic follow-up calls to patients who miss appointments and scheduled tests and arranges support group meetings and consultations. Phone calls have been shown to increase the compliance of patients.<sup>12</sup>



**FIGURE 1.** The interdisciplinary nature of the role of the clinical nurse coordinator (CNC): in addition to assisting with clinical services, the CNC also coordinates and follows-up on appointments and interfaces with the ancillary and community services to ensure best survival rates and quality of life for patients and their successful reintegration into the society.

### Interdisciplinary Collaboration

The CNC ensures that all members of the interdisciplinary team are updated of the status of the child and family during therapy and follow-up. If patients are admitted in another hospital in the community, the CNC contacts the treating team there and visits the patient in that hospital.

### Twinning and Telemedicine

Twinning and telemedicine are especially important for providing the best-possible treatment for our patient population.<sup>13-15</sup> The mentor team provides expert opinion for ably managing complex diseases, assuring quality of treatment, increasing compliance, and for long-term education of key personnel. The CNC plays a vital role in such initiatives by suggesting the cases that need to be discussed and coordinates with the oncologist to finalize the list of the cases to be presented for an expert opinion. Then, the CNC presents or submit the cases for the telemedicine discussion. Finally, the CNC informs the family about the decision and documents it in the chart.

### Support of Systems

CNCs are actively involved in KHCC committees that focus on improving quality of care and promoting safety. Such committees have played a major role in furthering KHCC and helped it receive an accreditation from the Joint Commission International. KHCC was the first hospital in Jordan to achieve international accreditation in February 2006 and disease-specific accreditation in November 2007. In addition, CNCs assist in data entry for patients, protocols review, and are part of the interdepartmental team that established preprinted chemotherapy orders to improve safety. Also, they provide strong support to the nursing educational office through formal and informal mentorship of newly appointed nurses.

## Research and Publications and Professional Leadership

These domains function at a complex level. The role of the CNC in these domains has become better defined only recently. Initially, CNCs started as collaborators in multidisciplinary research within the pediatric division. Then, CNCs of neuro-oncology and ocular oncology services began modest research initiatives. They have since made 12 oral presentations in many international, regional, and national conferences. Also, the strong support of the CNC to the oncologist for both services indirectly promotes research at the physician and nursing level.

## Education

This includes mentoring of newly appointed CNCs and contributing to the orientation course for new CNCs provided by the nursing education office at KHCC. Disease-specific protocols are explained to new CNCs or nurses to improve adherence and patient safety. CNCs also regularly participate in the continuous medical education activities for nursing at KHCC. KHCC also invites nurses from other hospitals and centers in Jordan to update them on the latest in the field of pediatric oncology nursing. In addition, CNCs participate in the monthly online telemedicine session for nursing with the International Outreach Program at the St Jude Children's Research Hospital, Memphis, TN.

## RESULTS AND DISCUSSION

Because KHCC is a new center, no quantifiable data, outcomes, or compliance information has yet been collected on how the new role of the CNC has impacted care in the neuro-oncology and ocular oncology services. The established role of the CNC in developed countries and its impact on different specialties are good arguments for empowering nursing at KHCC. However, the role of the CNC needs to be better defined and continually evolve in developing countries. It is possible that the marginalization of nursing in developing countries negatively impacts their quality of healthcare. In a classical study, Haley and coworkers<sup>16</sup> found in a representative sample of US hospitals that having an infection control nurse and providing regular education and feedback help decrease nosocomial urinary tract infections, surgical wound infections, pneumonia, and bacteremia in patients. Haley et al's study provides indirect evidence that marginalization of nursing in any discipline, including pediatric oncology, in developing countries will negatively impact the quality of care provided for patients and their families.

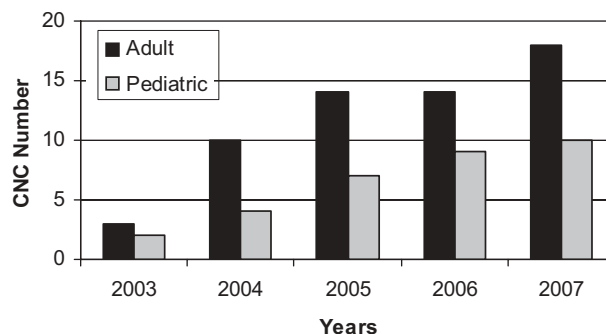
On average, a pediatric oncologist in the United States gets 20 to 25 new cases per year. The neuro-oncology and ocular oncology services at KHCC have provided care for 60 to 80 new cases per year from December 2002 to December 2007. Even with only 1 oncologist available for the service, we achieved a compliance of more than 90% for brain tumors in general and a 3-year survival rate of 92% for patients with medulloblastoma.<sup>13,14</sup> For children with retinoblastoma, we achieved results that were on a par with those from developed countries, with zero mortality a compliance of 90%, and reduction in enucleation from 90% to 25%.<sup>15</sup>

Although the number of oncologists at KHCC has increased over the years, so have the extent and scope of treatment and the additional duties of managing a growing hospital, restricting oncologists' ability to provide modern comprehensive treatment, which is the mission of KHCC. The fortification of the role of CNCs at KHCC has helped accomplish this. At KHCC, the importance of CNCs was evident in services rendered by them to the pediatric neuro-oncology and ocular oncology services, wherein patients have complex care needs. The initial resistance expressed by some physicians in accepting the stronger role of nursing is now declining as CNCs prove their positive impact on care. The demand for CNCs at KHCC has increased in the pediatric and other departments, causing more CNCs to be appointed. The total number of CNCs in 2007 was 28 (Fig. 2).

Although factors such as financial support to people with cancer by the government contributed to the good results, we believe that the strong involvement of our nurses in clinical care, patient education, and follow-up, especially by phone, was key to good outcomes, reduced mortality and morbidity, and increased compliance. Empowering and promoting nurses can help further improve the care despite the shortage of pediatric oncologists in developing countries. In the Central American countries, which have a population of 36.1 million, only 20 pediatric oncologists are available to treat the 1714 new cases of cancer per year, with 1 oncologist having to attend to 86 new cases (Federico Antillon, personal communication, November 6, 2007). The ratio of oncologist to new cases varies significantly in other countries: 1:24 in Panama, 1:138 in El Salvador, and 1:195 in Guatemala. In these countries and others worldwide, a stronger role for nursing is imperative.

The interdisciplinary approach we adopted to provide treatment to pediatric oncology patients and the central role of the CNC in coordinating this care for patients has been crucial in achieving the good outcomes and compliances in the neuro-oncology and ocular-oncology services at KHCC.

We propose the cost-effective use of expert nurses in an expanded nursing role in developing countries. The cost of educating a patient about chemotherapeutic regimens, importance of follow-up, and infection control by an oncology CNC is much lower than that for treating relapses or complications.



**FIGURE 2.** Increase in the number of CNCs at the King Hussein Cancer Center (KHCC) from 2003 to 2007. CNC indicates clinical nurse coordinator.

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