
A Case Approach to Perioperative Drug-Drug Interactions

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A Case Approach to Perioperative Drug-Drug Interactions

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Foreword

Drug–drug interactions (DDIs) comprise a category of medical mysteries that are, to say the least, perplexing to anesthesia providers. Despite their very real potential to cause major morbidity and even death to patients, they have generally failed to generate the sizzle of recognition associated with major discoveries in medicine. Why is this? Is it because the potential numbers of DDIs are too large or perhaps too ill-defined to stimulate anesthesia providers to care? Is it because we don't have sufficient epidemiologic studies to document the extent and severity of DDIs? Do they cause harm that is observed by individual providers so infrequently that they don't generate interest in learning about them?

All of these issues may be at play, but I suspect that many trainees and colleagues in anesthesia find there are so many hypothetical DDIs – and they personally observe any bad outcomes so infrequently – that they don't put effort into learning about them except to superficially be aware of the general concept. Is my observation real or perceived? It's hard to say for certain, but let's take the example of herbal medications and potential DDIs. Most anesthesia providers are aware that there are herbal medications that can alter drug metabolism. Ironically, because most anesthesia providers don't observe significant DDIs associated with these medications, few pay much attention to them. When major DDIs associated with herbal medications occur, they often are surprising to anesthesia providers, and more often than not, these events are written off as rarities that the providers will likely never again encounter.

I believe that past perceptions will change. DDIs matter, and they will matter more as the medical world advances. More drugs and herbal products lead to more potential DDIs. Emerging technologies and the growing spread of integrated health care-related electronic medical records offer opportunities to incorporate algorithms and other software identification pathways to warn unsuspecting anesthesia providers of potential DDIs. It would be so simple to have an electronic screen warning displayed whenever a potential DDI-associated medication was part of a patient's care.

Even in this advanced health care world, anesthesia providers will have to be able to understand basic DDI issues. That's where this wonderful new text becomes

valuable. The unique use of case studies and subsequent detailed chapters provide anesthesia providers with several ways, both entertaining and scientific, to learn more about these increasingly important DDI issues. Ultimately, the outcomes of our patients are at stake, and the safe care of our patients is why we are anesthesia providers. Congratulations to the team for putting together such an outstanding and valuable resource for our patients and their providers.

Mark A. Warner, MD

Preface

What do you want me to do?

To watch for you while you're sleeping?

Well please don't be surprised

When you find me dreaming too.

—Robert Hunter

Anesthesia providers rest their notion of safe, quality care on constant and inquisitive vigilance. In the operating room, we react and change anesthetic parameters to subtle changes in the pitch of the pulse oximeter signal, the sound of the ventilator or respiratory circuit, the look of the blood in the surgical field, the tone of voice around the operating table, or any other of a thousand cues in a complex environment. We believe that this attention to detail serves our patients and improves outcomes, and we fear missing something big – metaphorically, being caught sleeping.

Yet those of us who have focused on the perioperative implications of drug–drug interactions (DDIs) frequently describe our introduction to the field as having our eyes opened, of being “turned on” to something new and important. Although DDIs occur frequently in both inpatients and outpatients and are often morbid or even mortal, most of us rely daily on knowledge of pharmacodynamic interactions (eg. two drugs affecting the same receptor) and rarely consider DDIs as potential sources of harm to the patient.

It is time for all of us to wake up to DDIs. Indeed, in this era of 80-hour work-weeks for medical trainees, many of us owe our arousability to a single DDI. The phenelzine-meperidine DDI that killed young Libby Zion directly led to the adoption of work hour restrictions – and better sleeping and waking for a generation of resident physicians.

We hope this book will be a gentle, comprehensive introduction to an important concept. We have chosen a case-based format to introduce potentially dry concepts, with each case backed by referenced discussion and take-home points. None of the cases presented here are based on hypotheticals from *in vitro* data alone. Particularly

severe interactions are highlighted as the “**Fatal Forty**.” In addition, however, detailed mechanistic chapters cover important concepts in depth, offering a second level of knowledge for the interested reader. Finally, comprehensive tables are clearly separated from the text and easily found in the back of the book, allowing use of this book as a reference as well. If you just want to get started now, flip to the cases and read at random. I am confident they will pique your curiosity and start you on a path. If not, there is a more comprehensive “how to use this book” chapter immediately following this preface. Regardless of how you use the book, we welcome you to a fascinating and complex new world and wish you and your patients pleasant awakenings.

Michael P. Hutchens, MD

Acknowledgments

This book is being given as a gift to the Foundation for Anesthesia Education and Research (FAER) and to the national and international anesthesia communities. It is our belief that increased awareness, knowledge, and insight regarding the drug–drug interactions we face in the practice of anesthesiology and perioperative medicine will result in safer and better care for patients.

The project has required an enormous and sustained effort. Many individuals, including anesthesiologists, anesthesiologists, pharmacologists, pharmacists, and other clinicians, have generously given their time and energy to research and write the case scenarios. We are grateful for these contributions.

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Catherine Marcucci, MD

Contents

Part I. Introduction to Drug–Drug Interactions

1. **Let’s Start at the Very Beginning: Overcoming Fear and Gaining Mastery of Drug–Drug Interactions** 3
F. Jacob Seagull PhD, Christopher E. Swide MD, and Catherine Marcucci MD
2. **Pharmacodynamic Interactions: Core Concepts** 9
Erica D. Wittwer MD PhD and Wayne T. Nicholson MD PharmD MSc
3. **Pharmacokinetic Interactions: Core Concepts** 15
Erica D. Wittwer MD PhD and Wayne T. Nicholson MD PharmD MSc
4. **A Brief Treatise on the Area Under the Curve** 23
Michael J. Sikora MD and Barbara Jericho MD

Part II. Introduction to Drug–Drug Interactions: Brief Review of Cytochrome P450 (CYP450) Enzymes, Uridine 5'-diphosphoglucuronosyltransferases (UGTs), and Transporters

5. **CYP2D6: Where It All Began** 29
John C. Sanders MBBS FRCA, Rachel Koll MD, and Randal O. Dull MD PhD
6. **CYP2E1: The Anesthesia Enzyme** 33
Benjamin S. Gmelch MD and Randal O. Dull MD PhD
7. **CYP3A4: The Workhorse** 37
Jennifer DeCou MD, Nathaniel Birgenheier MD, and Randal O. Dull MD PhD

8. CYP1A2: The Switch-hitter	41
<i>Danielle Roussel MD, Emily Hagn MD, and Randal O. Dull MD PhD</i>	
9. CYP2B: 2B or Not 2B?	45
<i>Dustin Coyle MD and Randal O. Dull MD PhD</i>	
10. CYP2C9: The Support Crew I	49
<i>Byron Douglas Ferguson MD, Crystal B. Wallentine MD, and Randal O. Dull MD PhD</i>	
11. CYP2C19: The Support Crew II	53
<i>Barbara Jericho MD, Alfredo Aguiar MD, and Randal O. Dull MD PhD</i>	
12. Uridine 5'-diphospho-glucuronosyltransferases (UGTs): Conjugating Cousins	57
<i>Neil B. Sandson MD</i>	
13. The Cytochrome P450 System in Disease States—A Brief Review . .	61
<i>Catherine Marcucci MD</i>	
 Part III. Drug–Drug Interactions: Paradigms and Core Concepts	
14. P-glycoprotein and Organic Anion-transporting Polypeptide (OATP) Transporters	67
<i>Dustin Coyle MD, Erica D. Wittwer MD PhD, and Juraj Sprung MD PhD</i>	
15. The “Fatal Forty”	73
<i>Neil B. Sandson MD, Michael P. Hutchens MD, F. Jacob Seagull PhD, and Catherine Marcucci MD</i>	
16. The Six Patterns of Pharmacokinetic Drug–Drug Interactions . .	81
<i>Neil B. Sandson MD and Catherine Marcucci MD</i>	
17. The Problem with the Drug–Drug Interaction Software: A Procrustean Dilemma	87
<i>Neil B. Sandson MD, F. Jacob Seagull PhD, Wayne T. Nicholson MD PharmD MSc, and Catherine Marcucci MD</i>	
18. Pharmacogenomics	93
<i>Chad D. Moore PhD, William Hartman MD PhD, Michael P. Hutchens MD, and Randal O. Dull MD PhD</i>	
19. The Pharmacoepidemiology of Drug Interactions: Why and How They Are Important	103
<i>Joseph A. Lovely PharmD BCPS, Stephen Esper MD MBA, Michael P. Hutchens MD, Wayne T. Nicholson MD PharmD MSc, and Catherine Marcucci MD</i>	

- 20. The Lawyers Can Read, Too: Cases from the Courtroom 109**
Jessica Voge MD and David K. Miller JD

Case #1: Really Tragic

Case #2: Disaster After Day Surgery—Hydrocodone and Prednisone

Case #3: A Truly Awful Fentanyl Patch Outcome

Part IV. Drug–Drug Interactions Involving Inhalational Anesthetic Agents

- 21. Introduction 117**
Catherine Marcucci MD

- 22. That Sums It Up. 119**
 Inhalational anesthetics, additive minimum alveolar concentration (MAC)
James A. Jernigan MD and James W. Ibinson MD PhD

- 23. 1+1+1+1=? 123**
 Variable effects of combined substances
Anthony T. Silipo DO, Raymond M. Planinsic MD, Erica D. Wittwer MD PhD, Juraj Sprung MD PhD, and Wayne T. Nicholson MD PharmD MSc

- 24. A Delayed Surgeon Is a Dismayed Surgeon 129**
 Nitrous oxide, dexmedetomidine, somatosensory evoked potentials
Jonathan Anson MD

- 25. Relax, It's Only Gentamicin 133**
 Inhalational anesthetics, aminoglycoside antibiotics, neuromuscular junction
Brian Gierl MD and Ferenc E. Gyulai MD

- 26. Jaundice After Surgery 137**
 Halothane hepatitis, CYP2E1
Jonathon E. Kivela MD, Toby N. Weingarten MD, and Juraj Sprung MD PhD

- 27. Everybody Clear? 141**
 Halothane, epinephrine, arrhythmia
Nikhli Patel MD, Barbara Jericho MD, and Randal O. Dull MD PhD

- 28. The Hemodynamic Hole 145**
 General anesthetics, angiotension-converting enzyme inhibitors (ACE-Is), angiotensin II receptor blockers (ARBs)
Arun L. Jayaraman MD PhD and Theresa A. Gelzinis MD

- 29. Alpha-2 to the Rescue but Beware Bradycardia.** 149
 Inhalational anesthetics, α_2 -agents
Phillip Adams DO and Nashaant N. Rizk MD
- 30. Hot Stuff!** 155
 Triggering drugs, ryanodine receptor, malignant hyperthermia
Cornelius B. Groenewald MD ChB and Juraj Sprung MD PhD

Part V. Drug–Drug Interactions Involving Intravenous Anesthetic Agents

- 31. Introduction** 163
Catherine Marcucci MD
- 32. How to Successfully Occlude an Intravenous Line.** 165
 Thiopental, rocuronium, line precipitation
*Helga Komen MD, Juraj Sprung MD PhD
 and Toby N. Weingarten MD*
- 33. A Curious Cause of Seizures.** 169
Fatal Forty DDI: ketamine, theophylline
Charles Galaviz MD and Randal O. Dull MD PhD
- 34. Magnesium Mama and the Mad Dad** 173
 Magnesium sulfate, propofol, remifentanyl, vecuronium
*Ana Maria Manrique MD, Catherine Marcucci MD,
 and Kathirvel Subramaniam MD*
- 35. Dexy’s Midnight Spinal.** 179
 Dexmedetomidine, bupivacaine spinal, multiple mechanisms,
 CYP3A4, CYP2D6
*Michael P. Hutchens MD, Edward A. Kahl MD,
 and Matthias J. Merkel MD PhD*

Part VI. Drug–Drug Interactions Involving Local Anesthetics

- 36. Introduction** 185
Catherine Marcucci MD
- 37. Comfortably Numb** 187
 Local anesthetics
Joseph J. Yurigan DO and Todd M. Oravitz MD
- 38. Naturally Occurring and Nasty** 193
 Cocaine, propranolol
Lauren Partyka MD and Li Meng MD MPH
- 39. LOL-LOL: Little Old Lady—Lots of Lido.** 199
 Lidocaine, bupivacaine
*Kitling M. Lum BSN RN CCRN-CSC
 and Kelly N. Stafford BSN RN CCRN-CSC*

40. The Spinal Countdown	203
General anesthesia after spinal anesthesia	
<i>Audra M. Webber MD and Franklyn P. Cladis MD FAAP</i>	
41. Are Drug–Drug Interactions The Smoking Guns of Local Anesthetic Toxicity? Smoking Gun I	207
Fatal Forty DDI: ropivacaine, fluoxetine, CYP1A2, CYP3A4	
<i>L. Michele Noles MD</i>	
42. Are Drug–Drug Interactions The Smoking Guns of Local Anesthetic Toxicity? Smoking Gun II	211
Bupivacaine, methocarbamol	
<i>L. Michele Noles MD</i>	
43. A Perfect Storm?	215
Fatal Forty DDI: omeprazole, nicardipine, diltiazem, bupivacaine, CYP3A4, CYP2C19, CYP2D6	
<i>J. Andrew Dziewit MD and Nabil M. Elkassabany MD</i>	
44. Shake Rattle and Roll	219
Fatal Forty DDI: lidocaine, cimetidine, CYP3A4	
<i>Hans P. Sviggum MD and Juraj Sprung MD PhD</i>	
45. Hello, We Have a Patient With Acute Delirium and We Need an Urgent Psych Consult	223
Lidocaine, metoprolol	
<i>Katarina Bojanić MD, Juraj Sprung MD PhD, and Toby N. Weingarten MD</i>	
46. Fatal Pain Relief	229
Local anesthetics, intrathecal morphine	
<i>Matthew M. Kumar MD and Richard Levi Boortz-Marx MD MS</i>	
47. Lipid Lifesaver	233
Local anesthetic, lipid emulsion	
<i>Adrian Pichurko MD and Guy Weinberg MD</i>	

Part VII. Drug–Drug Interactions Involving Opioids

48. Introduction	239
<i>Toby N. Weingarten MD</i>	
49. No ‘Subs’titute for Sobriety	241
Buprenorphine, μ -agonist opioids	
<i>James Hilliard MSN CRNA and Kirk Lalwani MD FRCA MCR</i>	
50. A Needle and the Damage Done	245
Fatal Forty DDI: buprenorphine, ritonavir, CYP3A4	
<i>James Hilliard MSN CRNA and Kirk Lalwani MD FRCA MCR</i>	

51. Dad's Not Having Much Pain	249
Fatal Forty DDI: methadone, ciprofloxacin, CYP3A4 <i>Rani Chovatiya MD, Mehmet S. Ozcan MD FCCP, and Randal O. Dull MD PhD</i>	
52. Royal Flush	253
Fatal Forty DDI: methadone, nortriptyline, CYP2D6, CYP3A4 <i>Kimberly Mauer MD, Catherine Marcucci MD, and Neil B. Sandson MD</i>	
53. The Worry That's Always With Us: Afternoon Nap	257
Oxycodone, diazepam <i>Syed M. Quadri DO and Randal O. Dull MD PhD</i>	
54. The Bawling Baby	261
Fatal Forty DDI: rifampin, methadone, CYP3A4, CYP2B6 <i>Angela Kendrick MD</i>	
55. Sleeping Beauty	265
Fatal Forty DDI: fentanyl, ritonavir, CYP3A4 <i>Hans P. Sviggum MD and Juraj Sprung MD PhD</i>	
56. Codeine Can't Do It	269
Fatal Forty DDI: codeine, fluoxetine, CYP2D6 <i>Katarina Bojanić MD, Wayne T. Nicholson MD PharmD MSc, Erica D. Wittwer MD PhD, Toby N. Weingarten MD, and Juraj Sprung MD PhD</i>	
57. A Shuddering Interaction	275
Meperidine, phenelzine, serotonin toxicity <i>Christine A. Kenyon Laundre MD, Randall Flick MD, and Juraj Sprung MD PhD</i>	
58. Double Indemnity	281
Fatal Forty DDI: morphine, rifampin, P-glycoprotein <i>Lisa Chan MD, Catherine Marcucci MD, Neil B. Sandson MD, and Kirk Lalwani MD FRCA MCR</i>	
59. Breaking the Codeine	285
Fatal Forty DDI: codeine, quinidine, CYP2D6 <i>Clint Christensen MD, Nathan G. Orgain MD, and Randal O. Dull MD PhD</i>	
60. The Ultimate Ultram Primer I: My Mood Is Better, but Boy Do I Hurt!	289
Fatal Forty DDI: tramadol, paroxetine, CYP2D6 <i>Toby N. Weingarten MD and Juraj Sprung MD PhD</i>	

- 61. The Ultimate Ultram Primer II: I “Haight” Narcotics, but I Hate Seizures More** 293
Fatal Forty DDI: tramadol, bupropion, CYP2D6, seizures
Bruce T. Dumser MD and Neil B. Sandson MD
- 62. The Ultimate Ultram Primer III: Tremor-dol Trigger in Serotonin Syndrome** 297
Fatal Forty DDI: tramadol, paroxetine, CYP2D6, serotonin syndrome
Bryan C. Hoelzer MD and Stephanie Neuman MD
- 63. Too Much of a Good Thing** 303
Fatal Forty DDI: codeine, drug–gene interaction, CYP2D6
Erica D. Wittwer MD PhD, Juraj Sprung MD PhD, and Wayne T. Nicholson MD PharmD MSc

Part VIII. Drug–Drug Interactions Involving Nonopioid Pain Medications

- 64. Introduction** 311
Toby N. Weingarten MD
- 65. Pining for Pete in the Pain Clinic** 313
Fatal Forty DDI: nortriptyline, paroxetine, CYP2D6
Steven S. Liu MD, Toby N. Weingarten MD, and Catherine Marcucci MD
- 66. You Do Not Look Well Today, Mon Ami** 317
Fatal Forty DDI: amitriptyline, amiodarone, QRS widening
Kimberly Mauer MD, Catherine Marcucci MD, and Neil B. Sandson MD
- 67. My Headache Is Gone, But My Leg Now Hurts** 321
Fatal Forty DDI: methysergide, erythromycin, CYP3A4
Jessica D. Lorenz MD, Juraj Sprung MD PhD, and Wayne T. Nicholson MD PharmD MSc
- 68. Special ‘K’ase** 327
 Oral S-ketamine, ticlopidine
Lisa Chan MD and Kirk Lalwani MD FRCA MCR
- 69. Not Manic About NSAIDS** 331
Fatal Forty DDI: ketorolac, lithium, toxicity
Allen N. Gustin MD FCCP and Michael J. Bishop MD
- 70. Keep It Capped!** 335
 Acetaminophen, ethanol
Christine M. Formea PharmD BCPS and Wayne T. Nicholson MD PharmD MSc

71. The ACE Is Not Always High	339
Fatal Forty DDI: ketorolac, lisinopril	
<i>Wayne T. Nicholson MD PharmD MSc</i>	
72. When the Smoke Clears, Relaxation Disappears	343
Fatal Forty DDI: cyclobenzaprine, smoked tobacco, CYP1A2	
<i>Avinash Ramchandani MD and Julio A. Gonzalez-Sotomayor MD</i>	
73. Befuddled by Aspirin	347
Fatal Forty DDI: aspirin, valproic acid, protein binding	
<i>Melisa N. Weingarten RN MS, Juraj Sprung MD PhD,</i> <i>and Toby N. Weingarten MD</i>	
74. You Can't Trick Us!	351
Fatal Forty DDI: ibuprofen, phenytoin, CYP2C9, protein binding	
<i>Catherine Marcucci MD and Neil B. Sandson MD</i>	

Part IX. Drug–Drug Interactions Involving Benzodiazepines and Other Sedatives

75. Introduction	357
<i>Catherine Marcucci MD</i>	
76. The Worry That's Always With Us: Now I'm Depressed	359
Benzodiazepines, opioids, propofol	
<i>Kelly T. Peretich MD and Raymond M. Planinsic MD</i>	
77. The Worry That's Always With Us: Tragic but Not Rare	363
Alprazolam, clonazepam, and buprenorphine	
<i>Phillip Adams DO and Ibtesam A. Hilmi MB CHB FRCA</i>	
78. Lack of Sedation	369
Fatal Forty DDI: midazolam, carbamazepine, CYP3A4	
<i>Erica D. Wittwer MD PhD, Juraj Sprung MD PhD,</i> <i>and Wayne T. Nicholson MD PharmD MSc</i>	
79. A Cold Isn't Going to Slow Me Down	373
Midazolam, goldenseal, CYP3A4, CYP3A5, CYP2D6	
<i>Leelee Thames MD and Jessica Miller MD</i>	
80. Her Patients Never Wake Up on Time	377
Fatal Forty DDI: midazolam, diltiazem, alfentanil, CYP3A4, CYP3A5, CYP3A7	
<i>Toby N. Weingarten MD, Erica D. Wittwer MD PhD,</i> <i>and Wayne T. Nicholson MD PharmD MSc</i>	
81. When Enough Is Now Too Much	381
Fatal Forty DDI: midazolam, itraconazole, CYP3A4	
<i>Erica D. Wittwer MD PhD, Juraj Sprung MD PhD,</i> <i>and Wayne T. Nicholson MD PharmD MSc</i>	

82. The Distressed Daughter	385
Fatal Forty DDI: alprazolam, carbamazepine, CYP3A4	
<i>Jennifer Egan MD, Kirk Lalwani MD, and Catherine Marcucci MD</i>	
83. Check Check and Double Check	389
Fatal Forty DDI: diazepam, fluvoxamine, CYP3A4, CYP2C19	
<i>Catherine Marcucci MD and Neil B. Sandson MD</i>	
84. Doggone It—The Case Is Cancelled	393
Fatal Forty DDI: midazolam, lopinavir/ritonavir, CYP3A4	
<i>Erica D. Wittwer MD PhD, Wayne T. Nicholson MD PharmD Msc, Corinne Wisdo DPM, and Catherine Marcucci MD</i>	
85. Noct’ Out	397
Fatal Forty DDI: chloral hydrate, phenobarbital, furosemide	
<i>Michael Wollenberg MD and Kirk Lalwani MD FRCA MCR</i>	
86. Predisposed to Doze	401
Promethazine, CYP2D6 poor metabolizer	
<i>Erica D. Wittwer MD PhD, Juraj Sprung MD PhD, and Wayne T. Nicholson MD PharmD MSc</i>	
87. Synergistic Sedation	405
Fatal Forty DDI: midazolam, clozapine, synergism	
and clozapine, sertraline, CYP2D6	
<i>Michael P. Hutchens MD, Paul Schipper MD FACS FACCP, and Catherine Marcucci MD</i>	

Part X. Drug–Drug Interactions Involving Neuromuscular Blockade Agents

88. Introduction	411
<i>David G. Metro MD</i>	
89. Blocked Again: Effects of Repeated Doses of Succinylcholine	413
Succinylcholine, repeated doses	
<i>Matthew Patrick Feuer MD and Thomas M. Chalifoux MD</i>	
90. Irreversibility Sux	417
Succinylcholine, neostigmine	
<i>Joseph C. Shy MD and David G. Metro MD</i>	
91. Keep an “Ion” the Twitches	421
Magnesium, neuromuscular blockade	
<i>Brian Gierl MD and Ferenc E. Gyulai MD</i>	
92. A Reversal of Misfortune	425
Neostigmine, glycopyrrolate	
<i>Thomas N. Talamo MD and Richard J. Kuwik MD</i>	

93. Stop Moving	429
Fatal Forty DDI: vecuronium, phenytoin	
<i>Michael D. Olson PA-C and Randall Flick MD</i>	
94. There's Just Not Enough Roc in the World	433
Fatal Forty DDI: rocuronium, carbamazepine	
<i>Tammara S. Goldschmidt MD and Randal O. Dull MD PhD</i>	
95. Slow Sux I: A Lengthy Wake-up Period After Electroconvulsive Therapy	437
Succinylcholine, atypical plasma cholinesterase	
<i>Jennifer A. Rabbits MB ChB and Juraj Sprung MD PhD</i>	
96. Slow Sux II: I Remember Reviewing This for the Boards	443
Succinylcholine, atypical plasma cholinesterase	
<i>Andrew Oken MD and Scott Richins MD</i>	
97. Slow Sux III: Where Did the Twitches Go?	449
Succinylcholine, donepezil, atypical pseudocholinesterase	
<i>Katarina Bojanić MD, Juraj Sprung MD PhD,</i> <i>and Toby N. Weingarten MD</i>	
98. Weakened All Weekend	455
Vecuronium, amikacin	
<i>Daniel W. Johnson MD</i>	
99. The Patient Who Could Not Raise Her Head	459
Vecuronium, gentamicin	
<i>Nicole L. Varela MD, Toby N. Weingarten MD,</i> <i>and Juraj Sprung MD PhD</i>	
100. An Unexpected Wait	463
Pancuronium, mivacurium	
<i>Michael W. Best MD and Shawn T. Beaman MD</i>	
101. Diabolical Cough Syrup	467
Rocuronium, pholcodine	
<i>Melisa N. Weingarten RN MS, Juraj Sprung MD PhD,</i> <i>and Toby N. Weingarten MD</i>	

Part XI. Drug–Drug Interactions Involving Antibiotics and Antifungals

102. Introduction	473
<i>Catherine Marcucci MD</i>	
103. Full Stop	475
Ceftriaxone, calcium	
<i>Norah Janosy MD</i>	
104. Flummoxed by the FLOX	479
Fatal Forty DDI: ciprofloxacin, tizanidine, CYP1A2	
<i>Janice Kim MD</i>	

105. Tales of Terror	483
Fatal Forty DDI: ciprofloxacin, simvastatin, CYP3A4 <i>Arun Subramanian MBBS and Juraj Sprung MD PhD</i>	
106. Too Low To Go	487
Fatal Forty DDI: erythromycin, nifedipine, CYP3A4 <i>Catherine Marcucci MD and Neil B. Sandson MD</i>	
107. A Fungal Story	491
Fatal Forty DDI: fluconazole, phenytoin, CYP2C9, CYP2C19 <i>Jerusha Taylor PharmD BCPS and Ansgar M. Brambrink MD PhD</i>	
108. Rejection Protection Turned Kidney Killer	495
Fatal Forty DDI: voriconazole, tacrolimus, CYP3A4, P-glycoprotein <i>Erica D. Wittwer MD PhD, Juraj Sprung MD PhD, and Christine M. Formea PharmD BCPS</i>	
109. Can't Get Well	501
Fatal Forty DDI: itraconazole, budesonide, CYP3A4 <i>Michael J. Sikora MD, Barbara Jericho MD, and Randal O. Dull MD PhD</i>	
110. Linezolid (I): Be "VREy" Careful	505
Fatal Forty DDI: linezolid, bupropion <i>Bruce T. Dumser MD</i>	
111. Linezolid (II): Hyper and Hot	509
Linezolid, meperidine, serotonin syndrome <i>Erica D. Wittwer MD PhD, Toby N. Weingarten MD, and Juraj Sprung MD PhD</i>	
112. Not Sweet At All	513
Fatal Forty DDI: trimethoprim/sulfamethoxazole, glipizide, CYP2C9 <i>Mayumi Horibe MD and Michael J. Bishop MD</i>	
113. Where Did All the Sugar Go?	517
Fatal Forty DDI: levofloxacin, glyburide, complex interaction <i>Nicole L. Varela MD, Federica Scavonetto MD, Toby N. Weingarten MD, and Juraj Sprung MD PhD</i>	
114. Exposed! (Part 1)	521
Fatal Forty DDI: rifampin, buspirone, CYP3A4 <i>L. Michele Noles MD and Catherine Marcucci MD</i>	
115. Exposed! (Part 2)	525
Fatal Forty DDI: rifampin, ondansetron, CYP3A4 <i>L. Michele Noles MD and Catherine Marcucci MD</i>	
116. Seizures on 5 West	527
Carbapenem, valproic acid, P-glycoprotein, UGT <i>Elizabeth Duggan MD and Nabil M. Elkassabany MD</i>	

Part XII. Drug–Drug Interactions Involving Cardiovascular Medications

117. Introduction	533
<i>Michael P. Hutchens MD</i>	
118. Riding the Rollercoaster	535
Nitroglycerine, sodium nitroprusside, propofol <i>Catherine Marcucci MD, Erica D. Wittwer MD PhD, and Juraj Sprung MD PhD</i>	
119. A Pressing Need for Vasopressin!	539
ACE-Is, general anesthesia <i>Erin B. Payne MD and Anna Dubovoy MD</i>	
120. Too Young to Die	543
Fatal Forty DDI: bupropion, pseudoephedrine, pharmacodynamic interaction <i>Catherine Marcucci MD</i>	
121. A Widening Gyre	547
Epinephrine, phosphorus, insulin <i>Edward A. Kahl MD and Michael P. Hutchens MD</i>	
122. Misusing Mom’s Meds	551
Chronic amphetamine, indirect-acting sympathomimetics <i>Pulsar Li DO and Steven L. Orebaugh MD</i>	
123. If the Patient Has No Renal Failure, Why Is Her Potassium So High?	555
Candesartan, spironolactone <i>Jennifer A. Rabbitts MB ChB, Wayne T. Nicholson MD PharmD MSc, and Juraj Sprung MD PhD</i>	
124. Prazosin and the PTSD Paratrooper	563
Prazosin, tadalafil <i>Allen N. Gustin MD FCCP and Michael J. Bishop MD</i>	
125. Nicardipine Notes	569
Fatal Forty DDI: nicardipine, tacrolimus, CYP3A4 <i>Nenna Nwazota MD and Randal O. Dull MD PhD</i>	
126. Hypotension Harry	573
Fatal Forty DDI: nicardipine, clarithromycin, CYP3A4 <i>Matthew Hart MSN CRNA, Bryan J. Read MSN CRNA, Wayne T. Nicholson MD PharmD MSc, and Toby N. Weingarten MD</i>	

127. Too Slow to Flow	577
CYP2D6 ultraslow metabolism of metoprolol	
<i>Scott W. Cantwell MD, Toby N. Weingarten MD,</i> <i>and Juraj Sprung MD PhD</i>	
128. Better Sleep but Slower Heart	581
Metoprolol, diphenhydramine, CYP2D6	
<i>Erica D. Wittwer MD PhD and Juraj Sprung MD PhD</i>	
129. Extreme Blood Pressure After Ephedrine: Should We Rule Out Pheochromocytoma?	585
Ephedrine, selegiline	
<i>Erica D. Wittwer MD PhD, Juraj Sprung MD PhD,</i> <i>and Wayne T. Nicholson MD PharmD MSc</i>	
130. Heart-Stopping Treatment	589
Fatal Forty DDI: verapamil, erythromycin, CYP3A4	
<i>Erica D. Wittwer MD PhD, Toby N. Weingarten MD,</i> <i>and Juraj Sprung MD PhD</i>	
131. Induction Crashes: Are There Clues in the Ashes?	593
Fatal Forty DDI: theophylline, smoked tobacco, CYP1A2	
<i>Dawn L. Baker MD MS and L. Lazarre Ogden MD</i>	
132. The Wakeup Call: 2AM Trauma	597
β -blockers, cocaine	
<i>Devin C. Tang MD and Nabil M. Elkassabany MD</i>	
133. Falling Down	601
Fatal Forty DDI: nifedipine, fluoxetine, CYP3A4	
<i>Scott Kennedy MD and Norman A. Cohen MD</i>	
134. A Hidden Drug	605
Fatal Forty DDI: diltiazem, sildenafil, CYP3A4 and sildenafil, nitroglycerin	
<i>Helga Komen MD, Toby N. Weingarten MD,</i> <i>and Juraj Sprung MD PhD</i>	
135. I'm Listening, I'm Listening	611
Fatal Forty DDI: diltiazem, carbamazepine, CYP3A4	
<i>Catherine Marcucci MD, Jerusha Taylor PharmD BCPS,</i> <i>Ansgar M. Brambrink MD PhD, and Neil B. Sandson MD</i>	
136. Jump Start My Heart	615
Fatal Forty DDI: metoprolol, amiodarone, CYP2D6, CYP1A2	
<i>Katarina Bojanić MD, Juraj Sprung MD PhD,</i> <i>and Toby N. Weingarten MD</i>	

137. The Statin Trilogy (I): ‘Statin’ from the Beginning	619
Fatal Forty DDI: simvastatin, cimetidine, diltiazem, CYP3A4	
<i>Brian Mitchell MD</i>	
138. The Statin Trilogy (II): Tripped and Fell at the Train ‘Statin’ . . .	623
Fatal Forty DDI: simvastatin, itraconazole, CYP3A4	
<i>Brian Mitchell MD</i>	
139. The Statin Trilogy (III): Welcome to the United ‘Statins’ of America.	627
Fatal Forty DDI: atorvastatin, phenytoin, CYP3A4	
<i>Brian Mitchell MD</i>	
140. Be Still, My Beating Heart	631
Fatal Forty DDI: amiodarone, digoxin, P-glycoprotein	
<i>Branka Polić MD MSc, Julije Meštrović MD PhD,</i>	
<i>Toby N. Weingarten MD, and Juraj Sprung MD PhD</i>	
141. The Nice Niece	637
Fatal Forty DDI: digoxin, St. John’s wort, CYP3A4, P-glycoprotein	
<i>Michael P. Hutchens MD and Catherine Marcucci MD</i>	
142. Cyclo Killer: Qu’est-ce que c’est?	641
Carvedilol, cyclosporine, P-glycoprotein	
<i>Jeff Chen MD, Michael P. Hutchens MD,</i>	
<i>and Wayne T. Nicholson MD PharmD MSc</i>	
143. Blurry-Eyed with Rapid Heart Beats	645
Fatal Forty DDI: digoxin, hydrochlorothiazide	
<i>William A. Shakespeare MD and Juraj Sprung MD PhD</i>	
 Part XIII. Drug–Drug Interactions Involving Coagulation Modifiers	
144. Introduction	651
<i>Catherine Marcucci MD</i>	
145. Seize the Day	653
Fatal Forty DDI: tranexamic acid, furosemide, ibuprofen	
<i>Roman M. Sniecinski MD, Erica D. Wittwer MD PhD,</i>	
<i>Kenichi Tanaka MD MSc, and James Zaidan MD</i>	
146. The Third and Final Complication	657
Fatal Forty DDI: warfarin, nafcillin	
<i>Daniel W. Johnson MD</i>	
147. An Interaction with the Furniture	661
Fatal Forty DDI: warfarin, metronidazole, ciprofloxacin,	
CYP2C9, CYP1A2	
<i>Heather Norvelle PharmD BCPS and Ines P. Koerner MD PhD</i>	

148. Macrolide Mishap for Little Miss Muffett	665
Fatal Forty DDI: warfarin, clarithromycin, CYP2C9	
<i>Elizabeth Pedigo MD</i>	
149. From Asymptomatic to Symptomatic: A Cause of Nosebleed . . .	669
Fatal Forty DDI: warfarin, amiodarone, CYP2C9	
<i>Joško Markić MD MSc, Julije Meštrović MD PhD,</i> <i>and Juraj Sprung MD PhD</i>	
150. The Consequences of Not Following a Cardiac Diet	675
Fatal Forty DDI: clopidogrel, omeprazole, CYP2C19	
<i>Kristen B. McCullough PharmD BCPS BCOP</i> <i>and Wayne T. Nicholson MD PharmD MSc</i>	
151. Clopidogrel (I): Bagel Brunch	681
Fatal Forty DDI: clopidogrel, omeprazole, CYP2C19	
<i>Ann Marie Canelas MD and Randal O. Dull MD PhD</i>	
152. Clopidogrel (II): Conferring over the Kung Pao	685
Clopidogrel, proton pump inhibitors, calcium channel blockers, CYP2C19, CYP3A4	
<i>Catherine Marcucci MD and Neil B. Sandson MD</i>	

Part XIV. Drug–Drug Interactions Involving Immunosuppressants, Antiemetics, and Chemotherapy

153. Introduction	691
<i>Catherine Marcucci MD</i>	
154. Beaned	693
Fatal Forty DDI: diltiazem, tacrolimus, CYP3A4, P-glycoprotein	
<i>Matthew Hart MSN CRNA and Michael P. Hutchens MD</i>	
155. Addisonian Adjustment	697
Fatal Forty DDI: prednisone, fluconazole, CYP3A4	
<i>Catherine Marcucci MD and Neil B. Sandson MD</i>	
156. Tea Time	701
Fatal Forty DDI: St. John's wort, tacrolimus, cyclosporine, CYP3A4, P-glycoprotein	
<i>Nikki Jaworski MD</i>	
157. No Fits at Uffizi	705
Fatal Forty DDI: phenytoin, cyclosporine, CYP3A4	
<i>Michael P. Hutchens MD</i> <i>and Christine M. Formea PharmD BCPS</i>	

158. Quit Steroids Quit Kidneys	709
Steroids, tacrolimus, CYP3A, P-glycoprotein <i>Toby N. Weingarten MD, Wayne T. Nicholson MD PharmD MSc, and Christine M. Formea PharmD BCPS</i>	
159. The Fall Guy (I)	713
Fatal Forty DDI: tamoxifen, metoclopramide, CYP2D6 <i>Catherine Marcucci MD and Neil B. Sandson MD</i>	
160. The Fall Guy (2)	717
Fatal Forty DDI: tamoxifen, diphenhydramine, CYP2D6 <i>Catherine Marcucci MD and Neil B. Sandson MD</i>	
161. The Topic of the Day	721
Fatal Forty DDI: cimetidine, lidocaine, CYP1A2, CYP3A4 <i>Catherine Marcucci MD</i>	
162. Bounce Back	725
Ondansetron, CYP2D6 ultra-rapid metabolism <i>Erica D. Wittwer MD PhD, Wayne T. Nicholson MD PharmD MSc, and Juraj Sprung MD PhD</i>	
163. Call the Cath Lab!	729
Fatal Forty DDI: omeprazole, clopidogrel, CYP2C19 <i>Anna Dubovoy MD and Erin B. Payne MD</i>	
164. The Imatinib Inquiry: A Theoretical Case (for Now)	733
Imatinib, metoprolol, midazolam, fentanyl, CYP3A4 <i>Stephen J. Gleich MD, Erica D. Wittwer MD PhD, Juraj Sprung MD PhD, and Nicole Henwood MD</i>	
165. A HAART-breaking Tale	737
Metformin, tenofovir <i>Dean Laochamroonvorapongse MD and Kirk Lalwani MD FRCA MCR</i>	

Part XV. Drug–Drug Interactions Involving Neuropsychiatric Drugs

166. Introduction	743
<i>Neil B. Sandson MD</i>	
167. Phenytoin (I): Going Crazy!	745
Fatal Forty DDI: phenytoin, quetiapine, CYP3A4 <i>Sara M. Skrlin MD and Ansgar M. Brambrink MD PhD</i>	
168. Phenytoin (II): The Wrong Drug for the Schizophrenic	749
Fatal Forty DDI: phenytoin, quetiapine, CYP3A4 <i>Melisa N. Weingarten RN MS, Juraj Sprung MD PhD, and Toby N. Weingarten MD</i>	

169. Dizzy and Depressed	753
Fatal Forty DDI: nefazodone, carbamazepine, CYP3A4	
<i>William A. Shakespeare MD and Juraj Sprung MD PhD</i>	
170. The Funeral Is on Monday	757
Fatal Forty DDI: phenytoin, valproic acid, CYP2C9	
<i>Elizabeth Macri MD, Ansgar M. Brambrink MD PhD,</i> <i>and Neil B. Sandson MD</i>	
171. This Antacid Is Making Me Sick!	763
Fatal Forty DDI: phenytoin, cimetidine, CYP2C9, CYP2C19	
<i>Arun Subramanian MBBS, Toby N. Weingarten MD,</i> <i>and Juraj Sprung MD PhD</i>	
172. Young at Heart	767
Fatal Forty DDI: pimoziide, nefazodone, CYP3A4	
<i>Catherine Marcucci MD</i>	
173. Shiver Yes, Die No	771
Selegiline patch, meperidine, serotonin syndrome	
<i>Ahmed F. Zaky MD MPH and Michael J. Bishop MD</i>	
174. Clip and Dip	775
Fatal Forty DDI: carbamazepine, felodipine, CYP3A4	
<i>David W. Barbara MD, Randall Flick MD, and Juraj Sprung MD PhD</i>	
175. Blue Fog	779
Citalopram, methylene blue, serotonin syndrome	
<i>Toby N. Weingarten MD, Wayne T. Nicholson MD PharmD MSc,</i> <i>and Juraj Sprung MD PhD</i>	
176. Confiscated Contraceptives	785
Fatal Forty DDI: lamotrigine, ethinyl estradiol, UGT1A4	
<i>Erica D. Wittwer MD PhD, Juraj Sprung MD PhD,</i> <i>and Wayne T. Nicholson MD PharmD MSc</i>	
177. Gotta Love Derm	789
Fatal Forty DDI: lamotrigine, valproic acid, UGT1A4	
<i>Jonathan Anson MD and Richard C. Month MD</i>	
178. Desperate for a Drink	793
Fatal Forty DDI: amitriptyline, CYP2D6 poor metabolizer	
<i>Erica D. Wittwer MD PhD, Juraj Sprung MD PhD,</i> <i>and Wayne T. Nicholson MD PharmD MSc</i>	

Part XVI. Drug–Drug Interactions Involving QT-Prolonging DDIs

179. Introduction	799
<i>Matthew DeCaro MD FACC FACP</i>	

180. Delusion at Heart	803
Fatal Forty DDI: thioridazine, ondaneestron, QT-prolongation <i>Arun Subramanian MBBS, Toby N. Weingarten MD, and Juraj Sprung MD PhD</i>	
181. At Long Last	807
Fatal Forty DDI: ziprasidone, moxifloxacin, CYP3A4, CYP2D6, QT-prolongation <i>Kristen B. McCullough PharmD BCPS BCOP, and Wayne T. Nicholson MD PharmD MSc</i>	
182. Metha-don't!	813
Fatal Forty DDI: methadone, amitriptyline, levofloxacin, CYP2D6, QT-prolongation <i>Bryan C. Hoelzer MD, Juraj Sprung MD PhD, and Wayne T. Nicholson MD PharmD MSc</i>	
183. Flash Fire	819
Fatal Forty DDI: amiodarone, haloperidol, CYP1A2, CYP3A4, CYP2D6; QT-prolongation <i>Michael P. Hutchens MD, Catherine Marcucci MD, and Neil B. Sandson MD</i>	
184. I Am Dizzy When I Stand Up	825
Fatal Forty DDI: thioridazine, propranolol, CYP2D6, QT prolongation <i>Tasha L. Welch MD, Toby N. Weingarten MD, and Juraj Sprung MD PhD</i>	

Part XVII. Drug–Drug Interactions Involving Foods and Nutrition

185. Introduction	831
<i>Kevin W. Cleveland PharmD and David G. Metro MD</i>	
186. High Fat Diet (I): No Juice For The Ketotic Kid	833
Ketosis, carbohydrates, seizures <i>Denise M. Hall Burton MD, Miya Asato MD, and Charles Boucek MD</i>	
187. Protein Huffing and Puffing	837
Fatal Forty DDI: theophylline, dietary protein, CYP1A2 <i>Brian C. Bane MD and James Gordon Cain MD MBA FAAP</i>	
188. Salty Sam	841
High-salt diet, nitroprusside <i>Robert Scott Lang MD and Li Meng MD MPH</i>	

189. A Peak Potassium Problem	847
Salt substitute, spironolactone, lisinopril <i>Justin McCray MD and Steven L. Orebaugh MD</i>	
190. Awake?	851
Vitamin C, general anesthetics <i>Nicole Scouras MD and David G. Metro MD</i>	
191. Tropical Punch Packing a Real Knockout	855
Fatal Forty DDI: grapefruit juice, midazolam, CYP3A4 <i>Brian Blasiole MD PhD and Shawn T. Beaman MD</i>	
192. When the Fire Won't Go Out	859
Pomegranate juice, sildenafil, CYP3A4 <i>Thomas P. Pontinen MD and Randal O. Dull MD PhD</i>	
193. Peppermint Patty	863
Fatal Forty DDI: peppermint, felodipine, CYP3A4 <i>Ryan D. Ball MD and Karen Boretsky MD</i>	
194. From Bleeding Gums to Green Thumbs: A True Story	867
Fatal Forty DDI: warfarin, green vegetables <i>Audra M. Webber MD and Patricia L. Dalby MD</i>	
195. Delicious but Malicious	871
Licorice, spironolactone, hypokalemia <i>Eric Fox BA and Kirk Lalwani MD FRCA MCR</i>	
196. I Just Can't Lick This Problem	875
Fatal Forty DDI: licorice, electrolytes, digoxin <i>Koshy M. Mathai MD, Michael P. Hutchens MD, and Robert G. Krohner MD</i>	
197. Sommelier's Surprise	879
Tyramine-rich foods, MAOI drugs, monoamine oxidase <i>Charles Lin MD and Joseph F. Talarico DO</i>	
198. Dairy Carefully	883
Fatal Forty DDI: dairy, fluoroquinolone <i>Kristin Ondecko Ligda MD and Erin A. Sullivan MD</i>	
199. Cold and Sick, Sick and Cold	887
Fiber, thyroxine replacement, malabsorption <i>A. Murat Kaynar MD MPH and Nikhil K. Bhatnagar MD</i>	
200. TPN (I): A Review and Two Interactions	891
TPN basics and complications <i>Lavinia Kolarczyk MD and Patrick J. Forte MD</i>	

201. TPN (II): A Traumatic Case of Increased Metabolism	895
TPN, valproic acid <i>Erica D. Wittwer MD PhD, Wayne T. Nicholson MD PharmD MSc, and Juraj Sprung MD PhD</i>	
202. Skin and Bones.	899
Starvation, perioperative drugs <i>Mariam M. El-Baghdadi MD and Ibtesam A. Hilmi MB CHB FRCA</i>	
203. Enough to Make You Sick.	903
Syrup of ipecac, general anesthesia <i>John Hache MD and Thomas M. Chalifoux MD</i>	
204. Determined and Desperate to Diet.	909
Fatal Forty DDI: orlistat, warfarin <i>Lisa Chan MD and Kirk Lalwani MD FRCA MCR</i>	

Part XVIII. Drug–Drug Interactions Involving Spices and Supplements

205. Introduction	915
<i>Kirk Lalwani MD FRCA MCR</i>	
206. Caffeine Crash	917
Fatal Forty DDI: caffeine, ethinyl estradiol, ciprofloxacin, CYP1A2 <i>Brian Gierl MD and Ryan Romeo MD</i>	
207. Sad Sequelae.	921
Fatal Forty DDI: dong quai, warfarin <i>Stacy L. Fairbanks MD</i>	
208. The Scary Side of <i>Ginkgo biloba</i> Is No Match for an Anesthesia Superstar: Seizures	925
Fatal Forty DDI: <i>Ginkgo biloba</i> , phenytoin, CYP2C19 <i>Shreya Patel MD and Kirk Lalwani MD FRCA MCR</i>	
209. The Scary Side of <i>Ginkgo biloba</i> Is No Match for an Anesthesia Superstar: Sugar	929
<i>Ginkgo biloba</i> , tolbutamide, CYP2C9 <i>Shreya Patel MD and Kirk Lalwani MD FRCA MCR</i>	
210. The Scary Side of <i>Ginkgo biloba</i> Is No Match for an Anesthesia Superstar: Subdural	933
<i>Ginkgo biloba</i> <i>Shreya Patel MD and Kirk Lalwani MD FRCA MCR</i>	
211. “Khat” Unaware	937
Depletion of central and peripheral endogenous catecholamines <i>Brian D. Tompkins MD and Kirk Lalwani MD FRCA MCR</i>	

212. Pain on the Plane	941
Fatal Forty DDI: ginseng, warfarin, CYP2C9	
<i>Lei Wu MD and Kirk Lalwani MD FRCA MCR</i>	
213. Ca va, c'est Kava	945
Kava, carbidopa-levodopa, dopamine receptors	
<i>Solina Tith MD and Kirk Lalwani MD FRCA MCR</i>	
214. Summertime and the Herbals are Hot.	949
Fatal Forty DDI: goldenseal, amitriptyline, CYP2D6, CYP3A4	
<i>Jessica Miller MD BM and Leelee Thames MD</i>	
215. Garlic I: More Than Just Bad Breath	953
Fatal Forty DDI: garlic, ritonavir, CYP3A4, P-glycoprotein	
<i>Vincent Lew MD and Kirk Lalwani MD FRCA MCR</i>	
216. Garlic II: A Girl Named Allicin	957
Garlic, inhibition of clotting cascade	
<i>Vincent Lew MD and Kirk Lalwani MD FRCA MCR</i>	
217. “Danshen” the Night Away	961
Fatal Forty DDI: Salvia miltiorrhiza, warfarin, CYP2C9, CYP1A2	
<i>Tara C. Carey BA MD and Kirk Lalwani MD FRCA MCR</i>	
218. Caught Yellow-Handed	965
Fatal Forty DDI: turmeric, warfarin, CYP1A2, CYP2C9	
<i>Giorgio Veneziano MD and Michael Mangione MD</i>	
219. St. John: Not Such a Saint	969
Fatal Forty DDI: St. John's wort, cyclosporine,	
CYP3A4, P-glycoprotein	
<i>Heather Norvelle PharmD BCPS and Ines P. Koerner MD PhD</i>	
220. Hearing the News.	973
Fatal Forty DDI: St. John's wort, oral contraceptives,	
CYP3A4, P-glycoprotein	
<i>Nikki Jaworski MD</i>	
Index	977
Fatal Forty Index	1003
Drug Index (Generic)	1005
Drug Index (Brand)	1011

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