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Towards Good Palliation for Children with Cancer

*Recognizing the Family and the Value of
Communication*

LI JALMSELL



ACTA
UNIVERSITATIS
UPSALIENSIS
UPPSALA
2015

ISSN 1651-6206
ISBN 978-91-554-9291-5
urn:nbn:se:uu:diva-259409

Dissertation presented at Uppsala University to be publicly examined in A1:111a, BMC, Husargatan 3, Uppsala, Friday, 25 September 2015 at 09:00 for the degree of Doctor of Philosophy (Faculty of Medicine). The examination will be conducted in English. Faculty examiner: Associate Professor Steven Joffe (University of Pennsylvania School of Medicine, Department of Medical Ethics and Health Policy).

Abstract

Jalmsell, L. 2015. Towards Good Palliation for Children with Cancer. Recognizing the Family and the Value of Communication. *Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine* 1123. 73 pp. Uppsala: Acta Universitatis Upsaliensis. ISBN 978-91-554-9291-5.

Pediatric cancer imposes a threat on the child's life and approximately every fifth child diagnosed with cancer will die due to his or her disease. The overall aim of this thesis was to explore palliative care of children with cancer and bereaved family members. The thesis includes data collected retrospectively from medical records, a nationwide questionnaire directed to bereaved parents, a nationwide questionnaire for bereaved siblings and individual interviews with children in cancer care.

Most children dying from cancer were recognized as being beyond cure at time of death; for some this recognition occurred close to death, leaving little time for potential personal preferences (Paper I). Bereaved parents and siblings noticed extensive suffering in the child close to death (Paper II, VI), with physical fatigue being the most commonly reported symptom irrespectively of age and diagnosis of the child (Paper II). Bereaved parents' psychological well-being appears to be closely related to experiencing suffering in the dying child (Paper III) but also to high-intensity treatment (with bone marrow transplant as the example) of a child that still dies from his or her disease (Paper IV). Bereaved siblings experience a lack in information at the end of their brother's or sister's life and report feeling poorly prepared for the loss. An increased risk of anxiety was seen in siblings whom nobody talked to about what to expect at the time of death of their brother or sister (Paper VI). When caring for children with cancer it is vital to take the individual child's awareness and preferences regarding information into consideration. Bereaved parents who have communicated with their child about death expressed that this often occurred at the child's own initiative (Paper V) and simple means such as fairy tales could be used to facilitate communication. Ill children themselves expressed in interviews wanting honest, but still hopeful information regarding bad news (Paper VII).

The results of this thesis stress the importance of striving to achieve good communication and keeping a family perspective throughout care of children with cancer.

Keywords: palliative care, child, cancer, family, communication, end-of-life care, bereavement

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ISSN 1651-6206

ISBN 978-91-554-9291-5

urn:nbn:se:uu:diva-259409 (<http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-259409>)

*To my fabulous family
Fredrik, Hannah, Hugo & Henry*

*On ne voit bien qu'avec le cœur.
L'essentiel est invisible pour les yeux.*

Antoine de Saint-Exupéry

List of Papers

This thesis is based on the following papers:

- I **Jalmsell L.**, Forslund M., Hansson M.G., Henter J.I., Kreicbergs U., Frost B.M. (2013) Transition to non-curative end of life care in pediatric oncology – a nationwide follow-up. *Acta Paediatrica* 102(7):744-748
- II **Jalmsell L.**, Kreicbergs U., Onelöv E., Steineck G., Henter J.I. (2006) Symptoms affecting children with malignancies during the last month of life: a nationwide follow-up. *Pediatrics*, 117(4):1314-1320
- III **Jalmsell L.**, Kreicbergs U., Onelöv E., Steineck G., Henter J.I. (2010) Anxiety is contagious: symptoms of anxiety in the terminally ill child affect long-term psychological well-being in bereaved parents. *Pediatric Blood and Cancer* 54(5):751-757
- IV **Jalmsell L.**, Onelöv E., Steineck G., Henter J.I., Kreicbergs U. (2011) Hematopoietic stem cell transplantation in children with cancer and the risk of long-term psychological morbidity in bereaved parents. *Bone Marrow Transplantation* 46(8):1063-1070
- V **Jalmsell L.**, Kontio T., Stein M., Henter J.I., Kreicbergs U. (2015) On the child's own initiative: Parents communicate with their dying child about death. *Death Studies* 39(2):111-117
- VI Lövgren M., **Jalmsell L.**, Eilegård A., Steineck G., Kreicbergs U. (2015) Siblings' experience of the brother's or sister's cancer death: a nationwide follow-up 2-9 years later. *Psycho-Oncology*, E-published ahead of print August 12th, 2015
- VII **Jalmsell L.**, Frost B.M., Hansson M.G., Henter J.I., Kreicbergs U., Lövgren M. Tell the truth but leave room for hope - children with cancer share their views on receiving bad news. *Manuscript*

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Abbreviations

CES-D	Center for Epidemiological Studies Depression Scale
CI	Confidence interval
HADS	Hospital Anxiety and Depression Scale
HCP	Health care practitioners
HSCT	Hematopoietic stem cell transplantation
NOPHO	Nordic Society of Paediatric Haematology and Oncology
RR	Relative risk
SIOP	International Society of Paediatric Oncology
STAI-T	State-Trait Anxiety Inventory
VDS	Visual digital scale
WHO	World Health Organization

Personal reflections

When I was accepted into medical school, I had a clear idea about what I wanted to be when I graduated. I wanted to work with families. In my mind I pictured working with autistic children (or children with some other kind of mental disability) and their families. However, early on I realized that I was even more fascinated by somatic illnesses and especially the trauma that affects the family when one of its members fell ill, trauma that was further accentuated if the illness posed an immediate threat to that individual's life. During my rotation in hematology blood cells and chemotherapy caught my attention and new treatments like "antibodies" and "targeted drugs" sounded almost magical. So, I adjusted my plan for the future: about halfway into med school I knew that I wanted to be a pediatric oncologist when I "grew-up". *They* got to work with severely ill children together with the families and were faced with the challenge of possible death and subsequently bereaved family members.

For me, the journey that in the end led to this thesis started after a seminar in pediatric oncology. I had been looking forward to that seminar since I first laid eyes on it in the lecture plan. Imagine my disappointment when it turned out that there were cases to prepare, and that I hadn't done so. I was absolutely sure that I hadn't received any papers in advance, and although our supervisor was initially skeptical, my fellow students backed me up (I had been an ambitious student so far), and defended me. The seminar was organized by Jan-Inge Henter, and we began talking after the seminar. Jan-Inge probably realized what was at the root of my disappointment and I expressed my interest in meeting the whole family and possibly finding ways in which individual family members could be supported during their difficult journey and even after the possible death of the child. As it turned out, he had an ongoing project regarding bereaved parents and I was invited to see if any of the research appealed to me. I got to meet Ulrika Kreicbergs (at the time a PhD student close to defending her thesis) and was given the opportunity to work with her material. The following summer my journey into the scientific world began. One could have imagined that I should have stayed and finished a thesis then and there, but somehow life got in the way. My mother, who some years earlier had been diagnosed with breast cancer, found out that her disease had now metastasized and somehow this made me think differently about research. I wanted to meet *real patients* and learn to be a

good clinician. I moved to Visby to do my internship at a smaller hospital to get as much clinical experience as possible and also to be forced to take challenging decisions as a young physician on call. During my internship my mother died and my clinical work became even more important to me; thus I put all my ambitions on continuing with my research on hold.

I finished my internship and continued with my clinical work at the combined oncology and palliative unit (for adult patients). However, as part of my residency I had to revisit the university hospital in Stockholm. Back again, research started growing on me, and luckily my supervisors had not given up hope on me and welcomed me back. (Thank you!) However, I had abandoned the idea of continuing exclusively with material about bereaved parents. I wanted to pair data from parents with reports from clinicians, other family members and most definitely from the children themselves.

At a conference in Sandhamn on ethics and end-of-life decisions I came in contact with Britt-Marie Frost, pediatric oncologist from Uppsala, and Mats Hansson, medical ethicist who shared my interest in pediatric palliative care. In addition, they had decided to take on a PhD student to explore the area and were kind enough to invite me to the Centre for Research Ethics & Bioethics (CRB) at Uppsala University where I finally embarked on the PhD journey in earnest. (Thank you!) Although CRB embraces a diverse group of researchers and PhD students, the interest in ethical issues arising in different parts of medicine unites all the co-workers, and I felt that my project had found its rightful home. I'm grateful you let me come aboard, even with the bumpy ride of my research career so far. It would have been easier for you if you had found a PhD student who could have just "worked" for four years without all my detours...

Still, life and clinical work tend to get in the way, and additional studies in this thesis have had to compete with my wish to pursue a clinical career as well as with my personal life. Marrying the man of my dreams (with dreams of his own), and having three children together, has further delayed this work, which at times has been hard to accept. However, life gives you perspective and I do believe that all that has happened has not only given me perspectives on my own life but also on how I interpret data. I think that the extended time, and all the obstacles and joys that lengthened the time it took me to compose this thesis have made it better. It would not have been what it is today, had I finished it earlier.

Acknowledging that children die

We'll meet in Nangiyala¹

In Western countries, the death of a child is rare, but even so, one must acknowledge that not all children live into adulthood. In Sweden a total of 439 children below the age of 15 years died in 2012, approximately two thirds of them during their first year of life.² The most common causes of infant mortality (death during the first year of life) are perinatal complications and severe congenital malformations. For children older than one year, accidents and cancer are the most common causes of death.^{2,3}

Children are expected to outlive their parents, and losing a child has been described as one of the most stressful life-events possible.^{4,5} While accidents are by definition unexpected, death due to cancer can often be foreseen and if the possibility of death is acknowledged, the child as well as his or her family can be encouraged to plan according to personal preferences. This, together with the possibility of saying a proper farewell has been seen to benefit bereaved family members years after their loss.^{6,7}

Childhood cancer

In Sweden, approximately 300 children are diagnosed with cancer every year. Leukemia and tumors in the central nervous system are the most common forms of childhood cancer and also represent the leading causes of death from pediatric malignancies.⁸ Over the last fifty years, mortality due to pediatric malignancies has decreased significantly but still approximately one out of five children will die due to his or her disease, and mortality rates are similar in most Western countries.⁹⁻¹³

Treatment in pediatric oncology, in Sweden, is provided according to treatment protocols sanctioned by the Nordic Society of Paediatric Haematology and Oncology (NOPHO).⁸ However, when it becomes evident that the child is beyond cure, no protocol or national guidelines stipulate how to provide optimal pediatric palliative care. Some clinics/departments have developed regional guidelines but in many cases the clinicians must draw on their own

experiences to guide them through the care of the dying child and his or her family.

Many families express a wish for end-of-life care to be given at home, including the home as the desired place of death.^{14,15} Caring for the child at home is the least disruptive to family life, and has been seen to give parents a feeling of choice and control.¹⁶ Nonetheless, many children die in hospitals, and there are studies reporting that the hospital is the place of death for at least half of the children who die of cancer.¹⁷⁻²⁰ In order for end-of-life care to take place at home one has to accept the likelihood of death, which permits the family to plan accordingly. The great number of children who die in hospitals, contradictory to the expressed wishes, could partly be due to a lack of recognizing the possibility of death, but also to cancer-directed treatment being administered close to death. Another contributing factor could be the poor availability of advanced home care for children.²¹

In Sweden, treatment for childhood cancers takes place at one of the country's six pediatric oncological units, situated in Stockholm, Uppsala, Göteborg, Lund, Linköping and Umeå (**Appendix 1**). If a curative approach no longer remains possible, care can often be transferred to a hospital closer to home. However, there is only one formal service that provides advanced home care for children and only one pediatric hospice; both of these are located in the Stockholm area. In other parts of the country, the regular staff giving advanced home care might or might not accept children as their patients, depending on the function they have been assigned.

Childhood cancer – a global perspective

Although this thesis focuses on Swedish conditions (similar to those in many other Western countries) it should be noted that improving the conditions of children diagnosed with cancer remains a global concern. Globally, approximately 100 000 children are diagnosed with cancer each year and roughly 250 of them die per day.³ Most of these children die in low-income countries, and could have been cured, had adequate therapies been available.

Palliative care

“To cure sometimes, to comfort always, to hurt the least, to harm never.”

The ethical code of Hippocrates remains valid even though medical and technical advances have improved the outcome of many diseases. Diagnoses

that used to mean certain death are now curable. Likewise, diseases that were considered life-threatening merely decades ago are now considered chronic conditions without necessarily shortening an expected lifespan.

Palliative care according to the World Health Organization (WHO) is “an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychological and spiritual”.²²

While palliative care traditionally has mainly been seen to include care of the dying individual, the WHO definition of palliative care for children (**Appendix 2**), states that it starts when a child receives a life-threatening diagnosis.²² According to this definition, palliative care should be provided to all children diagnosed with a cancer, irrespective of the expected outcome. In line with these recommendations an integrated approach often is advocated in favor of a traditional model where palliative care follows after curative treatment when all hope of cure is gone (**Figure 1**).^{6,20,23-26}

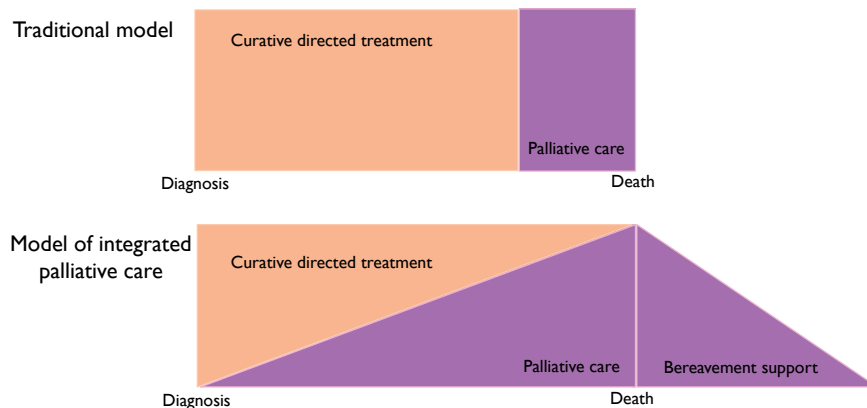


Figure 1. Traditional care model vs. model of integrated palliative care

However, this model is not yet routine in clinical praxis.^{24,27,28} Several barriers have been suggested to contribute to this,^{24,25,29} including a lack of trainees in palliative medicine.^{27,30-32} In Sweden the medical specialty of palliative medicine was formalized only in May 2015, and it remains to be seen how many pediatricians pursue this subspecialty. In addition, there is a lack in consensus regarding the term *palliative care*,^{32,33} which for many is associated exclusively with care of the dying individual, and hence an integrated approach might seem strange.^{28,34,35} In Sweden, discussion of whether and

how to implement palliative care alongside curative treatment has been scarce, and the WHO definition is far from being implemented into clinical praxis.

In this thesis, the term *palliative care* will be used as equivalent to palliative care at the end of life, if not stated otherwise, since this is apparently the most widespread understanding of the term in Sweden. In the discussion I will return to the WHO definition as well as the ongoing debate on integrating palliative care earlier during the child's disease trajectory.

Cornerstones in palliative care

The Swedish National Board of Health and Welfare has formulated four important cornerstones for good palliative care at the end of life.^{36,37} These are:

- Easing of symptoms and suffering
- Cooperation in the multiprofessional team
- Communication and relationships
- Support to close relatives

Easing of symptoms and suffering

Palliative care acknowledges that suffering comes not only from physical symptoms but also from psychological symptoms, the social situation and needs, as well as existential questions and needs. Needs within all these four areas must be cared for in order to minimize the patient's (and the relatives') suffering.

Even with good medical care, children dying from cancer are still affected by several different symptoms, of which pain has been most thoroughly explored.³⁸⁻⁴³ Other commonly reported symptoms troubling the child with cancer in the end of life are fatigue, lack of energy, weakness, dyspnea and poor appetite and weight loss.^{38-40,42,43}

In one study, the dying child's symptom burden was reduced when the child was cared for at an intensive care unit compared to at a hospital ward.³⁸ However, in another study, home care in the end-of-life period was not found to negatively affect relief of pain or other symptoms.¹⁹

Cooperation in the multiprofessional team

In order to provide best possible palliative care, it is important that the health care system and the social services work together. Securing this collaboration as well as a multiprofessional team that work together to resolve any difficult situations the patient or his or her relatives encounter is central.³⁷

The composition of the team might vary depending on the needs of the individual patient; team members may include physicians, nurses, nurse's aides, physiotherapists, occupational therapists, psychologists, counselors, nutritionists and priests, among others.

The clinical work can be organized in various ways. This will however not be elaborated upon in this thesis.

Communication and relationships

Communication is the core of medicine. The ability to communicate openly leads to better-informed patients, and improved psychological as well as behavioral outcomes. It can also help a family adapt to a stressful and challenging situation. Communication is a key element in providing high quality palliative care^{44,45} and improvements in communication are recognized as one of the most important factors in enhancing end-of-life care in a pediatric setting.⁴⁶⁻⁴⁸

Communication is vital not only between the health care practitioners (HCP) and the child and his or her family, but also within the family and between clinicians. Communication includes more than just delivering information. Several persons can participate and the aim can be both to exchange information, to develop mutual understanding, and to provide support. Good communication is needed to secure adequate information from the patient about his or her situation so that optimal treatment (e.g. pain relief) can be provided, but may also in itself offer relief by giving guidance on how to handle emotional distress or a difficult situation.³⁷

Communication and the severely ill child

Historically, there was a general belief among physicians and parents that children should not be informed about their cancer diagnosis. This attitude began to shift during the 1970s, with new therapies, improved survival rates and growing availability of psychosocial support services.⁴⁹ Studies also revealed that children were well aware of their illness, whether they had been directly told or not, and that they were able to cope more effectively when properly informed.^{47,50-55} Even though most physicians, in Western countries, believe in telling children about their illness and prognosis,⁴⁹ family preferences and cultural values may disagree with this view.⁵⁶ Most stud-

ies regarding communication around bad news in pediatric oncology focus on interaction between physicians and parents and there is a lack on research where the children themselves have been asked to share their preferences and wishes.⁵⁷ The need for new studies focusing on the ill child's own perspective is highlighted in a recent review regarding communication barriers in pediatric palliative care.⁵⁸

Communication and close relatives

Having a child with a severe, potentially life-threatening illness forces the family to recognize that life is not endless, and that even children might die. Being told that one's child is likely to die is undoubtedly one of the worst fears of any parent, who may in addition be faced with the difficult task of balancing the wish to keep the child alive as long as possible with the wish to protect the child from unnecessary suffering.

In a study by Mack et al, the quality of communication with the physicians was closely related to how bereaved parents rated their child's end-of-life care.⁵⁹ Key elements parents considered important in physician communication were receiving clear information about what to expect during the end-of-life period, attention to emotions, and an appropriate level of communication with both child and parent. They also expressed that it was important that physicians communicated directly with the sick child, and not only with the parents.⁶⁰ Still, it is crucial to acknowledge that even though there is a wish for difficult news to be delivered directly and honestly, the family members of severely ill children usually want to be able to maintain hope,⁵⁹ and leaving room for hope agrees with guidelines from the International Society of Paediatric Oncology (SIOP).⁶¹

If and when the child gets worse, the parents have to choose if, when and how to communicate about death with the child, and more specifically if and how to communicate about the child's own approaching death. In a study by Kreicbergs et al, no parent who had talked to his or her child about death was seen to regret this, whereas a quarter of the parents who had not talked about death with their child regretted this later on.⁶² The study concludes that HCPs might support families in talking about death at minimal risk of causing long-term regrets, in particular if the child is aware of the approaching death, but specific recommendations as to how this could be facilitated are not presented.

Support to close relatives

Pediatric palliative care includes support to members of the ill child's family. According to WHO, this support starts at the time when the child is diagnosed with a life-threatening disease and continues following the child's

death. The support needed varies between individuals as well as with time and with the progression of the disease.³⁷ Studies based on data from bereaved family members often conclude that there is a need for more information and that parents as well as siblings often want an opportunity to be included in decision-making and care-giving.^{63,64}

Parents

Even though the overall prognosis for childhood malignancies is good the individual outcome is always uncertain. When the child is diagnosed with cancer, the parents are at risk of anticipatory grief⁶⁵ with the recognition of the possible separation to come.

Caring for severely ill patients is emotionally challenging and there are studies reporting that inadequate control of the patient's symptoms affects the psychological well-being of family members (as well as other caregivers).⁶⁶⁻⁶⁹ Bereaved parents report longer-lasting and more intense grief reactions than adults who have lost a spouse or a parent and they are at increased risk of psychological morbidity (e.g. anxiety and depression) than peers.⁷⁰⁻⁷² Several care-related factors have been seen to affect bereavement outcome for parents^{66,69} and even though most parents express satisfaction with the palliative care given to their child at the end of life, the need for improvements is stressed repeatedly.^{42,59,60,73-75}

Siblings

Siblings of children diagnosed with cancer are often described as being invisible. With both the parents and HCPs focusing on the ill child, the vulnerability of the healthy sibling is often overlooked.^{63,76} If and when the child's condition deteriorates and hope of cure is lost, parents have to balance their own grief with continued care for the ill child and it is therefore not uncommon that siblings experience a feeling of loneliness.⁶⁴

Siblings are exposed to their brother's or sister's physical and emotional suffering during treatment as well as the parent's grief both before and after the loss. Moreover, parents have been seen to withhold information about the ill brother or sister in an attempt to spare the siblings from worry or pain, which results in anxiety and depression in the siblings who are left alone with their thoughts and worries.^{77,78} The siblings are at risk of losing their childhood as well as losing their sense of security.

The child in the midst of the family

There are several challenges in pediatric palliative care. Given the small number of children who die every year there is limited professional

knowledge and experience regarding the care of these children. Different conditions involve different disciplines and specialists. Although this thesis addresses palliative care of children dying from cancer, it should be recognized that there are children with other diagnoses who could also benefit from improved palliative care, e.g. children with neuromuscular diseases, cystic fibrosis and heart diseases.^{24,28}

In addition, HCPs working within pediatrics meet children of various ages, and it almost goes without saying that you cannot treat a 3-year-old the same way as a 10-year-old or a 17-year-old. Of special concern is the growing child, and a 10-year-old who has lived with a life-threatening illness for 4 years will have a deeper understanding of the situation, as well as of life and death, than a newly diagnosed child the same age, or healthy peers. Discerning the individual understanding and maturity in the child is one of the challenges that must be met in order to provide the best possible care.

Last but not least, children are tightly bound to their close family. Although autonomous beings, they must legally abide by choices made by their guardians (usually their parents), which may or may not correspond with their own preferences. It is presumable that not all parents and children share the same view on if and how information, communication and care should be provided. A recent example from the literature reports a mother and a child who did not agree on the amount of information that should be given to the child.⁴⁶ The relevance of this issue is supported by the clinical experience of many colleagues working within pediatric oncology.

Parents may have their own hopes, goals and dreams for their child that might cloud their decision-making in doing only what is “objectively” best for their child. In addition, parents have a duty to care not only for the ill child but also for other siblings. This may in some cases cause a conflict of interest. Nonetheless, most parents do what is best for their child and also listen to and let their child participate in the decision-making concerning his or her care. Still, the formal and legal roles within the family should not be forgotten as factors that can and sometimes will complicate the medical care.

Rationale

Research in pediatric palliative care in Sweden is limited, with most studies exploring well-being in parents. A recent review stresses the need for including the views of the ill child in future research.⁷⁹ In addition, most studies use only one source of informants, whereas guidelines state that palliative care should include both the ill child and his or her family members. With this in mind, it is important to add results from different informants (and

different perspectives) to search for aspects where improvements could increase quality of care not only for the ill child but also for surrounding family members.

This thesis seeks to provide a clearer picture as to when children dying from cancer are presumed to be incurable and if and how factors in the care of the ill child affect bereaved family members. By connecting data from medical records with the narratives and opinions of ill children and bereaved family members, I will discuss pediatric palliative care within the perspective of the family as a whole and not as individual family members.

Aims

The overall aim of this thesis is to provide a better understanding of palliative care of children with cancer and to explore aspects of care and communication of interest for both the child and bereaved family members.

The specific aims for the included papers were

- I. to study if and when there is a shift from curative to non-curative care in children dying from cancer
- II. to study symptoms affecting the well-being of children dying from cancer, as described by bereaved parents
- III. to study if reduced psychological well-being in bereaved parents is associated with unrelieved symptoms in the dying child
- IV. to study long-term psychological consequences in bereaved parents whose child underwent treatment with bone marrow transplantation prior to his or her death
- V. to study ways in which parents and their children dying from a malignancy communicated about death
- VI. to study siblings' experiences of their brother's or sister's cancer death and if these experiences influenced long-term anxiety, and
- VII. to study aspects that children suffering from malignancies regarded as important when receiving bad news

Ethical considerations

To comply with Swedish law, all research involving human subjects with a risk of physical or psychological harm must first be approved by an Ethics Committee.⁸⁰ This thesis focuses on palliative care of children with cancer and includes research with ill children as well as with bereaved parents and siblings. Children with cancer and their relatives are in a vulnerable position and all research needs to be conducted with respect for the individual and without compromising the trust between these families and the health care staff. The research within this thesis was conducted in agreement with Swedish law and the Declaration of Helsinki.⁸¹ The Regional Ethics Board at Karolinska Institutet, Stockholm, Sweden granted ethical approval for the studies included in **Papers II-V** (Dnr 01-024) and **Paper VI** (Dnr 2007:862-31), and the Regional Ethics Board in Uppsala, Sweden granted ethical approval for the studies in **Paper I** and **Paper VII** (Dnr 2009/361).

Many children suffering from cancer are included in studies regarding new treatment protocols, evaluation of certain procedures, etc. Participating in many studies can be burdensome for both the child and his or her family and might also impact the research, depending on the form it takes. For example, an interviewed child's perception of the care he or she has received might not provide an accurate view of how care in general would be perceived, if the child has participated in extensive studies that included more check-ups than would be provided in regular care.

Several ethical principles have been considered during the research process. The Swedish Research Council has set forth four main requirements that must be fulfilled by all research within humanities and social science: information, consent, confidentiality and utilization of research data.⁸² These requirements overlap the principles described by Beauchamp and Childress (probably the most commonly used ethical framework in medical ethics): respect of autonomy, beneficence, non-maleficence and justice.⁸³

For **Paper I**, where medical records of deceased children were reviewed, there was no legal requirement for informed consent from the bereaved parents as long as the study had received ethical permission from the Regional Ethics Board and data were handled according to Swedish Law and presented in an anonymous way. However, bereaved parents have already lived

through one of the greatest losses there is, and going through their child's medical records without them knowing seemed like a violation. Therefore all parents or legal guardians of the child at the time of death received a letter explaining the aim of the study along with a consent form. If one of the parents declined consent, the medical records were not examined.

Papers II-V are all based on the same questionnaire directed to bereaved parents. At the time of data collection, questions were raised of whether or not it was unethical to "remind" these parents of their loss 4 to 9 years later. Fears that this might bring up bad memories and cause the parents more harm were discussed. After ethical approval, the questionnaire was sent out with an additional form including five questions regarding the parents perceptions of the study.⁷⁰ Interestingly, most participants reported being positively affected by participation (285 parents, corresponding to 68% of eligible parents), and although 123 (28%) parents reported being negatively affected, almost all participating parents (423; 99%) found their participation in the study valuable.

The questionnaire was returned in such a way that did not permit the researchers to identify who had sent in which questionnaire, thus safeguarding the participants' anonymity.

The questionnaire used in **Paper VI** resembles the parental questionnaire used in **Papers II-V** and was sent out to siblings that had reached majority (18 years). Inviting only siblings aged 18 years or older allowed them to give consent themselves, without involving the parents. The questionnaire was returned anonymously, in the same way as that from the bereaved parent. Most siblings found it to be a positive experience answering the questionnaire (142 siblings, corresponding to 84%), while 21 siblings considered it a negative experience (13%). No sibling thought their participation would affect them negatively in the long term.⁸⁴

Finally, special considerations must be taken when interviewing ill children about their disease and preferences regarding receiving bad news (**Paper VII**). It must be clear to the children that the interview is not part of the regular care, that participation is voluntary and that their care will not be affected by whether or not they participate. Receiving information from a researcher somewhere outside the ward might reinforce the child's feeling that the study is not part of regular care. However, being approached by an unfamiliar face while under treatment might result in mistrust towards research and/or HCPs. Therefore, physicians and nurses who the child already knew well informed the family about the opportunity to take part in the study. They stressed that participation was voluntary and would include an audio-recorded interview where the child would be asked what it had been like

being ill and about communication on the ward. In addition to oral information, written information and a consent form, was provided where both the parent and the child could sign. After obtaining consent, the researcher approached the family and ensured that they had understood the information given previously. The child and the parents were informed that the interview would only include the child and although the parents were welcome to stay, they were asked to remain silent if present.

While the aim of the interviews was to gather viewpoints on how the children thought bad news could be delivered in the best possible way, it remained important that the interview did not cause the child harm or unnecessary worries. The word *death* was left out of the conversation unless the child him- or herself brought it up.

While there are many factors that need to be considered when conducting research within pediatric palliative care, one should not feel limited by these factors but embrace and explore them. Backing away from research in an attempt to spare these families from potential harm is counterproductive since it condemns us all to a future where such families are denied access to evidence based medicine. However, the path forward should be treaded gently, with respect for and in collaboration with the individuals involved, to ensure that the families are neither “under-researched” nor “over-researched”.

Methods

In order to gain a deeper understanding of palliative care of children with cancer in Sweden, both quantitative (**Paper I-IV, VI**) and qualitative methods (**Paper V-VII**) were used. Data were collected through medical records, questionnaires and interviews with patients.

In **Paper I**, a review of medical records was chosen to describe characteristics of end-of-life care for children dying of cancer. In addition, information was gathered on if and when the children were considered to be beyond cure.

To examine bereaved parents' experiences of their child's care and suffering at the end of life, as well as the parents' own well-being 4 to 9 years after their loss, a nationwide anonymous questionnaire was used (**Paper II-IV**). In addition, free-hand comments from the parents were analyzed to examine how the parents had communicated with their child about death (**Paper V**).

In **Paper VI** a nationwide questionnaire was chosen to study bereaved siblings' experiences of their brother's or sister's cancer death as well as the siblings' own psychological well-being 2 to 9 years after their loss.

In **Paper VII** individual interviews were chosen to explore ill children's own views regarding receiving bad news.

Is there an age-limit to being a child?

Internationally, the term *childhood cancer* is usually used to describe cancers that arise before the age of 15 years. This particular age group is therefore often represented in epidemiological research and statistics. However, Swedish pediatricians care for patients until they turn 18, and this thesis therefore includes children and/or adolescents diagnosed with cancer before the age of 18 years.

Paper I and **Paper VII** focuses on care and communication in the field of pediatrics, and therefore only includes children who were dying before being transferred to adult medicine, hence with an upper age-limit of 18 years.

However, **Papers II-VI** focus on the relationship between the child and his or her parents and/or siblings. The two questionnaires include bereaved parents and siblings of a child diagnosed with cancer below the age of 17, and who later died before the age of 25. Technically some of these were in fact *adolescents* or *young adults* when they died. Readers should bear in mind that in this thesis, all deceased children, adolescents and young adults are grouped together with regard to their relational role within the family, as a child to their parents and a brother or sister to their siblings.

Paper I: Review of medical records

Children who had died due to cancer in 2007-2009 were identified through the NOPHO registry for children. In total 159 children having a Swedish social security number, and parents/legal guardians living in Sweden, were identified. Parents were identified through the Swedish Population Register.

In 2010, all parents were sent a letter explaining the purpose of the study together with a consent form for permission to go through the child's medical records. A reminder was sent after 3 weeks to parents that had not returned the consent form. The child's medical records were only examined if all legal guardians consented to the study. Consent was given for 110 children. For 11 children at least one of the parents declined permission to access to their child's medical records, and parents of 38 children failed to return the consent form.

Data were gathered on site at the six departments of pediatric oncology in Sweden with the help of a data extraction sheet developed based on a review of the literature, supplemented with clinical experience. When end-of-life care was provided at a hospital closer to the child's home, medical records were requested from the home clinic. In total, medical records of 95 children (60% of the eligible children) were reviewed.

Descriptive statistics were used to present the characteristics of the children (**Table 1**). Data were analyzed with regard to diagnosis, age and sex of the child, and results are presented in proportions and relative risks (RR) with an associated 95% confidence interval (CI).

Table 1. Characteristics of children whose medical records were reviewed in *Paper I* (no. (%)).

	All children (n=95)
Sex	
Boy	52 (55)
Girl	43 (45)
Diagnosis	
Hematological malignancy	31 (33)
Brain tumor	30 (31)
Solid tumor	34 (36)
Age at time of death	
<5 y	32 (34)
5-9 y	17 (18)
10-14 y	20 (21)
>15 y	26 (27)
Place of death	
Home	37 (39)
Hospital (incl. 2 children dying at hospice)	52 (55)
Other/Not stated	6 (6)

Paper II-V: Questionnaire for bereaved parents

Papers II-V are part of a larger nationwide study of bereaved parents.^{70,85} Data were collected with a study-specific questionnaire sent out in 2001 to parents who had lost a child to cancer 4 to 9 years earlier. The questionnaire included questions on various aspects of the care of the child as well as the psychological health of the parents, both prior to the child's disease and at time of the questionnaire.

Children diagnosed with cancer before the age of 17 and who died before age of 25 (1992-1997) were identified through the Swedish National Register of Causes of Death linked with the Swedish National Cancer Register. The children's parents were identified through the Swedish Population Register.

Parents were eligible if they: 1) were born in one of the Nordic countries; 2) had a non-confidential telephone number; and 3) understood Swedish. The 561 parents who met the study's inclusion criteria were sent a letter introducing and explaining the objectives of the study together with an invitation to participate. All parents were telephoned with a request for their informed consent before the questionnaire was sent out to mothers and fathers, separately. To safeguard anonymity, the parents were asked to return the non-coded questionnaire separately from a coded card, notifying the investigators that the questionnaire had been returned.

In total, 449 (80%) parents participated in the study and their characteristics are presented in **Table 2**. Of the 112 parents who did not participate, 30 declined participation, 23 could not be reached, and 59 failed to return the questionnaire.

Table 2. Characteristics of bereaved parents (*Paper II-V*) (no. (%))

	All parents (Paper II-V) (n=449)	Parents whose child underwent HSCT (Paper IV) (n=97)	Parents included in the content analysis (Paper V) (n=67)
Relation			
Father	191 (43)	41 (42)	16 (24)
Mother	251 (56)	55 (57)	51 (76)
Not stated	7 (2)	1 (1)	0
Diagnosis of the child			
Hematological malignancy	149 (33)	63 (65)	29 (43)
Brain tumor	157 (35)	1 (1)	18 (27)
Solid tumor	93 (21)	25 (26)	14 (21)
Other/Not stated	50 (11)	8 (8)	6 (9)
Child's age at time of death			
0-4 y	132 (29)	28 (29)	11 (16)
5-8 y	95 (21)	15 (15)	17 (25)
9-15 y	103 (23)	31 (32)	20 (30)
16-24 y	106 (24)	21 (22)	17 (25)
Not stated	13 (3)	2 (2)	2 (3)
Place of death			
Home	158 (35)	32 (33)	25 (37)
Hospital	272 (60)	61 (63)	40 (60)
Other/Not stated	19 (5)	4 (4)	2 (3)

The parents were asked to rate 19 different symptoms according to the effect they perceived the symptoms to have on their child's well-being his or her last month of life. The 19 symptoms studied were: pain, poor appetite, weight loss, nausea, vomiting, difficulties swallowing, physical fatigue, shortness of breath, paralysis, anxiety, depression, reduced mobility, impaired speech, sleepiness (daytime), disturbed sleep due to anxiety, disturbed sleep due to pain, troublesome swelling/edema, urinary problems, and constipation. A 5-point scale was provided: not applicable, none, low, moderate or severe effect. In **Paper II** the answers were dichotomized with "not applicable", "none" and "low" effect in one group and "moderate" and "severe" effect in the other group. Data were analyzed with regard to the diagnosis and age at time of death of the child (**Paper II**), and presented as RR with an associated 95% CI.

To detect potential relationships between parental experiences of the child's suffering at the end of life and the parents' own psychological well-being, parents' reports on suffering were linked to parental self-estimated psychological morbidity (**Paper III**). Parental assessments of symptoms (the same

19 symptoms as in **Paper II**) were dichotomized into those reporting suffering in the child (“low”, “moderate” or “severe”), and those that did not (“not applicable”, “none”).

The parents were asked to rate their psychological well-being over the last month at the time of the questionnaire on a 7-point visual digital scale (VDS)⁸⁶ (**Figure 2**). Scores of the five most negative values were interpreted to indicate moderate or much anxiety/depression and decreased psychological well-being or low quality of life.

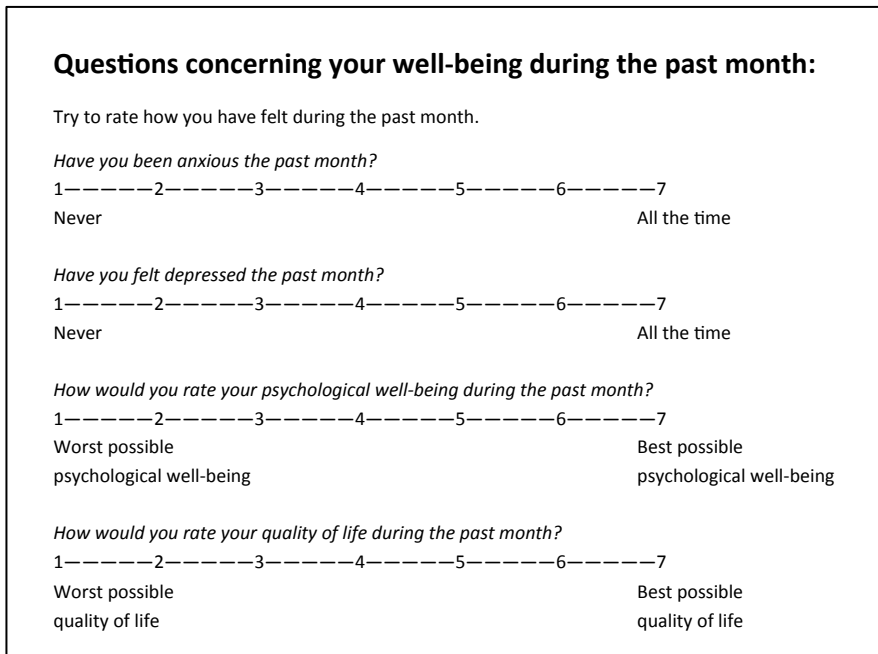


Figure 2. Visual digital scale provided to measure psychological well-being in bereaved family members

In **Paper IV**, hematopoietic stem cell transplantation (HSCT) was used as an example of intensive treatment, and the psychological well-being of bereaved parents who had experienced their child going through HSCT was compared with the well-being of bereaved parents who had not had this experience. Ninety-seven parents reported having a child that went through HSCT, and the characteristics are shown in **Table 2**.

In addition to the VDSs used in **Paper III**, the Spielberger’s trait measure from the State-Trait Anxiety Inventory (STAI-T)⁸⁷ and the Center for Epidemiological Studies Depression Scale (CES-D)⁸⁸ were used to measure anxiety and depression. To assess quality of life, in addition to the VDS, the Göteborg Quality of Life Instrument was used, with a cut-off below the 10th

percentile to define low quality of life.⁸⁹ Differences between parents whose child had been through HSCT and those whose child had not had this experience are presented as RRs with an associated 95% CI.

In **Paper V**, data were analyzed regarding how parents communicated with their ill child about death. Two questions were asked, one of which was closed-ended: *“Did you and your child communicate about death in any other way than by using the word death?”* Six potential answers were provided, and the parents could agree with as many as they saw fit. *“Not relevant, we didn’t communicate about death”*, *“Yes we communicated about death through fairy tales”*, *“Yes we communicated about death through drawings”*, *“Yes we communicated about death through films”*, *“Yes we communicated about death through music”* and, *“Yes we communicated about death through other activities”*. Descriptive statistics were used to provide an overview of how the parents responded.

In addition to the question above the parents were asked to describe, in their own words, how they communicated: *“If you talked or communicated in any way with your child about death, please feel free to describe how you talked or communicated.”* The free-hand comments were analyzed using systematic text condensation, as described by Malterud.⁹⁰ The following steps were used: (a) All comments were read through several times to formulate an overall impression of the data. (b) Meaning units related to how parents had communicated with their child about death were identified. With limited space provided for the parents to write in, most comments were short. In the analysis, each comment was treated as one meaning unit. The units were assigned a descriptive code and codes relating to similar themes were grouped together in descriptive categories reflecting relevant themes in the data. (c) Systematic condensation and abstraction of the meaning in each descriptive category was carried out and then expressed as if it were a story told by one of the bereaved parents. This helped to detect inconsistencies and led to some changes in the coding. (d) When each category appeared homogenous, the essence in each category was summarized in general descriptions of how parents communicated with their ill child about death. Original quotes (although translated) from the parents were selected to illustrate each category.

Paper VI: Questionnaire for bereaved siblings

Paper VI is part of a larger nationwide study of bereaved siblings.^{84,91} Data were collected using a study-specific questionnaire sent out in 2009 to siblings who had lost a brother or sister to cancer two to nine years earlier. Siblings of children diagnosed with cancer before the age of 17 and who died

before the age of 25 (2000-2007) were invited to participate. The deceased children were traced through the Swedish Childhood Cancer Registry and siblings were identified through the Swedish Population Registry.

Eligible siblings had to be 18 years or older at time of data collection. Siblings younger than 12 and older than 25 at the time of the brother's/sister's death were excluded. In addition, the siblings had to have a valid address/phone number and not suffer from mental disabilities. The 240 siblings meeting the study criteria were sent a letter introducing and explaining the objectives of the study together with an invitation to participate. All siblings were telephoned with a request for informed consent before the questionnaire was sent out. To safeguard anonymity, the siblings were asked to return the non-coded questionnaire separately from a coded card, notifying the investigators that the questionnaire had been returned.

In total, 174 siblings (73%) participated in the study; their characteristics are presented in **Table 3**. Of the 66 siblings who did not participate in the study, 20 declined participation and 46 failed to return the questionnaire.

Table 3. Characteristics of bereaved siblings (*Paper VI*) (no. (%))

	Bereaved siblings (n=174)
Relation	
Brother	73 (42)
Sister	101 (58)
Sibling's age	
19-23 y	88 (51)
24-28 y	59 (34)
29-33 y	26 (15)
Not stated	2 (1)
Diagnosis of the child	
Hematological malignancies	61 (35)
Brain tumor	40 (23)
Solid tumor	27 (16)
Other/Not stated	46 (26)
Place of death	
Home	81 (42)
Hospital	86 (45)
Other/Not stated	6 (3)

The siblings were asked 19 closed-ended questions about their experience of their brother's or sister's death with focus on communication, sibling's participation and emotions close to death. They were also asked to describe their experience in their own words: "*If you want, please describe your experiences of your brother's/sister's death.*" Questions from the Hospital Anxiety and Depression Scale (HADS)^{92,93} were included to assess the siblings' levels of anxiety and/or depression at the time of the questionnaire.

Descriptive statistics were used to present data from the closed-ended questions and Mann-Whitney U-tests were conducted to examine if the siblings' experiences of death influenced the levels of anxiety (according to HADS) at the time of the questionnaire. The free-hand comments were analyzed using conventional content analysis.⁹⁴ The following steps were included in the analysis: (a) all data were read to obtain a sense of the whole, (b) data were reread word by word to derive preliminary codes which were sorted into categories based on similarity of content, and (c) the preliminary codes together with the raw data were discussed among the authors and changes were made. The process ended when consensus was reached within the research group.

Paper VII: Interviews with ill children

In order to study how ill children wish to receive bad news, individual interviews with children diagnosed with cancer were carried out. The aim was to examine what aspects the children regarded as important when receiving information such as treatment failure, relapse, or that the disease was incurable and would lead to death.

In 2012, three pilot interviews were performed with two children, one 15-year-old and one 5-year-old. The younger child was interviewed twice with one day in between, since the first interview mostly focused on getting to know one another. Also, the father (who had been present on the first day) informed that the child's answers were a mixture of truth, imagination and what the child hoped for, but which parts were which was not clear in the interview. A second interview was performed to see if this changed when the child had met the researcher once before; however, the result remained the same. After the pilot interviews, the lower age limit was set at seven years.

During the initial phase of recruitment of participants for the study, the aim was to include children that were beyond cure, to gather their views. However, this proved too difficult (discussed further under methodological considerations), resulting in the inclusion of children still in active treatment. All children were cared for at the Pediatric Oncology Ward in Uppsala.

In 2013-2015, ten children between the age of 7 and 17 were interviewed, and their characteristics are shown in **Table 4**. All interviews were audio recorded and transcribed verbatim. The transcripts were analyzed using systematic text condensation,⁹⁰ as previously described for **Paper V**.

Table 4. *Characteristics of children interviewed in Paper VII*

	All children (n=10)
Sex	
Boy	6
Girl	4
Age	
7-10 y	2
11-14 y	4
15-17 y	4
Diagnosis	
Hematological malignancy	4
Brain tumor	3
Solid tumor	3

Summary of papers

Paper I: Characteristics of end-of-life care

In total, medical records of 95 children were examined. Of these, 83 children were being treated with a non-curative intent at the time of death. Children suffering from hematological malignancies were less likely to be recognized as being beyond cure than children with brain tumors (RR 0.7; 95% CI 0.6-0.9) or other solid tumors (RR 0.8; 95% CI 0.6-1.0).

A shift from curative to non-curative care was noted in the medical records an average of 60 days prior to death, although this shift was found to vary substantially with diagnosis. Children with hematological malignancies were recognized as being beyond cure at a median of 32 days prior to death (range 1-895 days, mean 125 days), with eight children suffering from hematological malignancies dying less than two days after it was stated in the medical records that he or she was beyond cure. Children suffering from brain tumors often had a longer period of time between being identified as non-curative and the time of death, the median being 180 days (range 17-1501 days, mean 267 days). Corresponding numbers for children suffering from other solid tumors were 54 days (range 2-997 days, mean 127 days).

Moreover, children suffering from hematological malignancies were seen to continue cancer-directed treatment with chemotherapy closer to death than children with brain tumors (RR 5.5; 1.3-23.0).

Paper II: Suffering at the end of life

Seven symptoms were reported to affect more than half of the children to a high or moderate extent (**Figure 3**). Physical fatigue was the most commonly reported symptom, regardless of the child's age and the type of cancer. Pain was among the three highest rated symptoms irrespective of the child's diagnosis, and among the top four irrespective of the age of the child.

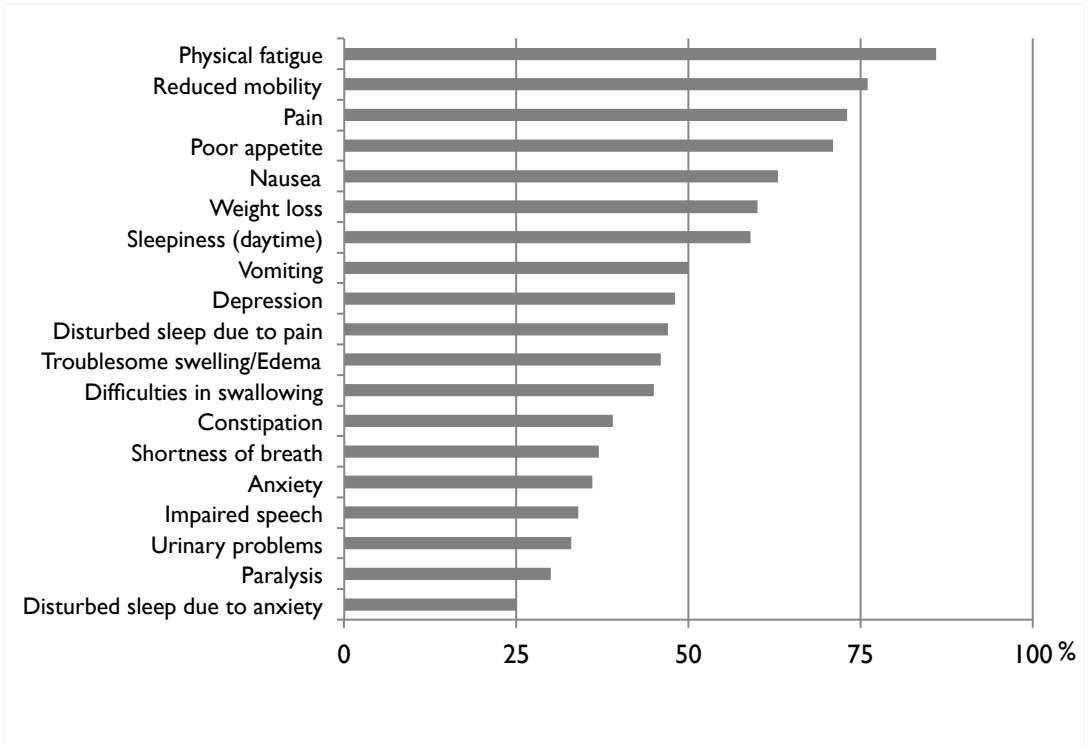


Figure 3. Symptoms reported to have moderate/high effect on the child’s well-being

Some symptoms were more commonly reported in children with a specific cancer. For example, parents of children with brain tumors more frequently reported that their child was affected by difficulties swallowing, paralysis, reduced mobility, impaired speech and constipation than parents of children with hematological malignancies. In contrast, children with hematological malignancies were more often affected by pain, poor appetite, weight loss and troublesome swelling (**Table 5**).

Bereaved parents of children who died between age 9 and 15 years, reported a higher number of symptoms as having affected their child’s well-being to a moderate or high extent than did other parents, specifically in regard to anxiety, urinary problems, disturbed sleep due to anxiety, depression, impaired speech and troublesome swelling (**Table 6**).

Table 5. Symptoms reported as affecting the child during his or her last month of life, differences according to diagnosis of the child.

	Hematological malignancy n/N (%)	Brain tumor n/N (%)	RR (95% CI)	Solid tumor n/N (%)	RR (95% CI)
Reduced mobility	94/143 (66)	119/146 (82)	1.2 (1.1-1.4)*	72/88 (82)	1.2 (1.1-1.5)*
Pain	106/142 (75)	93/146 (64)	0.9 (0.7-1.0)*	73/87 (84)	1.1 (1.0-1.3)
Poor appetite	114/141 (81)	76/144 (53)	0.7 (0.5-0.8)*	69/87 (79)	1.0 (0.9-1.1)
Weight loss	88/141 (62)	67/146 (46)	0.7 (0.6-0.9)*	64/86 (74)	1.2 (1.0-1.4)
Troublesome swelling/Edema	73/136 (54)	48/142 (34)	0.6 (0.5-0.8)*	43/82 (52)	1.0 (0.8-1.3)
Difficulties swallowing	57/142 (40)	85/145 (59)	1.5 (1.1-1.9)*	30/83 (36)	0.9 (0.6-1.3)
Constipation	36/142 (25)	65/145 (45)	1.8 (1.3-2.5)*	38/84 (45)	1.8 (1.2-2.6)*
Impaired speech	28/140 (20)	87/145 (60)	3.0 (2.1-4.3)*	15/86 (17)	0.9 (0.5-1.5)*
Paralysis	15/141 (11)	79/144 (55)	5.2 (3.1-8.5)*	18/86 (21)	2.0 (1.0-3.7)*
Disturbed sleep due to anxiety	27/136 (20)	38/138 (28)	1.4 (0.9-2.1)	26/82 (32)	1.6 (1.0-2.5)*

*significance at 95% confidence interval

Table 6. Symptoms reported as affecting the child during his or her last month of life, differences according to the age of the child.

	0-4 y n/N (%)	5-8 y n/N (%)	9-15 y n/N (%)	>16 y n/N (%)	RR (95%CI)	RR (95%CI)
Reduced mobility	90/125 (72)	77/92 (84)	1.2 (1.0-1.3)*	83/98 (85)	1.2 (1.0-1.4)*	0.9 (0.8-1.1)
Depression	46/124 (37)	45/89 (51)	1.4 (1.0-1.9)*	55/95 (58)	1.6 (1.2-2.1)*	1.3 (1.0-1.8)
Troublesome swelling/Edema	49/119 (41)	41/90 (46)	1.1 (0.8-1.5)	57/95 (60)	1.5 (1.1-1.9)*	1.0 (0.7-1.3)
Difficulties swallowing	51/123 (42)	36/91 (40)	1.0 (0.7-1.3)	52/94 (55)	1.3 (1.0-1.8)*	1.2 (0.9-1.6)
Anxiety	29/122 (24)	29/87 (33)	1.4 (0.9-2.2)	40/95 (42)	1.8 (1.2-2.6)*	2.0 (1.3-2.9)*
Impaired speech	36/121 (30)	32/92 (35)	1.2 (0.8-1.7)	43/96 (45)	1.5 (1.1-2.1)*	0.8 (0.5-1.3)
Urinary problems	32/123 (26)	32/92 (35)	1.3 (0.9-2.0)	42/96 (44)	1.7 (1.2-2.4)*	1.2 (0.8-1.8)
Disturbed sleep due to anxiety	25/121 (21)	18/86 (21)	1.0 (0.6-1.7)	32/93 (34)	1.7 (1.1-2.6)*	1.3 (0.8-2.2)

*significance at 95% confidence interval

Paper III: Parental well-being and experienced suffering in the child

Approximately one quarter of all bereaved parents participating in the study reported experiencing symptoms of anxiety (106 parents; 24%) or depression (122 parents; 28%) at the time of the questionnaire. A potential relationship between parental psychological morbidity and the symptoms that the parents felt had affected their child's well-being his or her last month of life (as described in **Paper II**) was studied, and an increased risk of psychological morbidity was found for parents who reported that their child's well-being was affected by anxiety or by disturbed sleep due to either anxiety or pain.

Parents who reported that their child's well-being was affected by anxiety or by disturbed sleep due to anxiety had a higher risk of self-assessed anxiety, depression, decreased psychological well-being, and decreased quality of life at follow-up (**Table 7**). In addition, parents who reported that their child's well-being was affected by disturbed sleep due to pain had an increased risk of self-assessed anxiety and decreased psychological well-being.

Bereaved parents who reported that their child had been affected by urinary problems were at greater risk of both decreased self-assessed psychological well-being and decreased quality of life. Apart from that, no relationship was found between the somatic symptoms the parents were asked to rate and alterations in the risk of parental anxiety, depression, psychological well-being or quality of life.

Paper IV: Well-being of parents whose child went through HSCT

To summarize, there was a trend that bereaved parents whose child had undergone HSCT had an increased risk of decreased psychological well-being at time of the questionnaire. Statistically significant differences were found, with increased risk for anxiety, and decreased psychological well-being and low quality of life when the parents were asked to fill in the 7-point VDS and although there was a trend towards increased risks of the same when measured with the STAI-T and the Göteborg Quality of Life Instrument, these results were non-significant (**Table 8**).

Table 7. Bereaved parents' psychological well-being assessed on a visual digital scale (VDS) at time of questionnaire (4-9 years post bereavement) and parental reports on the child's suffering (during his or her last month of life)

	Parental anxiety (VDS)		Parental depression (VDS)		Parental decreased psychological well-being (VDS)		Parental decreased quality of life (VDS)	
	n/N (%)	RR (95% CI)	n/N (%)	RR (95% CI)	n/N (%)	RR (95% CI)	n/N (%)	RR (95% CI)
Anxiety had affected the child's well-being								
Yes	74/263 (28)	1.6 (1.1-2.4)*	87/263 (33)	2.0 (1.3-3.0)*	161/263 (61)	1.6 (1.2-2.0)*	154/263 (59)	1.5 (1.2-1.8)*
No	24/137 (18)		23/137 (17)		54/137 (39)		55/138 (40)	
Depression had affected the child's well-being								
Yes	81/318 (26)	1.2 (0.8-2.0)	93/318 (29)	1.3 (0.8-2.0)	178/318 (56)	1.3 (1.0-1.7)	173/318 (54)	1.3 (1.0-1.8)*
No	17/83 (20)		19/83 (23)		36/83 (43)		34/84 (40)	
Disturbed sleep due to anxiety had affected the child's well-being								
Yes	64/193 (33)	2.0 (1.4-2.9)*	69/193 (36)	1.8 (1.3-2.5)*	123/193 (64)	1.5 (1.2-1.8)*	121/193 (63)	1.5 (1.3-1.9)*
No	33/201 (16)		40/201 (20)		84/200 (42)		82/202 (41)	
Disturbed sleep due to pain had affected the child's well-being								
Yes	75/265 (28)	1.8 (1.1-2.7)*	80/265 (30)	1.3 (0.9-1.9)	155/265 (59)	1.4 (1.1-1.7)*	143/266 (54)	1.2 (0.9-1.4)
No	22/136 (16)		31/137 (23)		59/137 (43)		63/137 (46)	
Urinary problems had affected the child's well-being								
Yes	58/205 (28)	1.4 (1.0-1.9)	66/206 (32)	1.3 (1.0-1.8)	123/206 (60)	1.3 (1.1-1.5)*	118/206 (57)	1.2 (1.0-1.5)*
No	42/204 (21)		49/204 (24)		96/204 (47)		94/205 (46)	

* significance at 95% confidence interval

Table 8. Self-assessed morbidity in bereaved parents whose child had HSCT vs parents whose child did not go through HSCT

Self-assessed morbidity in bereaved parents								
	Anxiety (VDS) n/total No (%)	RR (95% CI)	Anxiety (STAI-T) n/total No (%)	RR (95% CI)	Depression (VDS) n/total No (%)	RR (95% CI)	Depression (CES-D) n/total N (%)	RR (95% CI)
Child had undergone HSCT								
Yes	31/94 (33)	1.5 (1.0-2.1)*	16/96 (17)	1.3 (0.8-2.3)	29/94 (31)	1.1 (0.8-1.6)	19/95 (20)	(0.9-2.5)
No	74/331 (22)		41/330 (12)		90/332 (27)		43/326 (13)	

* significance at 95% confidence level

Table 8. (continued)

Self-assessed morbidity in bereaved parents				
	Low QoL (VDS)	Göteborg QoL Instrument	Poor psychological well-being (VDS)	
	n/total No (%)	RR (95% CI)	n/total No (%)	RR (95% CI)
Child having undergone HSCT				
Yes	63/95 (66)	1.4 (1.2-1.7)*	12/95 (13)	1.7 (0.9-3.3)
No	159/332 (48)		24/329 (7)	1.3 (1.1-1.5)*

* significance at 95% confidence level

Paper V: Parent–child communication about death

Overall the parents expressed that their child was well aware of his or her impending death and that the child often was the one who initiated communication about death.

The parents described four ways in which communication about death occurred (**Figure 4**). Some parents expressed that they talked about death together with their child, either about the child’s own impending death or about friends and family that had died. Others described talking about a life after death, an approach that was often described as providing comfort to the child in that he or she was not going to be alone after death but that someone was already waiting for him or her. The parents also described that some children communicated about and around death by making practical preparations for their own death. Such preparations included planning one’s own grave, deciding about flowers and/or rituals for the funeral. The children also prepared by giving away toys and thus ensuring that a favorite teddy bear would be taken care of by someone else.

Communication at the child’s own initiative			
Talking about friends and family that had died, or about death itself	Talking about life after death	Preparing for death through practical preparations	Communication about death by using narratives

Figure 4. Theme and categories as to how parents and child communicated about death

The most commonly described approach was communication about death through narratives, such as children’s books and/or movies. The parents expressed that this approach was used with both younger and older children. For younger children the parents often referred to well-known children’s books (**Appendix 3**) that had helped them in communicating about the difficult subject of death in a way that made it more bearable for them and also facilitated communication with and understanding of a small child. With older children (or young adults) the parents revealed that some children chose others to talk to, such as a girlfriend or boyfriend, and narratives were understandably others than the ones used for smaller children.

Paper VI: Siblings' experiences

The bereaved siblings reported receiving poor information regarding the impending death of their brother or sister, and most siblings only understood that their brother or sister was going to die less than 24 hours before death occurred.

The siblings were seldom informed about their brother's or sister's deterioration and upcoming death by HCPs, and felt unsure about what to expect from a dying person, especially regarding bodily changes. This was related to increased levels of anxiety at follow-up; siblings who reported that nobody had talked to them about what to expect had significantly higher levels of anxiety compared to those who had talked to someone ($p=0.048$).

Some siblings described the time shortly before their brother's or sister's death as emotional, with feelings of helplessness or powerlessness as well as fear of death. They described the uncertainty of waiting for death and how distressing it was to see their brother or sister suffer. Some sibling expressed regret that they did not spend more time with their brother or sister during the illness period. While some reported that this was due to them being busy with their own lives, others stated that they did not understand that their brother or sister was dying or that death could come so suddenly.

Approximately half of the siblings were present at the time of death with only one regretting this, whereas around three quarters of those who were not present regretted this. Among those who were present at the time of death, most reported a calm and beautiful atmosphere in the room but also sadness and, notably, more than two thirds of the siblings (70%) reported that their brother or sister suffered. Some siblings expressed feeling relief at the time of death and shortly thereafter since death released their brother or sister from more suffering.

The siblings expressed that it was important to be together as a family after the death, to say goodbye and to take care of the body. They described emptiness, as well as feeling angry but also guilty for being the one still alive. Over one quarter of the siblings reported not talking to anyone about the brother's or sister's death after it had occurred, and one third wished that they had talked more with their families about it.

Paper VII: The child's thoughts on receiving bad news

The children interviewed agreed on wanting truthful information regarding their disease and their prognosis, even if it was a poor one. They expressed a

wish not to be shielded from bad news and did not believe that one should hide bad news from other children their age or younger. However, they expressed that this might not be universal to all children and stressed that bad news as well as other medical information had to be delivered in a sensitive way, in language appropriate for the individual child, e.g. with wordings understandable according to age and maturity.

Most children expressed a wish to receive bad news together with, and at the same time as their parents and not, as is seen sometimes in the clinic, that the parents receive bad news beforehand. One boy stated that he wanted to be told separately in advance although he could not express why this was important, only that *“it feels the best”*.

Several children expressed that there always had to be hope in some way. One girl expressed that the child and his or her family as well as the physicians need that to hold on to. Others stressed that it was the hope of one day getting well that made them endure all the treatment and gave them the strength to keep fighting their disease. Others regarded the possibility of further treatment as self-evident and apparently considered the thought of no more treatment being possible very far-fetched. One 17-year-old boy, who was treated for several years for his brain tumor, expressed that when the treatment no longer worked, the physician could always offer a new treatment. When asked to imagine that there was no other treatment possible he thought for a moment, and then restated that there was always more treatment available, and if there wasn't then you would go back to the old treatment.

Key findings

The overall aim of this thesis was to provide a better understanding of palliative care of children with cancer and to explore aspects of care and/or communication of interest for both the child and bereaved family members.

Paper I, with data collected from medical records, reflects notes from HCPs; **Papers II-V** gathered data from bereaved parents; **Paper VI** gathered data from bereaved siblings, and in **Paper VII** the informants were children under active treatment for cancer. During the research leading to this thesis, and in the process of exploring pediatric palliative care, two overarching themes emerged from the included papers:

- a The need to recognize that family relations matter, and the suffering of the dying child affects bereaved family members (parents and siblings) years after their loss.
- b The importance of communication between all the parties involved: HCPs, the child and his or her relatives. Highlighted areas are communication regarding disease, prognosis and expectations, but also communication within the family, sharing information but also thoughts and worries.

While different aspects of palliative care have been studied, these two intertwining themes can be seen as overarching and can be traced back to the ill child as well as bereaved parents and siblings. Achieving good communication and keeping a family focus are cornerstones in pediatric palliative care and in the following chapter these themes will be discussed more thoroughly in relation to the literature and the current goals of palliative care.

Discussion of key findings

Most children diagnosed with cancer initially receive treatment with a curative intent. If and when the initial treatment fails, there is often a second and third line of treatment to try. With the continuous emergence of new drugs and new indications for older ones it is easy to reach for yet another treatment when an earlier one fails. The results in this thesis strengthen earlier findings that close family members are affected by the end-of-life care. It also appears that intensified treatment or lack of communication, e.g. not discussing a potential fatal outcome, makes it harder for parents and siblings to accept a potential death. So how to know when to stop trying for a cure? Even though statistics tell us that approximately every fifth child diagnosed with cancer will die from his or her disease, we rarely know which child and when.

Throughout the course of the disease, the ill child will be exposed to new and sometimes scary events, procedures, anesthesia and surgery. He or she will be given medicines that without proper administration and control can in themselves be fatal. Side effects are usually impossible to avoid and come in both physical form from the treatment itself (e.g. nausea, vomiting, rashes and hair loss) and psychological form, with the child having to be away from home and his or her friends and being subjected to unfamiliar surroundings and procedures.

The individual disease trajectory is uncertain and a fatal outcome is not always easy to foresee. The cancer of a few children will be incurable from start, whereas most children will initially be treated with hope of a cure. Progressive disease, treatment failure or relapse might lead to a shift in care when only a fatal outcome remains. Some children will have a period of time after this shift in care until death, whereas others are recognized as being beyond cure late in the course of their illness, and die only days thereafter (**Paper I**). In addition, some children die while still in potentially curative treatment, unexpectedly and from treatment complications. The latter is particularly true of children suffering from hematological malignancies.^{95,96}

When standard therapy no longer works and all that is left is treatment with low likelihood of cure, the parents – knowingly or unknowingly – face the dilemma of wishing their child to live as long as possible while simultane-

ously wanting to protect their child from unnecessary suffering. Treatment that does not result in prolonged life might in retrospect be seen as having caused the child unnecessary suffering (due to additional hospital visits and potential side-effects).⁹⁷ This can be compared with the findings in **Paper IV** where bereaved parents whose child went through HSCT as part of his or her treatment and still died, were at higher risk of decreased psychological well-being. Continued treatment at the end of life can be estimated to provide the child as well as the parents and siblings with unrealistic expectations and a false sense of hope, that hinders them in planning for the last time together and using that time in a way they would have chosen had they known death was close.

Family relations matter

Relations within families differ and it is not always easy to describe the bonds shared. There is a balance between loving intimacy and individual growth that family members must maintain. Further, there are responsibilities to consider. Parents have formal responsibilities for their children as long as they are minors. Moreover, most would agree that parents have additional responsibilities (although not necessarily legally binding ones) towards their children. Exactly where these responsibilities end is however not clear and is subject to discussion.⁹⁸ Most would probably agree that the parental role includes providing your child with love and a feeling of being cared for. In addition most parents want to shield their children from suffering and pain, especially unnecessary pain. When the child is diagnosed with a life-threatening disease, all these ambitions are in jeopardy. A cancer diagnosis carries with it procedures, treatments and hospital stays that menace the safe environment that one wishes for the child, and imposes a threat on life itself.

While reducing distressing symptoms and suffering in the ill child should be prioritized regardless of whether the child is regarded as curable or not, it may be considered as increasingly important at the end of life. However, despite efforts to reduce suffering and to obtain symptom control, children dying from cancer are affected by a number of different symptoms as death draws near.^{38-40,42} In **Paper VI**, 70% of bereaved siblings reported that their brother or sister suffered during the last hours of life. In **Paper II**, bereaved parents expressed that physical fatigue, reduced mobility, pain and decreased appetite were the symptoms that affected their child's well-being the most. Similar results have been found in other studies.^{38-40,42,43,99} All these symptoms affect the child's possibility to interact with family and friends, and hinder them in normal activities. Even if these symptoms, and the hindrance they impose on life, are the ones that have the greatest effect on the child, they are not the ones that seem to stay with the parents in a long-term per-

spective. Instead, psychological suffering in the child, such as anxiety and disturbed sleep, were found to affect bereaved parents' psychological well-being years after their loss (**Paper III**).

Physical fatigue and reduced mobility can often be a direct cause of the illness as well as the treatment provided. Pain is often caused by the illness and providing adequate pain relief is one of the key responsibilities of health care. However, relieving anxiety and helping your child have a good night's sleep are embedded in the role of a parent. It is therefore not surprising that these symptoms are the ones that stay with the parents long-term, as a possible expression of feelings of guilt (in having failed your child). Similarly, previous studies have reported about unrelieved psychological symptoms in patients having affected the surrounding persons (HCPs and relatives) more than unrelieved somatic symptoms.^{67,68}

Bereaved parents' psychological well-being appeared to be well connected to the perceived psychological well-being of the dying child. In addition, it appeared that the experience of seeing a child undergoing intensive treatment (in the form of HSCT) and nonetheless ultimately dying of his or her cancer, affected the bereaved parents' psychological well-being negatively (**Paper IV**).

All treatment aiming at a cure carries with it hopes for the child but also for the family. Earlier findings report on parents' intellectual awareness of their child's impending death being delayed when treatment is continued close to death,¹⁰⁰ and in adults with incurable cancer, continued treatment has been seen to provide both patients and physicians with false optimism.¹⁰¹ When the treatment does not succeed, these hopes will be crushed. Since all forms of treatment carry with them side-effects, one should always weigh these against potential benefits. If there is chance of a cure, more severe side-effects can be accepted than in cases where the best outcome is "only" prolonged life.

Family relations remain important, and pain or suffering in one member affects the others. The results in this thesis stress the need to always have a family focus in pediatric palliative care.

The importance of communication

Open and honest communication in the health care setting has been proposed as an important factor in providing good palliative care, and poor communication has been seen to increase distress in both the sick child and his or her parents.^{48,59,73} Children have historically been regarded as unaware of their situation, and parents as well as HCPs have tried to shield them from the

truth – that their disease would lead to death. This view has changed over the years and one of the most influential studies is the anthropological study by Bluebond-Langner, which provides insight into the lives of children suffering from cancer.⁵⁴ She describes how children treated at the cancer ward reach awareness of death as a possible outcome of their own as well as other children's disease. Similar reports have been presented by others^{47,51,52,102,103} and are further supported by statements from bereaved parents, who expressed that communication around death often occurred at the ill child's initiative (**Paper V**), pointing once again to the child's own awareness about his or her impending death. Communication occurred in different ways and included practical preparations for the child's own funeral as well as making sure that their favorite teddy bear would be taken care of after their death. These results are in line with earlier results by Beale et al, who found that children often raised the subject of death themselves, sometimes at unexpected times.⁴⁷

While **Paper I** revealed that although medical records show when a curative aim was abandoned, they do not show whether the parents and the child were informed (and were able to grasp the finality of this decision) at that same time. Awareness of the upcoming death has been seen to benefit bereaved family members.¹⁰⁰ Parents and physicians have previously been shown to estimate the likelihood of cure fairly equal at the time of diagnosis. However, as the child's condition deteriorated, the parents' understanding and acceptance of the likelihood of death was substantially delayed.¹⁰⁴

Parents of children with cancer have reported wanting to be informed immediately when physicians realize that the child's illness must be considered incurable.¹⁰⁵ Being informed about the child's terminal condition provides the parents with the possibility of making end-of-life decisions according to their preferences, as well as allowing for preparations according to family traditions and values, all of which have been seen to be beneficial to bereaved parents long term.^{100,106} Further, bereaved parents with short awareness time prior to the loss of their child report increased levels of long-term anxiety, compared to bereaved parents with longer awareness time.¹⁰⁰ It is also more common for the child to be cared for at home when parents have reached intellectual awareness of the child's impending death,¹⁹ this being in accordance with preferences often expressed by family members of ill children.^{16,17,107}

Even with both HCPs and family members bearing witness to the child's insight and awareness, there may be uncertainties regarding how to approach the child with bad news. One fear has been that giving the child such news would reduce the child's hope and quality of life. HCPs are in a unique position to help the families through this difficult time by facilitating communi-

caution. Importantly, siblings should also be invited into communication about the prognosis and what happens at the time of death, as siblings who had not been informed about what to expect when their brother or sister was dying were at greater risk of psychological morbidity at the time of the questionnaire (**Paper VI**).

Interviews with children in **Paper VII** reveal that they want information, and to be informed in no uncertain terms about their disease as well as the prognosis, even if that may be a poor one and no more treatment is at hand. These findings are supported by the study by Hinds et al, who report that ill children and their families are able to hold on to parallel goals of treatment and a possibility of cure as well as a palliative focus.¹⁰⁸ It is worth stressing that information is to be given in a respectful way, in words appropriate to the child's level of understanding and in as positive wordings as possible. The children wish to keep hope even when being informed of a poor or even fatal prognosis (**Paper VII**). The concept of hope is ambiguous and is subject to change over time. Even so, earlier studies conclude the importance of hope both for adolescents in cancer care and for parents whose children have cancer.¹⁰⁹⁻¹¹¹ Finding the balance in how to provide open and honest communication while supporting the child's and his or her family's hope remains one of the challenges but also one of the beauties of working with severely ill children and their families.

In **Paper VI** bereaved siblings reported that they experienced a lack of communication and were ill prepared for the death of their brother or sister. Similar results have been reported earlier.⁶⁴ While it is important to stress that siblings have a right to their own life, assuring that they are informed of an expected outcome will allow them to make choices based on a correct set of information and balancing a wish of spending time with their brother or sister with their own plans and dreams. Inviting and including them early in communication about disease and prognosis, preferably from time of diagnosis, will likely diminish the number of siblings who feel uninformed and who miss out on spending time with their ill brother or sister.

Parents who were able to grasp during end-of-life care that their child's disease was incurable were more likely to say goodbye to their child before death.¹⁰⁵ In addition, bereaved parents who talked to their child about death have not been seen to regret this, whereas some parents who did not talk to their child about death have reported regretting it.⁶² This was seen to be especially true of parents who sensed that their child was aware of his or her impending death while still choosing not to communicate about it. In **Paper V**, four different ways in which communication occurred was found, the most common being through narratives. By using narratives the difficult subject of death can be approached without specifically referring to the

child's imminent death. Fairy-tales might also be an easier way to describe death to younger children and provide them with a vocabulary they otherwise might lack, hindering them from expressing their thoughts. Awareness of different ways in which communication around death can occur, as presented in **Paper V**, can guide HCPs in helping these families. By supporting communication when the child shows interest, and by reassuring parents that this will usually be beneficial for both the child and the parents, communication around death can be facilitated. Since narratives are a common way to approach the topic one could also easily provide appropriate children's and teen books and/or movies at the hospital ward in any bookshelf and in this way facilitate for a conversation without forcing the topic on someone who is not yet ready.

Good communication is vital in providing good medical care, perhaps even more so in palliative care. Communication includes not only giving information but also interaction. Good communication can lead to shared goals and a better understanding of each other's perspectives, resulting in better outcomes for the child as well as his or her family.

Pediatric palliative care

The results from this thesis highlight communication and inclusion of the whole family (as opposed to focusing exclusively on the ill child) as important aspects when caring for a child with cancer. Integrated palliative care, as discussed briefly in the background, alongside potentially curative treatment aims to provide a continuous focus on these as well as other values and goals of palliative care throughout a disease trajectory. Though WHO²² and the American Academy of Pediatrics¹¹² have advocated integration of palliative care alongside potentially curative treatment for years, this integration is not regularly taking place.^{24,25,28} Reported barriers include inadequate palliative care training of HCPs and a lack of evidence based palliative care assessments and interventions in pediatrics but also professional attitudes regarding the appropriateness of discussing palliative care when prognosis is uncertain.^{25,28,29,63} The belief that palliative care exclusively involves care of the dying individual results in many reacting strongly to the concept of integrated palliative care.

While achieving good communication and keeping a family perspective are important aspects of palliative care, they are undoubtedly important in all pediatric care and even all medical care. One might therefore question the need for an integrated model of palliative care. Even so, based on the results in this thesis there appears to be room for improvements regarding both symptom control and communication. In addition, an increased family focus,

attending to the needs of both siblings and parents during the disease period as well as after bereavement seems to be warranted.

The results from this thesis support a model where palliative care values such as symptom relief, enhanced communication and support to close relatives are introduced early during the disease trajectory (**Figure 5**). These aspects should not interfere with potentially curative treatment. Honest communication from the time of diagnosis, that even though treatment aims at achieving a cure, a fatal outcome remains a possibility, helps the child and his or her family members have realistic expectations on the treatment given. Notably, one should certainly not discourage the child and his or her family: if a cure is likely this should of course be emphasized. If and when the disease progresses and hope of cure diminishes (or is lost) palliative care values gain in importance. By this time, a foundation has hopefully been laid to continue an open dialogue about realistic expectations that allow the families to spend the final time together according to personal preferences, to plan place of death and make it possible for the child and his or her parents and siblings to say farewell.

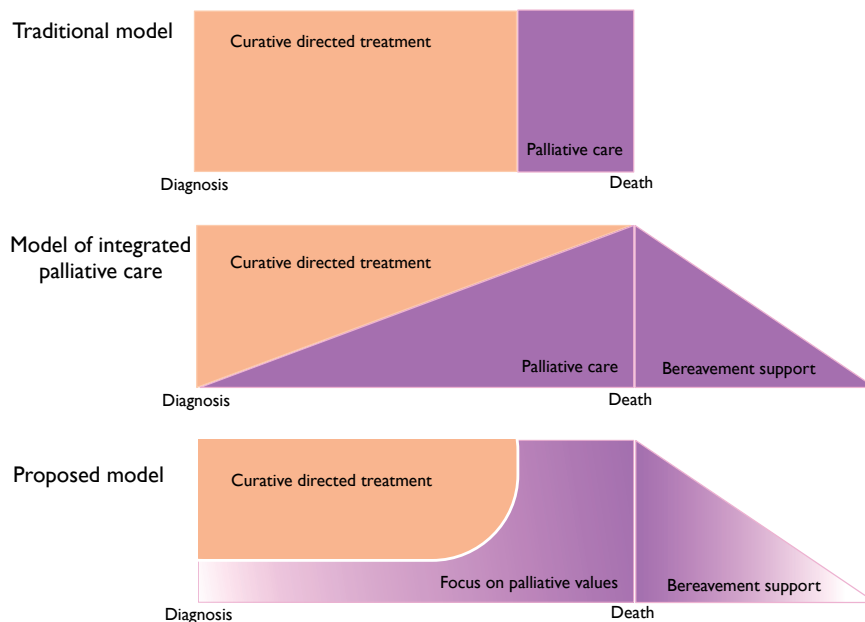


Figure 5. Different models of palliative care

In the proposed model the term *palliative care* is left out. Due to the lack of consensus regarding the definition of palliative care,^{32,33} use of the term may

lead to debate regarding semantics rather than a discussion of how to improve the care offered to these children and their families.

This thesis particularly stresses the need for considering the whole family – as opposed to only the ill child – when caring for children with life-threatening diseases. Acknowledging each family member as an individual, and paying attention to family preferences regarding care and communication will help individualize care and hopefully result in improved palliative care. Key aspects to consider:

- ***Identify the whole family.*** Who are the people close to the child? Identify parents, siblings and/or other close relatives likely to be affected by the child's disease.
- ***Identify family values and preferences,*** both regarding communication but also regarding treatment. Who should be informed and by whom if or when a treatment is no longer working? Is the family prone always to try out a new treatment or do they (in case of a really poor prognosis and when only experimental treatment remains) prefer to care for the child at home, having a period of time together as a family before the child's death?
- ***Identify treatment expectations.*** Before offering and starting any treatment, the realistic expectations of said treatment should be evaluated and distinguished from mere hopeful expectations. Throughout the child's care, these expectations need to be reevaluated and openly communicated between HCPs, the child and family members. An open dialogue permits the family to make preparations according to their preferences and personal values, but also for HCPs to support the families in their preferences and to provide the best possible care.

These are only a few of the important aspects to consider when caring for children with life-threatening diseases and their families. Future research as well as clinical expertise can add to the list. It is imperative to strive for open communication from the time of diagnosis, and to remember that no child is isolated: children always exist in the context of a family.

Methodological considerations

The overall aim of this thesis was to provide a better understanding of palliative care of children with cancer and to explore aspects of care and/or communication of interest for both the child and bereaved family members. To answer the various research questions, information was gathered in four separate studies and analyzed using both quantitative (**Paper I-IV, VI**) and qualitative method (**Paper V-VII**). Gathering data from different sources and using different methodologies strengthen the findings of this thesis. However, there are methodological considerations and limitations with the approaches used in this study that need to be discussed:

Retrospective review of medical records

The aim of **Paper I** was to provide baseline data on patterns of care for children dying from cancer in Sweden. The nationwide approach ensures that the data do not represent treatment traditions at a single center. However, the retrospective design of collecting data through medical records limits the results to what is written in the medical records.

Consent was sought from bereaved parents before examining the child's medical records and the selection bias introduced by the 49 children for whom consent was denied or where the parents failed to return the consent form represents a limitation of the study. Due to study design it is not possible to determine if patterns of care differed for children whose parents denied consent. Conclusions from the study must be interpreted with this in mind.

The Swedish Register of Palliative Care started in 2005 and strives to include all persons dying in Sweden.¹¹³ One aim of the register is to use the data to evaluate the quality of end-of-life care. HCPs report directly to the register after the death of a patient, including data on place of death, symptoms and suffering, pain relief, etc. In 2014, 68% of the deaths in Sweden were reported; however, the coverage is significantly lower in the pediatric population, with only 23% of deaths being registered.^{113,114} With increased awareness of the register and encouragement to report data on deceased children, this register could be used in future evaluations of end-of-life care not only of children in pediatric oncology wards, but of all children who die.

Questionnaire for bereaved parents (used in Paper II-V)

The nationwide, population-based approach together with a participation rate of 80% represents one of the strengths of the study. The questionnaire was anonymous and could be answered at home, and forms were sent to mothers and fathers separately.

However, the study approach also has several limitations. Recall bias, due to the years that have passed between bereavement and the time of the questionnaire, cannot be disregarded. Further, the design of the questionnaire did not permit follow-up questions or clarifications, which is of special importance when analyzing free-hand comments as in **Paper V**.

Questionnaire for bereaved siblings

The questionnaire directed to bereaved siblings (used in **Paper VI**) has strengths and limitations similar to those of the questionnaire for bereaved parents. In addition, special considerations needed to be addressed. Only siblings older than 18 at time of the questionnaire were included, since including younger siblings would cause difficulties regarding informed consent, where parents and siblings would have to provide consent and assent, respectively. Thus, the results are limited by inclusion only of older siblings.

Interviews with ill children

Individual interviews empower individuals to share their stories and the qualitative approach can be used to explore and understand complex issues that cannot easily be measured.¹¹⁵

As mentioned earlier, the initial aim in **Paper VII** was to interview children for whom there no longer remained hope of a cure and who were informed of this. However, this approach proved too difficult due to the small number of eligible subjects, and the sometimes short time span during which they had to be asked to participate (in agreement with findings in **Paper I**). In addition, patients were recruited at the ward at the University Hospital in Uppsala, and many children who no longer are regarded as curable are transferred to a hospital closer to home or chose to stay at home with support of a home health care team. Some children themselves also prioritized (wisely) to live their life rather than participate in yet another study, being interviewed by someone they didn't know. A boy for whom there no longer remained any hope of cure, simply stated when asked if he wanted to participate in the study: *"I don't have time, I'm dying, you know. I have stuff I need to do."*

To ask children still in potentially curative care if they would like to be informed if the worst happens – that their disease becomes incurable and that they will die – is to pose a hypothetical question and the results must be in-

terpreted with this in mind. An anthropological design or a prospective study following children (together with their families) from the time of diagnosis and throughout their disease period would enable collection of better data on how children receiving bad news perceive this, together with their views on improvements.

Generalizability of the findings of the thesis

This thesis is strengthened by the diverse approaches used, collecting data from medical records, children and their family members. Combining quantitative data with qualitative data allows for a deeper understanding of different aspects in and of the care. The results include care of children with cancer spanning more than two decades and one must acknowledge that care has evolved during this period of time. The individual findings in each paper should not be generalized to all children with cancer, or automatically regarded as “true” of the care given today. However, the key themes, represented over time and supported by both children, parents and siblings should be seen as important aspects to consider in the care of all children diagnosed with cancer.

Increased awareness of aspects of communication that child and family regard as important as well as awareness that the care of the ill child affects family members is important in improving future care. The results and discussion of this thesis should not be regarded as a universal truth but rather as a stepping-stone toward continued discussion regarding how palliative care in pediatric oncology can be improved.

Concluding remarks and future research

Two overarching themes were found: acknowledging that family matters and the importance of communication. The findings in this thesis show that even though most children dying from a cancer in Sweden are recognized as being beyond cure at the time of death, for many children this is not acknowledged until shortly before death, especially for children dying from hematological malignancies. Bereaved parents and siblings recognize suffering in the child at the end of life, and bereaved parents are at increased risk of decreased psychological well-being if they perceive psychological distress in their child close to death. In addition, bereaved parents whose child went through HSCT as part of his or her treatment appear to be at increased risk as compared to bereaved parents without this experience.

Communication was found to be of great importance both to the ill child and to bereaved parents and siblings. Children with cancer expressed a wish for open communication, even in the case of a poor prognosis although they still wanted to be able to keep their hope. Bereaved parents reported that communication about death often occurred at the child's own initiative and communication was often facilitated through narratives. Several children also communicated through practical preparation for their own death or by talking about friends and family that had died or about life after death. Bereaved siblings expressed a lack of information and felt unprepared for their loss. In addition, siblings who reported that no one talked to them about what to expect when the brother or sister was going to die had increased levels of anxiety 2 to 9 years later.

Since the start of the research leading to this thesis, over a decade has passed. The field of pediatric palliative care has blossomed and there are an increasing number of papers and even textbooks on the subject. In Sweden, the first Nordic Hospice for children opened in 2010, and palliative medicine was recently recognized as an official specialty for physicians. Though advances have been made, pediatric palliative care still face several challenges.

In Sweden, few children die, which means that physicians and nurses have limited clinical experience. In addition, our sparsely populated country has just six centers caring for children suffering from cancers. The only hospice and the only advanced home care team specialized on children are situated in

the Stockholm area (**Appendix 1**). There are large differences and inequalities in the possibility for children to receive palliative care in Sweden, and although this thesis focuses on children with cancer, children with other life-threatening diagnoses will have the same challenges.

This thesis provides some pieces to the puzzle of caring for children with life-threatening diseases, although many are still missing. While continued research might help find more of the missing pieces, it would also be of great importance to continue not only describing the care provided but also trying to implement research findings into routine care, and evaluating such interventions.

Digging deeper into preferences of ill children and their families would be interesting in further developing palliative care services. Prospective studies, following children and their families over time, would be preferable. Of special interest would be to capture arguments and thoughts on choosing between continued treatment and best supportive care when hope of cure is diminishing (or even lost).

Adding “practice” to the descriptive results by visiting hospitals and care facilities that have succeeded in integrating palliative care (or values thereof) alongside regular therapy and developing a model that applies to Swedish conditions would be of great interest. Thereafter, the next step would be implementing and evaluating such a model.

More intervention studies are needed. A few interesting areas involve support to ill children and interventions to empower them, as well as support programs to siblings of ill children together with bereavement support.

Ethical areas that need further focus involve exploring assent versus consent in pediatric research as well as finding ways in which to conduct research *with* the ill child (as opposed to *of* the child).

Somewhere in the midst of this it would be interesting and of great importance to sort out the different meanings of palliative care and to develop nomenclature that helps us discuss these topics with each other without getting stuck in semantics. This, I am certain, will help us improve care for both ill children and their families.

Svensk sammanfattning (Swedish summary)

Barn borde överleva sina föräldrar. Trots detta måste vi acceptera att för vissa är situationen omvänd. Knappt 450 barn avled i Sverige under 2012, de flesta innan de nått ett års ålder. För barn över ett år är olyckor och cancer de två vanligaste dödsorsakerna. Medan dödsolyckan oftast är oväntad och plötslig medför cancerdiagnosen en möjlighet att förbereda sig inför avskedet, att planera den sista tiden samt möjliggöra ett avsked på det sätt man själv önskar.

Omkring 300 barn får varje år en cancerdiagnos i Sverige och behandling inleds oftast i syfte att uppnå bot. Behandlingen följer Nordiska protokoll som förankras, diskuteras och revideras regelbundet. För de barn som inte svarar på behandling och vars sjukdom avancerar bortom bot, saknas nationellt förankrade handlingsplaner och barnet med familj blir utlämnade till den enskilda läkarens eller vårdteamets erfarenheter och kompetens. I dagsläget kommer drygt vart femte barn som diagnosticerats med cancer att dö på grund av sin sjukdom.

Syftet med denna avhandling är att kartlägga vård av barn med cancer i livets slut samt att undersöka hur vård och kommunikation påverkar både det svårt sjuka, och döende barnet samt föräldrar och syskon efter barnets död. Resultaten bygger på fyra olika datainsamlingar, en journalgranskning (delstudie I), en nationell enkät med efterlevande föräldrar (delstudie II-V), en nationell enkät med efterlevande syskon (delstudie VI) samt intervjuer med barn under pågående cancerbehandling (delstudie VII).

Majoriteten av barnen avled efter att botande behandling hade avslutats, för ett antal skedde detta dock nära döden vilket lämnar lite tid till familj och barn att planera enligt egna övertygelser och preferenser (delstudie I). Anhöriga syskon och föräldrar vittnar om uttalat lidande hos det döende barnet (delstudie II, IV). Kroppslig orkeslöshet och smärta var vanligt hos alla barn som avled oavsett barnets ålder eller diagnos (delstudie II). Efterlevande föräldrars psykiska välbefinnande tycks sammanflätat med hur de upplevde sitt barns lidande i slutet av sitt liv (delstudie III). Likaledes återfanns en ökad risk för psykisk lidande hos de föräldrar vars barn genomgick en benmärgstransplantation innan sin död. En tolkning av detta är att ökad behand-

lingsintensitet inger familjen med ett ökat hopp om bot som gör en förlusten än svårare (delstudie IV).

Vidare studerades hur syskon upplevde tiden kring sin bror eller systers död (delstudie VI). Sammantaget upplevde syskonen sig dåligt informerade och dåligt förberedda på dödsfallet. Syskon som inte fått prata med någon om vad de skulle vänta sig vid dödsfallet befanns ha en ökad risk för ångest flera år efter brodern eller systemens död.

När man vårdar barn med cancer är det viktigt att beakta det enskilda barnets egen förståelse för sin situation. Det är också viktigt att barn tillåts fortsätta vara just barn trots sin sjukdom. Historiskt har man försökt skydda barnen från medicinsk information om deras egen sjukdom, speciellt om prognosen varit dystert. Under senare delen av 1900-talet blev det dock alltmer accepterat att informera barn om sin sjukdom och flera framstående forskare kunde visa på att barnen själva mycket väl förstod sin situation även om ingen berättade för dem hur det låg till.

Tidigare studier har visat att en del föräldrar som förlorat ett barn i cancer ångrar att de inte pratade om döden med sitt barn. Jämförelsevis kan noteras att föräldrar som pratat om döden med sitt barn inte tycks ångra detta. Kommunikation om döden kan ske på många olika sätt (delstudie V). Föräldrarna vittnade om att initiativet ofta kom från barnet själv, vilket är i samklang med tidigare studier som pekar på barnets egen medvetenhet om sin situation. Flera pratade om andra som dött, om släktingar och vänner men även andra barn man träffat under sjukdomstiden. En del pratade om himlen och ett liv efter döden. Andra barn planerade praktiskt för sin egen död, de berättade vart de ville begravas, vilka blommor och sånger de föredrog och planerade vem som skulle ta hand om deras gosedjur. Det vanligaste sättet att kommunicera om döden, oavsett ålder, var via berättelser. Sagor och filmer kunde användas för att göra ett tungt ämne mer lättillgängligt men också för att förenkla förståelsen för yngre barn.

I den sista delstudien (delstudie VII) intervjuades tio barn i aktiv cancerbehandling om deras syn på att erhålla svåra besked, såsom att deras cancer inte svarade på given behandling, återfall eller att deras sjukdom inte bedömdes botbar och skulle leda till döden. Alla barnen önskade ärliga besked och ville inte att "sanningen" skulle undanhållas, även om prognosen var dystert. Samtidigt önskade de att samtalet balanserades med hopp, en plan för hur man skulle gå framåt eller hopp om ett mirakel. Dessutom önskade barnen bli informerade samtidigt med sina föräldrar, och inte som ibland sker att föräldrarna blir informerade först.

Resultaten i denna avhandling visar på vikten av öppen kommunikation samt ett bibehållet familjefokus i vård av svårt sjuka barn med cancer. Tidigt, om möjligt redan då barnet får sin cancerdiagnos, bör man identifiera de olika familjemedlemmar som står barnet nära och kommer påverkas av sjukdom och behandlingsinsatser (föräldrar, syskon och andra närstående). Eftersom familjer är olika är det viktigt att efterfråga hur varje enskild familj ser på kommunikation; om och när ett bakslag kommer, vem ska informeras, av vem och hur? Vidare är det viktigt att diskutera behandlingsstrategier, vissa familjer är mer benägna att pröva nya experimentella behandlingar när hopp om bot med konventionella terapier är borta. Andra kan föredra att få en tid tillsammans utan behandling och täta sjukhusbesök innan barnet dör. Genom att ha en öppen dialog där realistiska förväntningar på tänkbar behandling identifieras (att jämföra med ett större hopp som ställs på behandlingen) kan familjen, med stöd av vårdpersonal, fatta beslut som överensstämmer med egna värderingar samt möjliggöra ett bra avslut om och när barnet dör.

Viktigt är att inte behandla barn med livshotande sjukdom som isolerade individer utan som del i en familj.

Acknowledgements

This work has been a wild, joyful and tearful journey during which I have learned a lot. I am deeply grateful for all the wonderful persons I have met and who have given me both times of fun and learning.

First and foremost, I wish to express my gratitude to the children who participated in my last study. Our conversations really were the most “fun” during this project. Thank you all for bravely and generously sharing your experiences and thoughts with me! A special thank you to *Anki* for helping me contact potential candidates.

Thanks to all my supervisors who have accompanied me during this thesis: Britt-Marie Frost, Mats Hansson, Jan-Inge Henter & Ulrika Kreicbergs. It has been an interesting journey with a lot of fruitful discussions regarding research, ethics and clinics. *Jan-Inge & Ulrika*: you have followed me the whole way, through ups and downs. Thank you for never giving up on me. I finally reached the end of “the book”... *Britt-Marie & Mats*: you provided my research with a perfect home at the Centre for Research Ethics and Bioethics, and although sometimes philosophically challenging, there have been a lot of great discussions along the way. Without you I doubt that I would have finished this thesis.

I’ve had the pleasure of working with different co-authors during this thesis. It has been a joy working with you all. Thanks to *Gunnar, Martin, Taru, Maria & Alexandra*

I’ve further had the benefit of working with two great statisticians, *Erik* and *Tommy*. How you make statistics approachable and “understandable” is a riddle. Thank you for your patience with me!

Special thanks to *Malin*, co-author, colleague and friend. Your support and insightful comments this past year have been invaluable.

Thanks to all my colleagues at the Centre for Research Ethics and Bioethics, with a special thanks to *Josepine* – without you we would all be stuck in traditional ways to present our research. Your creativity and eye for “reaching out” have been invaluable! Black posters from now on!

Special thanks to the junior researchers at CRB, past and present. *Malin, Joanna, Linus, Frida, Ashkan & Maria*: thank you for clearing the path for PhD students at CRB. *Mona*: thank you for always having an open door and time to listen. *Tove*: It's been a privilege having you as a companion in writing up the thesis. We made it in the end! *Jennifer, Mirko & Amal* you are a great support team in times of need and dreams. I will miss our discussions! *Marit*: now let's focus more on exchanging knitting and sewing experiences!

Also, great thanks to friends and colleagues at the Childhood Cancer Research Unit at Karolinska Institutet, Childhood Cancer Unit at Karolinska University Hospital and the Oncological Unit at Visby Lasarett. You have all taught me so much both in research and clinics!

Thanks to friends and family who kept me from disappearing completely in my work.

My dearest friends: *Céline*: my "oldest" friend, thank you for pauses in daily life, coffee-breaks while working from home and just letting me think about something other than work. *Nathalie*: now more time to wine and dine...! *Marie*: we have some catching up to do! All the *book-club girls*: after this it's time to re-launching the book club! Although having busy lives we all need time for literature, gossip, soup and cake...!

Lena & Göran: Thank you for support both mentally and by being the best of grandparents! Special thanks to Göran for great talks and dinner company while finishing this thesis as well as to all "*Bäne-bor*" for joyful conversations!

My father *Rune*, and big brother *Jonas*, for encouraging me throughout. My late mother, *Monica* for support and encouragement and for teaching me the value of following your dreams.

Emma and *Karin*: you are both sort of "big sisters" to me and it's always a privilege to chat, share, cook, travel, create, work-out...(the list could be long) with you. Time to catch up!

Fredrik: I could write a whole book about just how fabulous you are. Your love and support has carried me these last years. This book would not have been what it is without you. I love you now and forever!

Hannah, Hugo & Henry – my wonderful children. You put life in perspective and I enjoy every day with you. Tack för era underbara skratt och bekymmerslösa tillvaro. Ni är de coolaste jag vet!

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Appendix 1: Pediatric oncology units in Sweden



Appendix 2: WHO definition of palliative care

WHO definition of palliative care for children

Palliative care for children represents a special, albeit closely related field to adult palliative care. WHO's definition of palliative care appropriate for children and their families is as follows;

- Palliative care for children is the active total care of the child's body, mind and spirit, and also involves giving support to the family.
- It begins when illness is diagnosed, and continues regardless of whether or not a child receives treatment directed at the disease.
- Health providers must evaluate and alleviate a child's physical, psychological, and social distress.
- Effective palliative care requires a broad multidisciplinary approach that includes the family and makes use of available community resources; it can be successfully implemented even if resources are limited.
- It can be provided in tertiary care facilities, in community health centers and even in children's homes.

Appendix 3: Narratives

Many books and films touch on the subject of severely ill children. The following list includes suggestions and recommendations (only a few of in continuously growing field) of narratives that can be used to communicate about death with children (*denotes narratives mentioned by the parents in Paper V):

The Brothers Lionheart (Bröderna Lejonhjärta), Astrid Lindgren*
Mio, My Son (Mio min Mio), Astrid Lindgren*
House of Angels (Änglagård), film by Colin Nutley*
In the Land of Twilight (I skymningslandet*), Astrid Lindgren
Through a Glass, Darkly (I et speil, i en gåte), Jostein Gaarder
The Fault in Our Stars, John Green
(The Land of Summer¹) Sommerlandet*, Eyvind Skeie
Bambi*, Walt Disney
The Lion King*, Walt Disney Feature Animation
The Seagull*, Anton Chekov
The Little Prince (Le Petit Prince), Antoine de Saint Exupéry*
Goodbye, Mr Muffin (Adjö Herr Muffin), Ulf Nilsson
All the Dear Little Animals (Alla döda små djur), Ulf Nilsson
Michael Rosen's SAD BOOK, Michael Rosen & Quentin Blake
Oscar and the Lady in Pink (Oscar et la dame Rose), Eric-Emmanuel Schmitt
Sadako and the Thousand Paper Cranes, Eleanor Coerr
Jenny Angel, Margaret Wild & Anne Spudvilas
Before I Die, Jenny Downham
(Maja and Death¹) Maja och döden, Ann-Marie Ljungberg

¹ not translated to English

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