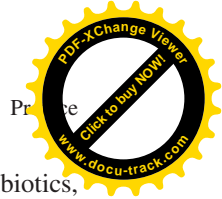
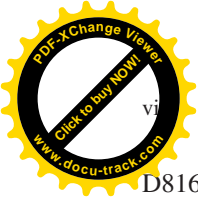


## Preface

A 2007 National Electronic Injury Surveillance System (NEISS) indicated that in the USA, 10% of the emergency room visits were due to anaphylaxis. The median age of the patients was 26 years, and 24% of the visits involved children less than 5 years of age who reacted to peanut or tree nuts. Only 19% of the patients received epinephrine and 57% of the patients presenting symptoms compatible with anaphylaxis were not recognized as having anaphylaxis upon discharge. Anaphylaxis is a recognized public health problem with increased prevalence, and yet because of its acute onset and the lack of specific biochemical markers, underrecognized and underdiagnosed. Anaphylaxis is defined as the most severe of the allergic reactions, with a rapid onset and which may cause death if prompt treatment is not installed. It occurs after exposure to an allergen in a previously healthy individual and can involve most organ systems in minutes, including the skin, gastrointestinal, respiratory, and cardiovascular systems. Death can be caused by cardiovascular collapse or laryngeal edema and asphyxiation. Allergens most commonly associated include foods with peanuts and nuts being the most frequent in children, and medications including antibiotics, monoclonals, and chemotherapy drugs such as platins and taxenes. Hymenoptera stings and exercise are well-recognized treatable causes of anaphylaxis. Mastocytosis and mast cell activation syndromes can present as anaphylaxis, and their diagnosis requires a high index of suspicion from clinicians. Recently, contaminants in pharmaceutical products have been recognized as likely triggers of hypersensitivity reactions and anaphylaxis.

The mechanisms leading to anaphylaxis relate to an individual's sensitization and the presence of specific IgE antibodies against an allergen, which can activate mast cells and basophils and release powerful inflammatory mediators. More recently, anaphylaxis has been recognized in the absence of an IgE-recognized mechanism but with identical clinical symptoms and severity such as during complement activation, kinins and bradykinins generation, and direct mast cell/basophil activation. This is important in hypersensitivity reactions to chemotherapy and monoclonal antibodies and other biological agents in which the mechanisms leading to anaphylaxis have not been elucidated. Although tryptase immunoassays have been available since 1987, they have been underutilized in emergency rooms and faster mediator assays are not available. New mediators such as PAF have been measured in patients suffering from severe peanut-induced anaphylaxis and its increased levels associated to the decrease in PAF acetyl hydrolase. A study of postmortem tryptase levels in patients who died of unidentified causes showed that in at least 20% of the cases tryptase was elevated indicating that anaphylaxis was a likely cause of death. Recognition of the early symptoms and prompt treatment with epinephrine are key to decreasing its morbidity and mortality, and anti-IgE therapy has shown to decrease the sensitivity of food allergic individuals.

The aim of this book is to fill the gaps in the recognition of the clinical presentation and triggers of anaphylaxis, the understanding of its natural history, its prevention, and the newest treatment options. The book provides up-to-date information elucidating some of its cellular, molecular, and genetic targets, including the description of a novel mast cell activation syndrome associated to c-kit



D816V mutation. Rapid desensitizations for the treatment of anaphylactic reactions to antibiotics, chemotherapy, and monoclonal antibodies is described here as the new frontier in providing first-line therapy for patients with cancer, cystic fibrosis, and other life-threatening conditions.

The audience includes clinicians, translational researchers, as well as basic researchers. The development of better diagnostic assays, less allergenic medications and biological agents, and the understanding of the pathophysiology of anaphylaxis will contribute to reduced morbidity and mortality.

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<http://www.springer.com/978-1-60327-950-5>

Anaphylaxis and Hypersensitivity Reactions

Castells, M.C. (Ed.)

2011, XIII, 361 p., Hardcover

ISBN: 978-1-60327-950-5

A product of Humana Press