



CRITICAL

ROBIN COOK

G. P. PUTNAM'S SONS
NEW YORK



G. P. PUTNAM'S SONS

Publishers Since 1838

Published by the Penguin Group

Penguin Group (USA) Inc., 375 Hudson Street, New York, New York 10014, U.S.A. •

Penguin Group (Canada), 90 Eglinton Avenue East, Suite 700, Toronto, Ontario M4P 2Y3, Canada (a division of Pearson Penguin Canada Inc.) • Penguin Books Ltd,

80 Strand, London WC2R 0RL, England • Penguin Ireland, 25 St Stephen's Green, Dublin 2, Ireland (a division of Penguin Books Ltd) • Penguin Group (Australia),

250 Camberwell Road, Camberwell, Victoria 3124, Australia (a division of Pearson Australia Group Pty Ltd) • Penguin Books India Pvt Ltd, 11 Community Centre,

Panchsheel Park, New Delhi-110 017, India • Penguin Group (NZ), 67 Apollo Drive, Rosedale, North Shore 0745, Auckland, New Zealand (a division of Pearson New Zealand Ltd) • Penguin Books (South Africa) (Pty) Ltd, 24 Sturdee Avenue,

Rosebank, Johannesburg 2196, South Africa

Penguin Books Ltd, Registered Offices: 80 Strand, London WC2R 0RL, England

Copyright © 2007 by Robin Cook

All rights reserved. No part of this book may be reproduced, scanned, or distributed in any printed or electronic form without permission. Please do not participate in or encourage piracy of copyrighted materials in violation of the author's rights. Purchase only authorized editions.

Published simultaneously in Canada

Library of Congress Cataloging-in-Publication Data

Cook, Robin, date.

Critical / Robin Cook.

p. cm.

ISBN 978-0-399-15423-2

1. Hospital administrators—Fiction. 2. Nosocomial infections—Fiction.
3. Staphylococcal infections—Fiction. 4. Drug resistance in microorganisms—Fiction. 5. Medical examiners (Law)—Fiction. 6. New York (N.Y.)—Fiction.
I. Title.

PS3553.O5545C76 2007 2007017292

813'.54—dc22

Printed in the United States of America

1 3 5 7 9 10 8 6 4 2

BOOK DESIGN BY NICOLE LAROCHE

This is a work of fiction. Names, characters, places, and incidents either are the product of the author's imagination or are used fictitiously, and any resemblance to actual persons, living or dead, businesses, companies, events, or locales is entirely coincidental.

While the author has made every effort to provide accurate telephone numbers and Internet addresses at the time of publication, neither the publisher nor the author assumes any responsibility for errors, or for changes that occur after publication. Further, the publisher does not have any control over and does not assume any responsibility for author or third-party websites or their content.

ACKNOWLEDGMENTS

Dominique Borse, MBA,
entertainment venture capitalist

Jean E. R. Cook, MSW, CAGS,
psychologist

Joe Cox, J.D., LL.M.,
superb tax and estate planning attorney

Rose Doherty, A.M.,
academician

Mark Flomenbaum, M.D., Ph.D.,
Chief Medical Examiner, Commonwealth of Massachusetts

Angelo MacDonald, J.D.,
criminal law attorney

To Cameron and the joy he brings

CRITICAL

PROLOGUE

Within the course of a week spanning March and April 2007, a serious, untoward event in the health of three strangers, two of whom lost their lives, was destined to impact the lives of hundreds, even thousands of people in a complicated web of causality. The victims had no premonition of their individual tragedies. Though they were all generally healthy married men of similar ages, they were engaged in totally different occupations, and each had absolutely no knowledge of the others, either socially or through business. One was a Caucasian physician who experienced a painful and debilitating athletic injury; the second an African-American computer programmer who contracted a fulminant, and rapidly fatal, nosocomial postoperative infection; and the third was an Asian-American accountant who suffered a ruthless, execution-style death.

LIKE MOST PEOPLE, Dr. Jack Stapleton never truly appreciated the anatomical and physiological marvel of his knees until they gave

out, on the evening of March 26, 2007. He'd been at work as a forensic pathologist at the Office of the Chief Medical Examiner, or OCME, since early that morning. He'd commuted to and from the OCME on his beloved Cannondale mountain bike without once acknowledging the contributions of his knees. During the rest of the morning, he'd done three autopsies, one of which was a complicated affair involving painstaking dissection of the tracks of multiple gunshot wounds. In total, he'd been on his feet in the autopsy room, colloquially referred to as "the pit," more than four hours, moving by reflex to aid him in his work. Never once did he think about his knees and the effort expended by their various ligaments, which faithfully maintained the integrity of the joints despite the considerable stresses placed on them, and by the menisci, which cushioned the substantial pressure exerted by the distal ends of the femurs, or thighbones, on the tops of the tibias, or shinbones.

It was later, toward the end of one of Jack's almost nightly runs on the illuminated neighborhood basketball court, that disaster struck. To Jack's chagrin, he and several of the best players with whom he'd teamed up for the evening, including his friends Warren and Flash, had not won a single game, requiring them to sit out for frustratingly long periods of time before getting back in the action.

As the evening dragged on, Jack didn't need Warren to remind him that he had been responsible for several of the losses by either missing easy shots or losing the ball, yet Warren ragged on him mercilessly. Jack couldn't say it wasn't deserved; at the end of one game, with the score tied, Jack had utterly embarrassed himself, losing the ball and ultimately the game by dribbling off his own foot.

The real calamity occurred toward the end of the final game when Jack took a long inbounds pass from Warren. With the final

game again tied and the next basket to determine the outcome, Jack was intent on redeeming himself. To his delight on what he hoped would be the final play, there was only one person between him and the basket. His name was Spit, in reference to one of his less endearing habits, but more important, from Jack's perspective, he was tall and lanky and hard put to keep up with Jack's quickness.

"Money!" Warren called out from the opponent's end of the court, fully expecting Jack to leave Spit in the dust for an easy layup.

After a convincing head fake to the left augmented by a rapid cross-dribble, Jack initiated a drive to his right. It began with his right leg lifting from the pavement, and the right knee rapidly flexing and then extending. As soon as his foot slammed down and planted itself on the macadam, Jack twisted his torso to the left to go around Spit, who was still recovering from the head fake and the cross-dribble. With Jack's left foot now off the pavement, his entire weight was transferred to his partially flexed right knee, which also had to deal with the sudden counterclockwise torsion.

If Jack had stopped to calculate the forces acting on his fifty-two-year-old knee, he might have thought twice about what he was asking his heretofore-faithful anatomy to withstand. Although his lateral ligaments held, since they effectively distributed the forces along their comparatively sizable width, the situation was different for the anterior cruciate ligament, which had lengthened slightly over the years as Jack had aged. Vainly, the relatively narrow band of tissue, which most people referred to as gristle when encountered in a leg of lamb but which Jack knew as collagen, tried to keep the femur from dislocating backward from the tibia. Unfortunately, the involved forces overwhelmed the ligament, and

with a popping sound, it literally ripped apart and briefly allowed Jack's femur to dislocate out of its socket, tearing the delicate leading edges of both menisci in the process.

Jack's right leg crumbled, hurling him onto the rough-surfaced pavement, where he skidded forward a few feet, leaving a significant amount of skin behind. One instant he was a coordinated mass of goal-directed muscle and bone, the next a bruised and abraded heap prostrate on the ground, wincing in pain while clutching his knee. Jack wasn't one hundred percent certain of what had happened, but he had an idea. All he could do was hope he was wrong.

"Man, you're going from bad to worse," Warren said after he'd sprinted over and assured himself that Jack was basically okay. Warren's tone reflected half sympathy, half disgust. He straightened up and thrust his hands on his hips, glaring down at his injured friend. "Maybe you're getting too old for this, doc, you know what I'm saying?"

"Sorry," Jack managed. He felt embarrassed, since everyone was looking at him.

"Are you done tonight or what?" Warren questioned.

Jack shrugged. The pain had peaked, then lessened considerably, giving him a false sense of hope. Gingerly, he got to his feet and gradually put weight on the injured joint. He shrugged again and took a few tentative steps. "It doesn't feel that bad," he announced as he assessed the abrasions on his left elbow and knee. Then he tried yet another couple of steps, which seemed okay until he twisted himself to the left. At that point, the joint again briefly dislocated, causing Jack to revisit the pavement. For a second time, he struggled to his feet. "I'm done," he remarked with equal resignation and regret. "I'm really done. Clearly, this isn't a simple sprain."

• LIKE MOST PEOPLE, David Jeffries had never truly appreciated the molecular marvel that bacteria represented, nor the fact that whether an infection, once started, would be contained or spread depended on the outcome of an epic molecular battle waged between the bacteria's virulence factors and the human body's defense mechanisms. He also had never truly appreciated the threat that bacteria continued to pose, despite the extensive pharmacopoeia of antibiotics available to the modern physician. He had been aware that bacteria were responsible for terrible scourges in the past, including the black plague, but that had been in the past. He certainly hadn't worried about bacteria the way he worried about viruses such as H5N1 (bird flu), Ebola, or the virus that causes AIDS, whose threat was continually hyped by the media. Besides, David had been vaguely aware there were so-called good bacteria that helped to make things like cheese and yogurt. So when he had entered Angels Orthopedic Hospital early one Monday morning in 2007 to have his anterior cruciate ligament repaired with a cadaver graft, bacteria weren't one of his concerns. What he had worried about was the anesthesia and not waking up after the operation was over. He had also worried about the possibility he'd go through the whole ordeal, which a buddy had confided was painful, and it wouldn't work, meaning he wouldn't be able to get back to the tennis he loved.

As a computer programmer for a high-flying Manhattan-based software company, David had spent, as he put it, a lot of hours on his butt, shackled to his monitor. Being an athletically inclined individual from as early as he could remember, he needed competitive exercise, and tennis was his thing. Up until his injury a month

prior to his surgery, he'd played at least four times a week. He'd even vainly tried to interest his two preteen sons in the game.

As for his injury, he had no idea how it had happened. He'd always kept himself in good shape. All he had remembered about the event was charging the net after making what he thought had been a good lead shot. Unfortunately, his shot had not been as good as he had hoped, and his opponent had followed up with a well-placed return to David's left. On the run, David had planted his leading foot and twisted left to try to get to the ball. But he never got near it. Instead, he had found himself on the ground, clutching a painful knee that had immediately begun to swell dramatically.

Considering David's fulminant postoperative course, one certainly could say that he should have been more respectful of bacteria. Within hours of his surgery, relatively small numbers of staphylococci, which had found their way into David's knee and the distal bronchioles of his lungs, began their molecular magic.

Staphylococcus is a common type of bacterium. At any given time, two billion people, a third of the world's population, have them commensally residing inside their nares and/or in moist locations on their skin. Indeed, David was so colonized. But the species that had gotten inside David's body was not from his flora, but was rather a particular strain of staphylococcus aureus that had taken advantage of the ease with which staphylococci exchange genetic information to enhance their virulence and hence competitive advantage. Not only did this particular subspecies resist penicillinlike antibiotics, it also carried the genes for a host of nasty molecules, some of which helped the invading bacteria adhere to the cells that lined David's smallest capillaries while others actually destroyed the defensive cells that David's body sent to

deal with the developing infection. With David's cellular defenses crippled, the invading bacteria's growth rapidly became exponential, reaching in hours a secretory stage. At this point, a group of other genes in this particular staphylococcus genome switched on, allowing the microorganisms to spew out a library of even more vicious molecules called toxins. These toxins began to wreak havoc inside David's body, including causing what is commonly referred to as the "flesh-eating effect," as well as the symptoms and signs referred to as toxic shock syndrome.

David was first made aware of the gathering storm by a slight fever, which developed six hours after his surgery, well before the invading bacteria reached the secretory stage. David didn't give the rise in temperature much thought, nor did the nurse's aide, who duly recorded it in his digital record. Next, he noticed what he described as tightness in his chest. With his narcotic pain medicine onboard, the administration of which he was able to adjust himself, he didn't complain. He thought these early symptoms were par for the course until his breathing became labored and he coughed up blood-tinged mucus. Suddenly, it was as if he couldn't quite catch his breath. At that point, he became truly concerned. His anxieties ratcheted up when he called attention to his worsening condition and the nurses responded by erupting in a flurry of anxious activity. As blood cultures were drawn, antibiotics were added to his IV, and frantic calls were made about a possible emergency transfer to the University Hospital, David hesitantly questioned if he was going to be all right.

"You'll be fine," one of the nurses said reflexively. But that reassurance notwithstanding, David died several hours later of overwhelming sepsis and multiorgan failure while en route to a full-service general hospital.

LIKE MOST PEOPLE, Paul Yang never truly worried about his ultimate fate, yet he should have, particularly around the time that David Jeffries was losing his molecular battle with bacteria. Similar to other fellow human beings cursed by the knowledge of their mortality, Paul didn't dwell on the harsh reality of death, even with the nagging reminder of progressively aging at a gradually quickening pace. At age fifty-one, he had too many more immediate concerns, such as his family, which included a spendthrift wife who was never materially satisfied, two children in college and another soon to follow, and a large suburban house with a commensurate mortgage and the constant need of major repair. As if all that wasn't enough, over the last three months his job had been driving him to distraction.

Five years previously, Paul had given up a comfortable yet predictable and somewhat boring job at an established Fortune 500 firm to be the chief and only accountant for a promising new start-up company proposing to build and run private, for-profit specialty hospitals. He had been aggressively recruited by his former boss, who had earlier been recruited to be the start-up's CFO by a brilliant woman doctor named Angela Dawson, who was just finishing her MBA at Columbia University. The decision to switch jobs had been agonizing for Paul, since he was not a gambler by nature, but his growing need for disposable income and the chance to make it big in the rapidly growing, trillion-dollar healthcare industry trumped the uncertainties and the associated risks.

Remarkably, everything had gone according to plan for Angels Healthcare LCC, thanks to Dr. Angela Dawson's innate business

acumen. With the stock, warrants, and options Paul controlled, he was within weeks of becoming rich along with the other founders, the angel investors, and to a lesser extent the more than five hundred physician equity owners. The closing of an IPO was just around the corner, and due to a terrifically successful recent road show that had institutional investors drooling, the stock price was just about set at the upper limits of everyone's expectations.

With an anticipated five hundred million dollars to be raised on the first go-round, Paul should have been on cloud nine. But he wasn't. He was more anxious than he'd been in his entire life, because he was ensnared in an epic ethical dilemma exacerbated by the series of recent corporate accounting scandals, including that at Enron, which had rocked the financial world during the previous six or seven years. The fact that he had not cooked the books was not a consolation. He religiously adhered to GAAP—Generally Accepted Accounting Procedures—and was confident that his books were accurate to the penny. The problem was that he didn't want anyone outside of the founders to see the books, specifically because they were accurate and therefore clearly reflected a major negative-cash-flow situation. The problem had started three and a half months previously, just after the independent audit had been completed for the IPO prospectus. It began as a mere trickle but rapidly mushroomed into a torrent. Paul's dilemma was that he was supposed to report the shortfall, not just to his CFO, which he certainly did, but also to the Securities and Exchange Commission. The trouble was, as the CFO quickly pointed out, such reporting would undoubtedly kill the IPO, which would mean that all their strenuous effort over almost a year would go down the drain, perhaps along with the future of the company. The CFO and even

Dr. Dawson herself had reminded Paul that the unexpected burn rate was a mere quirk and obviously temporary, since the cause was being adequately redressed.

Although Paul acknowledged that everything he was being told was probably true, he knew his not reporting definitely violated the law. Forced to choose between his innate sense of ethics and a combination of personal ambition and his family's insatiable need for cash, the conflict was driving him crazy. In fact, it had driven him back to drink, a problem he'd overcome years ago but that the current situation had reawakened. Yet he was confident the drinking wasn't completely out of control since it was restricted to having several cocktails prior to boarding the commuter train on his way home to New Jersey. There had been no all-night binges and partying with ladies of the night, which had been a problem in the past.

On the evening of April 2, 2007, he stopped into his designated watering hole en route to the train station, and while sipping his third vodka martini and staring at himself in the smoky mirror behind the bar, he suddenly decided he would file the required report the following day. He'd been flip-flopping for days, but all at once he thought maybe he could have his cake and eat it too. In his mildly inebriated state, he reasoned that it was now so close to the IPO closing that maybe the report would sit around at the bureaucratic SEC and not get to the investors in time. That way, he'd have assuaged his conscience and, he hoped, not killed the IPO. Feeling a sudden euphoria at having made a decision even if he would change his mind overnight, Paul rewarded himself with a fourth cocktail.

Paul's final vodka seemed more pleasurable than the previous, but it might have been the reason he did something an hour later

that he normally would not have done. Weaving slightly while walking home from the train station, he allowed himself to be approached a few doors away from his house and to be engaged in conversation with two nattily dressed yet vaguely unnerving men who had emerged from a large, vintage black Cadillac.

"Mr. Paul Yang?" one of the men had questioned in a raspy voice.

Paul stopped, which was his first mistake. "Yes," he responded, which was his second mistake. He should have just kept walking. Coming to such a sudden halt, he had to sway slightly to maintain his balance, and he blinked a few times to try to sharpen his mildly blurry vision. The two men appeared about the same age and height, with hatchetlike faces, deeply set eyes, and dark hair carefully slicked back from their foreheads. One of the men had considerable facial scarring. It was the other man who spoke.

"Would you be so kind as to afford us a moment of your time?" the man asked.

"I suppose," Paul responded, surprised by the disconnect between the gracious syntax of the request and the heavy New York accent.

"Sorry to delay you," the man continued. "I'm certain you are eager to get home."

Paul turned his head and glanced at his front door. He was mildly discomfited that the strangers knew where he lived.

"My name is Franco Ponti," the man added, "and this gentleman's name is Angelo Facciolo."

Paul looked briefly at the man with the unfortunate scarring. It appeared as if he didn't have eyebrows, which gave him an otherworldly appearance in the half-light.

"We work for Mr. Vinnie Dominick. I don't believe you are acquainted with this individual."