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## Preface

Many of the gains in overall survival in pediatric oncology over the past 50 years have come about through the utilization of combination chemotherapy, pioneered by the work done at the National Institutes of Health by Freireich and Frei and St. Jude Children's Hospital by Pinkel in children with acute lymphoblastic leukemia (ALL) (Pearson 2002). The ALL model was subsequently expanded to the management of other pediatric malignancies through the utilization of a multimodal approach including chemotherapy, radiation therapy and surgery (Pearson 2002). Due to smaller numbers as compared to the adult cohort, advances in therapy required the utilization of cooperative group studies to develop common therapeutic protocols and secondarily assess therapy effectiveness and toxicities. The modern advancement of these early initiatives has been the utilization of hematopoietic stem cell transplantation (HSCT) in certain pediatric malignancies which are refractory or recurrent where HSCT has been shown beneficial.

Underlying the gains in survival through the progression of therapy intensiveness has been the supportive care of pediatric patients with malignancies. Many of the early pioneers found that children were able to handle intensive therapies but needed the appropriate environment as well as supportive care measures to prevent infection and treat complications of therapy such as thrombocytopenia (with subsequent bleeding), tumor lysis syndrome (with metabolic complications) and infection. Again taking the ALL model, the newest drugs to be commonly utilized were developed in the mid-1980s, stressing that the improvement in cure has come about through changing the timing and intensity of known drugs as well as through improvements in supportive care. For ALL, decrease in both relapse/disease progression and treatment-related death prior to relapse/disease progression have significantly contributed to the gains in overall survival (Gaynon et al. 2010; Hunger et al. 2012).

*Supportive care* refers to the standard of care to support a child or adolescent during the active treatment process. The art and science of anticipating, preventing and managing treatment-related complications and toxicities vary considerably by individual experience and institutional practice. The editors have chosen the topics in this book to represent some of the most common and significant challenges impacting the success of treatment for our patients, recognizing many more areas are in need of future consideration. We have asked the authors to provide an evidence-based approach utilizing a standard grading system (Table 1) in management of common complications and toxicities as well as reporting practice based on consensus guidelines and institutional experience when validated data are lacking (Guyatt et al. 2006). The chapters

**Table 1** Grading recommendations

Grade of recommendation/description	Benefit versus risk and burdens	Methodological quality of supporting evidence	Implications
1A/strong recommendation, high-quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	RCTs without important limitations or overwhelming evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1B/strong recommendation, moderate-quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1C/strong recommendation, low-quality or very low-quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	Observational studies or case series	Strong recommendation but may change when higher quality evidence becomes available
2A/weak recommendation, high-quality evidence	Benefits closely balanced with risks and burdens	RCTs without important limitations or overwhelming evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patients' or societal values
2B/weak recommendation, moderate-quality evidence	Benefits closely balanced with risks and burdens	RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patients' or societal values
2C/weak recommendation, low-quality or very low-quality evidence	Uncertainty in the estimates of benefits, risks, and burdens; benefits, risks, and burdens may be closely balanced	Observational studies or case series	Very weak recommendations; other alternatives may be equally reasonable

*RCT* randomized controlled trial  
 With permission from Guyatt et al. (2006)

herein provide tools for recognition, assessment, and effective management of commonly encountered emergencies and treatment complications for pediatric oncology patients.

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