



NEWS RELEASE

United States Air Force

Headquarters, Air Education and Training Command

Office of Public Affairs
100 H Street, Suite 4
Joint Base San Antonio-Randolph, Texas 78150-4331

Phone: (210) 652-4400
Fax: (210) 652-2027
<http://www.aetc.af.mil>

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[Air Force doctor solves NASA's poop problem](#)

DEL RIO, Texas – Laughlin's 47th Medical Group commander helped solve a long-time problem for citizens of Earth who are launched into space.

Col. Thatcher Cardon, invented promising solutions for managing human waste in space, winning first place in the National Aeronautics and Space Administration's Space Poop Challenge.

NASA announced his win today on HeroX, a crowdsourcing website, where the tournament was managed, and awarded Cardon \$15,000 for outdoing more than 5,000 competitors.

"I've always wanted to go into biomedical engineering," Cardon said. "I opted for family medicine instead, thinking I could always do biomedical engineering later on. I never imagined that poop would be my ticket into the field."

NASA asked contestants to provide a way for astronauts to manage urine, feces and menstrual fluid while wearing a space suit continuously for six days. In the past, astronauts have worn super-absorbent diapers, which work okay for up to 24 hours. NASA anticipates future missions and emergency situations that could require astronauts to stay suited up for much longer periods. Several days in a diaper is not merely uncomfortable; untreated diaper rash quickly turns to deadly infection.

NASA already has tools for collecting waste in the low-gravity environment of the space shuttle, but it needs a way to handle human waste inside the clumsy confines of a space suit without leaking the suit's air pressure. Cardon said his training as a flight surgeon prepared him to address this problem by attuning him to issues of pressure. For example, a flight surgeon must foresee that an inflatable cast will become tighter as an airplane gains elevation.

Cardon's central creation is what he calls the "perineal access port," a valved opening in the fig leaf area of the space suit, through which several "introducers" are inserted to deliver various toileting devices that are maneuverable with a gloved hand.

The perineal access port imitates surgical technologies such as laparoscopy that utilize small openings into the body through which medical instruments are inserted. These technologies are designed to maintain pressure within a body system while executing a procedure, like, performing surgery inside a blood vessel without leaking blood.

One of Cardon's devices is the hygiene wand, which can be used in lieu of toilet paper. Its tip is covered with bunched tubular fabric; after the fabric is applied to the perineum, it is pulled outward through the middle of the wand so that fresh fabric slides forward from the outside of the wand in a motion similar to a sock being turned inside out.

"I am not surprised he won the contest," said Col. Thomas Shank, 47th Flying Training Wing commander at Laughlin where Cardon is stationed. "When I ask him for a solution, he always gives me several options and one of the options will be out of left field, one that I would never think about. He's an extremely innovative person."

"I planned my submission for the Space Poop Challenge in the same way I plan for something like a bathroom remodel," Cardon said of his creative process. "I lie on my bed or couch with my eyes closed and imagine every part of it, step by step, until I've created the entire thing in my head and I know just how it's going to work."

When he finished planning, Cardon packed up his family and drove around town to dollar stores, thrift stores, craft, clothing and hardware stores to buy materials for mockups.

"I have a small office and workshop that was in a complete uproar for several weeks as the submission came together on evenings and weekends," he said. "It was a ton of fun."

Just another day for a Renaissance man who has a medical degree, MBA, pilot's license and was a sniper for the local police department at his last assignment.

Media interested in interviewing Cardon and covering his story should contact Joel Langton, joel.langton.1@us.af.mil, 830-298-5980, 561 Liberty Drive, Laughling AFB, TX 78844-5230.

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