Background: Bispecific T-cell engagers (BiTE) and CD19-specific Chimeric Antigen Receptor (CAR) T-cell products are approved for relapsed and refractory B-cell neoplasms. However, rapid disease progression and the pre-treatment workflow during manufacturing challenges several specialties of health care professionals and involves a well educated team in the in-patient and out-patient setting. In addition, CARs and BiTEs are accompanied by a new spectrum of immune related toxicities. Currently, clinical trials investigate the safety of out-patient CAR T-cell administration, requiring high-level care during the early post-infusion period. To support the optimal management of these patients, we developed the interactive smartphone application ‘myTcell’, which guides and educates physicians in the pre-treatment logistics of CARs and BiTEs and management of related toxicities.

Materials and Methods: We initiated a multi step content development process with an extensive literature research of toxicity guidelines consented by the ASTCT, SITC, NCCN and EBMT as well as of officially released drug information. Findings were translated into an information platform with diagnostic and therapeutic recommendations as well as algorithms for interactive toxicity grading tools. A prototype has been validated at five German treatment centers through a questionnaire, which measures the advantage over common guideline practice. ‘myTcell’ will become available as medical product class I for iOS, Android and desktop in Europe on 15th of July. App development has been funded through educational grants by Celgene, Gilead Sciences, Janssen and Novartis.

Results: ‘myTcell’ guides disease and product specific in a step by step process through the clinical workflow of cell therapy. This includes recommendations for patient screening, safety assessment and stopping rules prior to leukapheresis and CAR T-cell transfusion. Upon entering relevant clinical data for grading of CRS, ICANS and HLH interactive tools display T-cell transfusion. Upon entering relevant clinical data for guideline practice.

Conclusions: ‘myTcell’ has the potential to become a highly usable smartphone app supporting the application of T-cell recruiting immunotherapies as well as the assessment and treatment of novel immunotoxities. In addition, it facilitates outreach and connects treatment centers and referring physicians. Thus, ‘myTcell’ can translate into increased guideline adherence, accelerated broader and safer application of CARs and BiTEs and improved patient outcomes.

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