

'Moneyball' for medicine

Researchers look to a winning formula from the world of sports to improve health-care delivery

by Mark Cardwell

TWO YEARS AGO, emergency physician Dr. Mark Wahba was searching for an innovative way to improve efficiency at the Royal University Hospital in Saskatoon as part of a provincial health-care quality control program he was taking.

He finally found what he was looking for in a pub 500 kilometres away in his hometown of Estevan, on Saskatchewan's border with North Dakota.

"I was having a beer with an old friend and he said, 'You've got to read this book,'" recalls Dr. Wahba, a clinical assistant professor of medicine at the University of Saskatchewan.

The book was American sportswriter Michael Lewis's 2003 book, *Moneyball: The Art of Winning an Unfair Game*, the bestselling story of how Billy Beane, general manager of the Oakland Athletics, used statistical analysis to build winning teams made up of low-budget players whose baseball talents were overlooked by big-market Major League Baseball competitors such as the New York Yankees and Los Angeles Dodgers.

"When I read it, I was amazed, absolutely floored," says Dr. Wahba. "The similarities between the Oakland Athletics and our health-care system were striking: We were both trying to provide big-league services with restricted budgets."

That epiphany prompted Dr. Wahba to approach Mary Smillie, a former consultant with the Health Quality Council of Saskatchewan, and Steven Lewis, a baseball fan and health policy professor at Simon Fraser University in Burnaby, B.C., to talk about if and how Canada's public health-care system could benefit from Beane's game-changing approach to baseball.

The result of their discussions is a new blog called "M.A.S.H."—Meaningful Analogies in Sports and Health.

Launched on the Open Medicine website in October (to roughly coincide with the late-September release of the book-based hit movie *Moneyball*, starring Brad Pitt), the blog is devoted to exploring how medicine and health care can profit from the development, use and application of statistical analysis in sports.

"Our operative theory is that health care would get better if it used data as adeptly as baseball—and, increasingly, other sports—to improve decision-making and quality," the trio wrote in their first entry on the website (<http://blog.openmedicine.ca/mash>).

"We suspect that many others out there agree in principle."

Though the site is open to sports-medicine analogies of all kinds, Dr. Wahba says he believes that baseball—a sport for which he says he has little affinity as a fan—was the perfect entry into the discussion because of its widespread and time-honoured use of statistics and analysis.

"Professional baseball by far predates all other sports in regards to data collection," he says.

He notes, for example, that baseball managers, coaches, players and even fans routinely follow and compare in minute detail almost every aspect of the sport, from pitches thrown and the resulting strikes and balls, to batters' hitting averages based on multiple factors including left- versus right-handed pitching, pitch counts and having runners in scoring positions.

"Numbers are in the very DNA of baseball," says Dr. Wahba. "It is a series of highly discrete events, every one of which can be shown to affect the outcome of a game."

He adds that other sports—notably professional hockey, football and basketball—are also now collecting and using analytical data in an effort to both gain competitive advantage and to select players who have the best chance of success in their sport.

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"There is no doubt that the use of statistics is now widespread in sport, and that they are enhancing performance," says Dr. Wahba.

Contrast that with health care, "which has an enormous inventory of unexplored data, underused analysis and, in too many places, a culture that regards data with suspicion and even hostility."

In their initial paper on the blog, the MASH founders write that in the world of professional sports, "the difference between success and failure sometimes hinges on minor differences in capacity and execution."

"Health and health care are, of course, far more fundamental to the human condition. Often, people live because of evidence-informed practice or die because the evidence has been ignored."

To date, the site has a handful of entries that explain what analogies might be drawn between sports and health data.

The Innovators

The Medical Post continues the eight-part series, "The Innovators," featuring profiles of dynamic physicians facilitating groundbreaking change in health care.

Coming up next, on March 27:

- Pediatric podcasts: Recognizing that their training resulted in a patchy mosaic of knowledge, med students at the University of Alberta started using podcasts to fill in the gaps

Dr. Wahba, for example, considers which data could explain outcomes. "The batting average explains less about a player's performance than previously assumed; being overweight (but not obese) has less adverse impact on health status than previously assumed," he writes. But there are "perils of focusing too narrowly on a performance metric. . . . Fielding average does not tell us much about fielding performance; 30-day postsurgical mortality or readmission rates may be less meaningful than one-year quality-of-life outcomes."

He advances a similar possibility for the importance of case-mix adjustment.

"A pitcher who yields three runs a game in a hitter-friendly ball park may be better than a pitcher who yields 2.5 runs a game in a park with distance fences; a surgeon with a higher crude mortality rate may be more skilled than one with a lower rate who takes easier cases.

"Understanding luck or random outcomes (good or bad)," he adds, "a pitcher who strikes out few batters but gives up few runs may be living on borrowed time; a hospital with no hand-washing protocol but (with) no major infection outbreaks may be likewise rolling the dice."

A recent MASH blog, which Lewis posted on Dec. 6, is entitled "Do clinicians need spring training?"

"Baseball," it reads, "has spring training and no one is exempt from the drills, the repetitions (and) the fine tuning. It is not just a rite of spring; it is fundamental to the pursuit of excellence."

"Baseball assumes that skills are impermanent, mastery is fleeting, coaching is essential, and practice never ends. Health care assumes that skills, once achieved, are permanent, mastery comes with time, coaching is unnecessary and practice is for students. Baseball has it right."

For Dr. Wahba, the goal of the MASH blog is to stimulate debate, participation and enjoyment among readers and writers alike.

"We want to encourage people to look at old problems in different ways," he said. "Like baseball, we should be using data to drive our allocation of services."

He notes that to succeed like Billy Beane, hospital and health-care stakeholders—everyone from administrators to medical staff—need to completely rethink their time-honoured approaches to chronic problems.

"The first question we should be asking ourselves is, 'What exactly are we trying to accomplish?'" says Dr. Wahba. "From there it's a matter of working backward to figure out how to make it happen."

He says he hopes the MASH blog will get people thinking along those lines.

"A measure of success," says Dr. Wahba, "would be if it inspires a single person to do something that improves a patient's experience or outcome."

Mark Cardwell is a freelance writer in Quebec.