

## BOOK REVIEW

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### Review of: *Karch's Pathology of Drug Abuse, 4th edition*

**REFERENCE: Karch SB. *Karch's pathology of drug abuse, 4th ed.* Boca Raton, FL: CRC Press, 2009, 709 pp.**

Dr. Karch brings us the fourth edition of his indispensable text on drug abuse, 7 years after the publication of the third edition. Many of the photographs are now printed in color, but the real prize is an additional 168 pages of information. The fourth edition contains a new chapter on marijuana. Other topics are presented with new or augmented information; the chapter on solvents, for example, includes a useful section with information on proper procedures for collecting and storing specimens in cases of solvent abuse. With the fourth edition each section on an individual drug begins with a helpful display of that drug's pharmacological data, its molecular formula, molecular weight, method of metabolism, volume of distribution, elimination half-life, known drug interactions, and so on.

Much of the increase in the fourth edition is due to the addition of discoveries in molecular biology and genetics that have altered our scientific understanding of the mechanisms by which drugs of abuse cause damage and death. In his Preface to the Fourth Edition, Dr. Karch summarizes the changes in forensic toxicology that have occurred in the past 20 years, specifically citing the role of genetic polymorphism in contributing to deaths related to methadone. The fourth edition includes information on deaths related to cocaine and other drugs as well, all succinctly

summarized by Dr. Karch, with references for additional study by the reader.

Reading the fourth edition of *Karch's Pathology of Drug Abuse* is an occasion for both despair and hope. The despair comes as Karch repeatedly shows that determining the cause of death in a given case is never as simple as looking at a blood concentration of a drug to see whether it is within some published reference range for lethality. Indeed, Karch shows that the overlap between lethal and nonlethal concentrations of drugs of abuse is often so broad as to be useless, taken purely by itself. This means that those who certify causes of death must always consider a given case in its entirety to determine the cause of death for that case, an appropriate way to practice medicine, but one with no hope for easy determinations of death caused by drugs of abuse. The hope comes from the promise of a better understanding of how drugs of abuse cause deaths. Sections 1.10 on the Electrophysiology of Sudden Death in Cocaine Abusers and 5.9.7 on Methadone provide a better understanding of how these drugs cause death and why death occurs in some individuals but not others. Clearly the day is coming when testing for genetic polymorphism will occur as part of the evaluation for a death related to drugs of abuse. Karch ends his Preface by stating that the role of DNA technology and molecular biology will become ever more important in understanding the pathology of drugs of abuse. We are fortunate to have *Karch's Pathology of Drug Abuse* to help in that understanding.

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