CHAPTER 12

SUMMARY, GENERAL DISCUSSION AND FUTURE PERSPECTIVES
12.1 SUMMARY, GENERAL DISCUSSION AND FUTURE PERSPECTIVES

Although current survival rates in pediatric oncology are relatively good, cancer still puts a child’s life at risk and is a great burden for a child and his/her family.[1] Supportive care is the care that focuses on reducing this burden, mainly by managing adverse events.[2] This comprises for instance antiemetic drugs to reduce nausea, erythrocyte transfusions to treat anemia, or hypnosis to reduce procedural pain. Treating adverse effects is not the only goal of supportive care, prevention of these adverse effects and treatment-related deaths are also important aims. For instance, early and adequate treatment of a severe infection can be potentially life-saving, as these infections can have a detrimental course in neutropenic patients. To reduce treatment-related morbidity and mortality, and to improve quality of life, optimizing supportive care is of the utmost important.

The aim of the project described in this thesis was to improve childhood cancer supportive care, by developing and implementing clinical practice guidelines (CPGs). This project was divided in three, partly overlapping phases, i.e. preparation for guideline development, development of CPGs, and implementation of CPGs. The findings and the included studies are discussed below. Also, strengths and limitations of the project, and future perspectives are presented.

12.2 SUMMARY

Part I - Preparation for guideline development

To identify areas where the clinical demand for guidance was the greatest, we assessed the needs of healthcare professionals, patients and parents.

In Chapter 2 we performed a Delphi survey study in a multidisciplinary group of 45 childhood cancer professionals, to prioritize supportive care topics for guideline development. The 10 highest scoring topics were: 1) infection, 2) sepsis, 3) febrile neutropenia, 4) pain, 5) nausea/vomiting, 6) restrictions in daily life and activities, 7) palliative care, 8) procedural sedation, 9) terminal care, and 10) oral mucositis.

In Chapter 3, we assessed which topics patients and parents considered most important for supportive care guideline development, and what role they wished to fulfil in shared decision making. Themes of major importance identified during focus groups with patients and parents were communication between patient and physician, well-timed provision of information, and the suitability and accessibility of psychosocial care. In contrast to prioritized supportive care topics by healthcare professionals, somatic
issues (e.g. febrile neutropenia) were infrequently addressed. Regarding shared decision making, patients and parents preferred to be actively involved in this process for specific topics, such as choice of analgesics and anti-emetics, but not for other topics in which specific medical knowledge was required, such as choice of intravenous antibiotics.

Next we wanted to evaluate the uniformity of Dutch childhood cancer supportive care practice and its accordance with recommended care in existing CPGs. As described in Chapter 4, uniformity was extremely poor: we found concordance in only 15% of the 67 assessed practice items. Partly concordance was found in 9%, but the vast majority of items (75%) showed discordant care. Also, adherence to recommendations from selected CPGs varied but was generally low. The variations we identified can negatively influence care, both in terms of outcomes and in terms of patient satisfaction. This underlines the importance of developing and implementing supportive care CPGs. As this is a time-consuming endeavor, we felt that we should call to arms as many motivated clinicians to help, which we did in our plea in Chapter 5. We stressed the importance of international collaboration, and invited people to join the International Pediatric Oncology Guidelines in Supportive Care (iPOG) Network to benefit as much as possible from the available knowledge and manpower, and to prevent overlap and thus double work.[3]

PART II - DEVELOPMENT OF CLINICAL PRACTICE GUIDELINES

The highest scoring supportive care topic for which there was no existing CPG that we identified in Chapter 2, was pain. In addition, pain was one of the areas in which patients and parents desired to actively participate in decision making (Chapter 3). Therefore, the development of a CPG for pain in children with cancer was initiated.

In Chapter 6 we described the methodology and overall results of this extensive project for which the guideline development panel comprised 44 members from six countries. In addition, a patient/parent-panel of four survivors and five parents were involved in discussing the recommendations. We strictly adhered to the guideline development methodology as presented by the Grading of Recommendations Assessment, Development and Evaluation (GRADE) working group. A clear finding of the systematic literature process was the scarcity of high-quality studies focusing on pain in children with cancer.

The guideline development panel met in Amsterdam in early 2018 to discuss the evidence and formulate draft recommendations. The working groups, focusing on different areas of pain, were not all able to formulate recommendations at the same moment, therefore we opted to publish the CPG in three parts. One part focused on assessment of pain, one focused on reducing tumor- and treatment related pain,
and one focused on procedural pain. The latter is presented in Chapter 7. Key strong recommendations on reducing procedural pain included use of topical anesthetics in all needle procedures, use of deep sedation/general anesthesia in children under 12 years undergoing lumbar puncture, use of deep sedation/general anesthesia in major procedures in children of all ages, use of hypnosis in all needle procedures, and use of active distraction in all needle procedures. The patient/parent-panel supported the formulated recommendations, and emphasized the importance of child autonomy in choosing appropriate strategies to reduce procedural pain and distress.

Alternative guideline development techniques exist. In Chapter 8 we described the development of a CPG regarding infusion duration of anthracycline chemotherapy agents in children with cancer, using an existing high-quality review as starting point. After an update search, a representative multidisciplinary panel formulated a strong recommendation in favor of an anthracycline infusion duration of at least one hour.

PART III - IMPLEMENTATION OF CLINICAL PRACTICE GUIDELINES
Several studies have shown that developing a CPG is on itself not enough to change practice.[4,5] Therefore, it is of the utmost importance to direct attention and effort towards implementation of CPGs. After all, only when a CPG is used in practice it has the potential to improve patient outcomes.

In Chapter 9 we explored the development and use of an individualized care plan to promote implementation of a Dutch pediatric palliative care CPG. The final care plan covered physical, psychological, spiritual and social functioning, with great emphasis on the recommendations from the CPG, advance care planning and patients’ and parents’ preferences and desires. The care plan was piloted in practice and although it should improve on user-friendliness, its implementation was experienced as an improvement compared to former practice.

To test the uptake of a CPG in practice, and to see its effect on health outcomes, indicators can be used. Indicators are measurable items that can be used as guides to monitor, evaluate and improve quality of patient care, and evaluate implementation of guidelines.[6] In Chapter 10 we present a rigorous but pragmatic approach to indicator development. To this end we focused on an area of supportive care for which a CPG was already available; febrile neutropenia (FN). Major findings were: 1) the CPG was suboptimally implemented, 2) there was a high percentage of correct use of initial antibiotics and additional testing in hospitals that used the CPG, and 3) FN still puts great burden on children with cancer, as almost one in five episodes of FN resulted in ICU admittance and one in 40 resulted in death.
To further evaluate outcomes of care and understand one of the most important outcome indicators in pediatric oncology, in Chapter 11 we studied prevalence and risk-factors for treatment-related mortality (TRM). A portion of children with cancer die due to their treatment, and with cure rates still improving the reduction of TRM might be crucial in further increasing overall survival. In a cohort of 1,764 children with cancer, we found an overall five-year survival of 78.6%. More than one in five deaths were treatment-related, with 40% occurring in the first three months after diagnosis. Infection accounted as predominant cause of TRM death. In multivariate competing risks analysis, risk factors for TRM were diagnosis of a hematological malignancy, age <1 years at diagnosis, and receipt of an allogeneic hematopoietic stem cell transplantation. Notably, in patients with a hematological malignancy, more patients died from TRM than from progressive disease.

12.3 IMPORTANCE OF SUPPORTIVE CARE

In the field of oncology, historically supportive care played second fiddle to anti-cancer treatment. The primary concern was to cure the cancer, and how the patient got through or came out of treatment was of secondary concern. However, with the remarkable improvement in cancer cure rates that has especially been seen in children, the question how this cure is achieved has become increasingly relevant.

Cancer in children is treated aggressively, with intensive therapies that often encompass multiple treatment modalities. All these treatments have their own adverse effects profile. Several adverse effects occur during or shortly after treatment, so called short term adverse effects, for example pain, nausea and vomiting, fatigue, anxiety, and neutropenic fever.[7-9] Most treatments are also associated with long term adverse effects, which can occur years to decennia after treatment. For example, compared to the general population, childhood cancer survivors are at greater risk of infertility, are more than twice as likely to develop a secondary neoplasm, and are seven times more likely to die due to cardiovascular disease.[10-12]

Children with cancer often have to undergo long treatment trajectories, and when successfully treated they still have a long life before them. Optimal supportive care to reduce short- and long-term adverse effects of anti-cancer treatment is therefore of utmost importance in this population. It nevertheless remains an underexposed field. High-quality studies are scarce (Chapter 6) and great variations in daily practice exist (Chapter 4). To improve care for children with cancer and the associated outcomes, we should focus attention on optimizing supportive care.
In our project we targeted to advise on care to reduce short-term adverse effects, i.e. procedural distress (Chapter 7), and long-term adverse effects, i.e. anthracycline-induced clinical heart failure (Chapter 8). However, we found that merely recommending on treatment options is not enough. Although healthcare professionals proved to have a very somatic focus on what is important (Chapter 2), patients and parents put their primary focus on things like communication and provision of information. This is important, because it implies that improving patient satisfaction is not only achieved by treating well, but also by communicating well. Previous research has repeatedly confirmed this; effective doctor-patient communication improves patient (and parent) satisfaction, treatment adherence, and sense of control.[13,14] This notice, together with the emphasis patient representatives put on empowering children, asks for an individualized approach. In our CPG advising on procedural pain management (Chapter 7), we effectuated this approach to lower the burden that repeated procedures put upon children and their families.

But it is not just quality of life that supportive care can improve, it can also prevent treatment-related death. As we have found that toxicity of treatment is responsible for one in five childhood cancer deaths (Chapter 11), optimizing supportive care has the potential to save lives. In adult cancer, various studies have been performed that underline this train of thought. For instance, one of the first trials that studied the effect of antifungal prophylaxis (now standard of care in children and adults in various phases of anti-cancer treatment) focused on comparing fluconazole with placebo.[15] In this study, significantly less deaths due to a systemic fungal infection were reported in the fluconazole group as compared to the placebo group (1 out of 179 vs. 10 out of 177, respectively). In children with cancer, also much has already improved regarding prevention and treatment of infections, with for instance the introduction of Pneumocystis jirovecii Pneumonia prophylaxis and the aforementioned antifungal prophylaxis.[16] Nonetheless, we found that infections still put great burden upon children with cancer (Chapter 10) and was responsible for the majority of treatment-related deaths (Chapter 11). Optimizing care regarding infections thus remains the first area I would focus on to reduce treatment-related mortality, for instance by commencing clinical trials to evaluate promising treatments to prevent or manage infections, or by designing comprehensible tools for practice to increase guideline adherence (e.g. flowcharts). To improve care, CPGs and their implementation can help greatly, as in adult cancer patients it was previously found that guideline-consistent supportive care was associated with decreased mortality in febrile neutropenia.[17]
12.4 CHILD IN CHARGE

An important finding of our project was the desire for shared-decision making (Chapter 3) and the value that children put on autonomy and being informed when requested (Chapter 7). Shared-decision making entails the process of mutually sharing information between healthcare professional and child (and his/her family), including the expression of treatment preferences by both parties, and collaboratively reaching a treatment decision both parties agree to.[18] Especially younger children have a special position in medical decision making, as final authority lays with their parents/caregivers. This should however not mean that their voices are unheard in decision-making. This is even more true for supportive care, as choice of treatment can be largely dependent upon developmental age, personal preferences, and previous experiences. Therefore, the first step to successful shared-decision making is information that is focused on the context of a child.

We have tried to take the individual context of a child into account as much as possible when developing the individual pediatric palliative care plan (Chapter 9). One of its perks is the repeated emphasis on the desires and wishes of a child, not only overall, but also on a per-symptom basis. For example, with regard to pain, one child might value being pain-free as most important, while another child might value not feeling sedated over being completely pain-free. These different stances can lead to different treatment decisions. Engaging in a conversation with children to inform and empower them before making a shared decision, is therefore extremely important. Our individual care plan emphasizes and facilitates this, for instance by registering needs and wishes for relevant individual symptoms.

Furthermore, while developing our CPG on procedural pain, we have integrated opinions, preferences and wishes of patients and parents as much as possible (Chapter 7). Working together with patient representatives in formulating recommendations, provided a valuable opportunity to gain the perspective of the child and the parents. Although the patient representatives agreed with the draft recommendations and thus changes hereof were not necessary, several important implementation considerations were added following these discussions. For example, we recommend the use of active distraction in painful procedures, but because of the input of the patient/parent-panel we have formulated an implementation consideration that there might be children who get distressed from being distracted, and in fact prefer to be engaged in the procedure. Discussing this with a child prior to a procedure can significantly benefit the experience of the child.
12.5 DEVELOPING GUIDELINES TO IMPROVE SUPPORTIVE CARE

In our quest to improve supportive care, we focused on an area that I believe can have great impact on quality and uniformity of delivered care: clinical practice guidelines (CPGs). Developing and implementing CPGs informs clinicians about best current practice, facilitates shared decision-making, and provides an outline of current scientific knowledge to derive a research agenda from.

A main strength in developing our CPGs was the profound adherence to the methodology of the GRADE working group.[19] This methodology is currently considered the standard in CPG development and has been endorsed by over 100 organizations including the World Health Organization and Cochrane. Although following these methods in detail was time-consuming and necessitated extensive training, this did result in very rigorously developed, reproducible, transparent CPGs. People using our CPGs can in detail read the justifications for a recommendation and accompanying considerations, and can thus make an assessment if the recommended course of action is applicable to their specific situation. I believe this will also promote uptake of the CPGs, as users can go over the underlying evidence and gain an insight as to why specific choices were made.

Another strength was the large, multidisciplinary, international guideline development panel. Having multiple healthcare professionals with extensive methodological training on this panel, including several members from Cochrane Childhood Cancer (situated in the Netherlands), helped greatly in understanding and adhering to the guideline development methods. In addition, having clinicians from various disciplines and countries involved contributed to the generalizability of the recommendations. Likewise, working together closely with the patient/parent-panel, and providing them with training in evidence-based guideline development, facilitated a CPG in which the patient perspective is interweaved. This I believe will enhance shared decision making. We also trained the healthcare professionals, and had them participate in all tasks (e.g. dual independent selection and quality appraisal). Although it might have been more quick and convenient to let a few dedicated people, for instance core group members, perform this work, we felt that engaging all members in these processes facilitated their understanding of the body of evidence and the used methodology. Because of the presence of all the different clinical perspectives and the accompanying knowledge and experience, we were able to formulate recommendations that are widely supported and useful in actual daily practice. Meeting the panel members face-to-face and discussing the evidence and draft recommendations in our two-day meeting in Amsterdam was of great help in this process.
When considering this project and its products, several limitations should be taken into account. The obvious limitation to commencing a project in a broad area is that one has to limit oneself to a clearly defined amount of work, therefore leaving other stones unturned. To focus on topics for which the clinical demand is the greatest, we prioritized supportive care topics prior to CPG development (Chapter 2).

In addition, our work was hampered by the scarcity of high-quality studies in childhood cancer supportive care. This provided several challenges, among which the formulation of recommendations was the greatest. Nevertheless, we were aware of both the encouragement of the GRADE working group to formulate recommendations despite a weak evidence base, as well as previous research that showed a clear preference of clinicians to receive recommendations in addition to evidence overviews.[20,21] Therefore, in both our CPG developments (Chapter 7 and Chapter 8) we went to great lengths to attempt the formulation of a recommendation, while retaining solid justification and transparency of our decision methods. Unfortunately, situations remained were the guideline development panel felt there was simply no justification to formulate a recommendation (e.g. precise infusion duration for anthracyclines in Chapter 8).

Lastly, in our CPG developments we put great focus on formulating recommendations, which might have distracted us from thinking about the implementation after finalization. This was perhaps also due to the fact that we still had to familiarize ourselves with implementation (i.e. our work described in Chapter 10 and Chapter 11). In future projects, I would combine this to a further extent as described earlier in this paragraph. This also entails effectuating a change in attitude of the guideline development panel members, to create awareness that the goal of CPG development is not to merely publish a CPG, but rather to have it used in daily practice.

THE RECIPE TO SUCCESSFUL USE OF CLINICAL PRACTICE GUIDELINES

In certain circles, guidelines are still somewhat frowned upon. In a recent study on implementation of evidence-based medicine, one of three main factors that influenced this negatively was the concern that adhering to guideline-based recommendations compromised personalized patient care and ignored the experience of the clinician in making a decision.[22] This is one of the fears that critics of CPGs disseminate; the fear that CPGs lead to ‘cookbook medicine’, where one is bound to follow recommendations from a guideline rather than their individual appraisal of the situation. The error in this train of thought is that a recommendation from a CPG is not a recipe, but merely an important ingredient for a recipe. There are various other essential ingredients, such as patient characteristics, patient preference, physician experience, geographical variations,
etcetera. To remain in culinary terms; the recommendation is your taco, which is essential to keep the dish together but needs toppings to be a meal.

It is essential that this awareness is carried out by evidence-based medicine advocates, as it contributes to a change in attitude that facilitates CPG implementation. One can use all the implementation strategies available to put a CPG into practice, but without having the trust of the clinician that the recommendations are facilitating informed, patient-centered, optimal decisions, the CPG will bite the dust. Informing and training clinicians in using CPGs and successfully performing evidence-based medicine, ideally with feedback loops making the process and corresponding improvements insightful, is of the utmost importance.

**12.6 FUTURE PERSPECTIVES**

**SUPPORTIVE CARE**

Generally, I believe more focus should be put on making supportive care an integral and important part of childhood cancer treatment. Optimizing supportive care reduces short- and long-term adverse effects, increases survival, and improves quality of life.

In this thesis we have presented recommendations on reducing procedural pain (Chapter 7), with a child-centered approach and including pharmacological and psychological treatment strategies. These recommendations can lead to direct changes in clinical care, e.g. as a consequence of our strong recommendation in favor of hypnosis, several members of staff will be trained to teach and perform hypnosis in the Princess Máxima Center.

Also for other supportive care topics a more child-centered approach would be beneficial to patient outcomes, as supportive care should not focus on eliminating side-effects, but on retaining quality of life. What contributes to quality of life might differ between children, therefore healthcare professionals should seek to explore this and integrate this in their recommended course of action. For various other supportive care topics, evidence-based guidance (and therefore uniform care) is still lacking. In my opinion attention should be focused on the development of recommendations on restrictions in daily life and activities. This was a top 10 scoring topic in our Delphi study (Chapter 2) and it is something where in my experience patients and parents ask a lot of questions about in the outpatient clinic ("Is my daughter allowed to swim tomorrow?"). Thus, further development of CPGs on this topic, and other important supportive care topics, is necessitated. This should be done, as we did, in an international
manner, to increase usefulness of the recommendations and to prevent overlap and double work.

Clinical supportive care research should focus on the prevention and treatment of infections, and even more so early infections in hematological malignancies. For instance, randomized trials with enhanced prophylaxis for fungal infections, or development of improved risk-prediction models to identify children with high-risk febrile neutropenia, could contribute to better outcomes in these children. As infection is associated with substantial morbidity and mortality, decreasing this burden would directly impact treatment outcomes and quality of life in children with cancer.

**PATIENT INVOLVEMENT**

As mentioned previously, we should put the child in charge. In clinical practice this would mean engaging more extensively in shared-decision making. For example, discussing the recommendations from our procedural pain CPG with the child and parents/caregivers and together design a tailor-fit strategy to approach these painful procedures.

Second, although we incorporated the perspective of the patients and parents in some phases, I believe we could and should have incorporated this perspective in more phases of the project. For instance, it would have been great to have these perspectives while prioritizing the importance of outcomes for decision-making, as patients and parents might deem other outcomes critical for decision making. Naturally there are also phases in which a similar involvement of patients and parents and clinicians is less realistic due to required specific training and/or knowledge, e.g. in appraising (quality of) studies. Enhanced involvement would also imply more extensive training of patient representatives. Standardizing methods for this involvement, benefiting from patient representatives in defining patient-reported outcome measures, and having at least one patient representative involved in every working group from the onset of the project, would in my opinion improve the value of a CPG substantially.

Research should also focus on identifying optimal tools for facilitating shared-decision making and its effects. This could for example comprise improved methods for age-appropriate information sharing, optimizing interventions to involve children who want to take part in the decision-making process, and investigating the effects shared-decision making has on treatment outcomes and quality of life in children with cancer and their families.
FUTURE PERSPECTIVES FOR CPG DEVELOPMENT

Our project led to several ideas about future perspectives specifically for CPG projects, which are not bound to the field of childhood cancer supportive care per se. I will present one of these perspectives for all of the three phases of our project.

Regarding preparation, I feel that a more standardized training to educate clinicians without previous guideline experience and patient representatives could improve the rate of progress and quality of CPG development. We chose to ad-hoc train guideline development panel members on a need-to-know basis, e.g. when entering the phase of quality appraisal, we would provide training regarding risk of bias assessment. Although this helped greatly in panel member’s understanding of the methods and in subsequent discussions, panel members might not have had a comprehensive overview of the complete development cycle. In future projects, I would provide all panel members with an initial training regarding CPG development, supplemented by short refresher courses for the then-relevant actions. This might help panel members to get even more involved and get a grasp on the full scale of the project, which I believe will contribute to both the efficiency and quality of the work. Further developing and standardizing this training and the training for patient representatives can contribute to the use of uniform, high-quality methods across CPGs. Sharing this training with other CPG development groups would prevent double work, as they could benefit from it to educate their panel members.

Regarding development, I feel there is a need for further uniformity in quality appraisal. For quality appraisal of randomized controlled trials, we used the Cochrane Risk of Bias Tool, which has very clear instructions that at first glance do not seem to provide much room for interpretation. Nevertheless, coming across various other systematic reviews and guidelines that used this tool, we saw large variations in how strictly it is applied. Recent studies confirmed that this tool is applied differently across reviews (different bias judgement for the same study) and frequently implemented in a non-recommended way.[23,24]. Therefore, I plea for an online, open access register with risk of bias judgements per study. This facilitates transparency, reproducibility, and prevents overlap of work. Naturally judgements between reviewers can still differ, but with an open platform design these differences are insightful and can be resolved by e.g. consensus.

Regarding implementation, we could benefit more from the potential of contemporary technology. In the current digital era there is a distinct opportunity to continuously remind and support clinicians in prescribing guideline-consistent care. Electronic interfaces lend themselves, for example, to integrating mouse-over hints (e.g. small messages with recommendations or justifications while moving over specific text), if-then rules (e.g. if a lumbar puncture is ordered, then show recommended pharmacological...
and psychological interventions for the specific patient), and dose calculation programs (e.g. dose based on weight). Weaving this into electronic patient record systems and exploring other technological opportunities to facilitate uptake of CPGs (e.g. smartphone applications), can contribute to successful implementation.

12.7 INDIVIDUALIZED SUPPORTIVE CARE PLAN

I believe that one of the most important steps we can take towards uniform and optimal supportive care in children with cancer, is the development of a specific individualized supportive care plan. Recommendations from supportive care CPGs can be fully integrated, facilitating further implementation. This personal supportive care plan can be drawn up shortly after diagnosis, in joint collaboration of the patient and his/her family and the pediatric oncology team. This is where it all comes together: individualized supportive care that is evidence-based and empowers the child.

In our project of developing the individualized care plan for pediatric palliative care, we found that these care plans benefit greatly from predictability. For various palliative trajectories, a treating physician can predict (based on evidence and experience) which symptoms are likely to occur. This also holds true for childhood cancer supportive care. Naturally one cannot predict the occurrence and severity of each single adverse event in a child who receives anti-cancer therapy, but we do know treatment schedules and their toxicity profiles to a large extent. For instance, a child diagnosed with acute lymphoblastic leukemia has a great chance to experience among other things nausea (due to doxorubicin administration), neuropathic pain (due to vincristine administration), and procedural pain and anxiety (due to repeated needle procedures). For the adverse effects that are most likely to occur, treatments in line with CPG recommendations can already be agreed upon, documented and prepared (e.g. providing a patient with the appropriate prescriptions or medication before neuropathic pain occurs).

One of the other major benefits of an individualized supportive care plan is the focus it puts on the wishes, needs and preferences of the child and his/her family. One of the things that was emphasized by parents and maybe even more so by survivors, was the value of autonomy and being in control. Sitting down with a child and his/her family, discussing disease trajectory and probable and possible adverse effects of treatment, providing room for personal needs and preferences (e.g. one child might find it most important to still be able to attend school, while another child might find it most important to not feel nauseous), and discussing and recording these in a clear and
transparent manner, is a great facilitator for patient empowerment, while simultaneously enhancing CPG implementation.

Developing such an individualized supportive care plan for children with cancer can contribute to improved supportive care and with that better patient outcomes.

12.8 CONCLUDING REMARKS

With the increased survival rates in children with cancer, supportive care has become more and more important. However, in current practice and research this remains a relatively underexposed field. Clinical focus should be put on improving and personalizing supportive care, as this contributes to a better quality of life, but also to increased survival rates. To facilitate optimal supportive care, we focused on development and implementation of childhood cancer supportive care clinical practice guidelines.

With this project we aimed to contribute to better care for children with cancer. I believe optimizing supportive care is the key to further improvement of survival rates, and even more so quality of life.
12.9 REFERENCES


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