

# THE Mortar & Pestle

FACULTY OF PHARMACY AND PHARMACEUTICAL SCIENCES

HOW ALBERTA PHARMACISTS  
ARE BRINGING HEALTH CARE

**BACK**  
**TO THE FUTURE**



INTRODUCING THE SMHEARTCARD

MANAGING ASTHMA

LOOKING BACK AT THE MOSKALYK DECADE



# Smart Hearts

FROM LEFT TO RIGHT:  
DR. IAN PATTERSON, DR. JOHN  
MACKEY, JAMES STEWART,  
DR. NEAL DAVIES

BY JYLLIAN PARK

**"BECAUSE MINUTES MATTER"** is more than a slogan. The phrase—which you'll find on the website and branding materials of the newly launched **SMHeartCard**—was a founding principle behind this unassuming but lifesaving device. Developed in Edmonton by University of Alberta alumni **Dr. John Mackey** (MD '90), **James Stewart** (MEng '89), **Dr. Neal Davies** (BSc Pharm '91) and implemented with cardiologist **Dr. Ian Patterson**, SMHeartCard aims to reduce the time between the onset of heart attack symptoms and a patient's access to the combination of Nitroglycerin (NG) and Acetylsalicylic acid (ASA)—commonly known as Aspirin—that work to break down clots, open up the blood vessels, and help to restore blood flow. Because the sooner you take these medications, the less likely you are to have a severe or fatal heart attack.

The cherry red, credit card sized ASA and NG pill holder doesn't look like much at first glance, and that's entirely the point. Small and discreet, the device, which holds four tablets

of ASA and three of NG, eliminates the need for those at-risk of suffering a heart attack to carry around bulky containers of medicine (like the commonly prescribed NG spray, typically made available in 9 cm tall bottles).

"People don't keep their heart medications with them," says Dr. John Mackey, Professor and Director of Clinical Trials for the University of Alberta Department of Oncology. "Coronary artery disease (CAD) patients are not compliant like cancer patients. With cancer patients, if you tell them to do something, they do it," says Mackey, who cited a recent study conducted by Dr. Catherine Horsman at the University of Medicine Hat that found only 18% of her patients with CAD actually carry NG, while none at all carried ASA. "What it comes down to is that the current method to carry these medications just isn't convenient for the general public."

The issue first came into focus when Mackey—whose own brother has CAD and regularly travels without his medications—

began a conversation with his friend James Stewart, a retired engineer. Stewart, an avid outdoorsman who frequents his remote camps in the foothills, carried the combination of pills in a resealable plastic bag in case him or a companion were to suffer a heart attack in a remote location.



"Medical literature is very clear that the time from your symptoms to treatment is a key determinant of outcome," says Mackey, referencing a study out of Montreal that determined the median time for heart attack

patients receiving ASA upon arrival to the emergency room was 98 minutes. “Many people die prior to contact with the medical system. With your first heart attack, about 30 to 40 percent never actually make it to hospital.”

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The need for a portable and convenient container to transport the lifesaving pills was clear but it turned out that the application wasn't as straightforward. Storing ASA is fairly routine. It's the NG that posed a challenge for the oncologist. “There is no easy way to store it,” says Mackey of the pill that is both heat and light sensitive, layers itself onto almost every known form of plastic, absorbs into the cotton used to reduce the humidity in the bottle, and has even been known to explode.

“We talked about inventing a solution, and we had done that on paper and in principle, but we needed the expertise to make it happen.”

That's where Dr. Neal Davies, Dean of Pharmacy and Pharmaceutical Sciences, came in. “John came to me saying that he was having a problem and I said ‘that's what pharmacists do! We solve problems,’” says Davies.

Davies led the team in prototyping a variety of packaging options and materials to maintain the stability and performance of the drug over time. They conducted tests at extreme temperatures and with different environmental factors for periods ranging from one up to 52 weeks. After months of trials, they landed on the final design, a polyfluorinated polymer insert and cap liner. The container keeps the pills stable for up to six months at room temperature as well as body temperature for storage in a pocket, and even in harsh winter or summer temperatures. The card

can be carried in a wallet, pocket, or attached to a cellphone and can be refilled without a prescription at any Canadian pharmacy.

SMHeartCard is available for purchase on the company's website ([smheartcard.ca](http://smheartcard.ca)) for \$19.99 and in a growing number of pharmacies. These pharmacies offer SMHeartCard to patients with known CAD and CAD risk factors, and they stock NitroStat 0.3mg tablets for this purpose. The initial run of 10,000 units has hit the market, with another, larger order in production as the inter-disciplinary team looks to take the product across the country and world.

“Our hope is that enough people will be carrying SMHeartCards that we will be able to demonstrate improved population-based outcomes,” says Mackey.

And there's already a case for the effectiveness of the wallet-sized device after Mackey found use for the SMHeartCard on a recent flight from Cancun to Edmonton. His fellow passenger, a man in his 70s, began complaining of seven out of ten chest pain. By the time Mackey had administered the third pill of NG, the man's pain had subsided. A little less than a week after the flight, the man's wife contacted Mackey to inform him that her husband had in fact suffered a small heart attack, but thanks to his SMHeartCard, suffered no major complications.

“We want to see that the people who have heart attacks will have less severe ones and they will be less likely to die. Our goal is to save lives.” ■

**To learn more about SMHeartCard or to carry the life-saving device in your pharmacy, visit [smheartcard.ca](http://smheartcard.ca) or call 780-965-7678**



## What are the symptoms of a heart attack?

- + Shortness of breath
- + Chest pain
- + Sweating
- + Nausea, indigestion, heartburn, or abdominal pain
- + Fatigue
- + Sudden dizziness or lightheadedness

## Who is at-risk of heart attack?

- + Those who smoke, drink heavily, or are physically inactive
- + Those with medical conditions such as angina, diabetes, high blood pressure, high cholesterol, obesity

## How is the SMHeartCard used?

When you experience symptoms of a heart attack:

1. Open your SMHeartCard.
2. Chew and swallow all ASA tablets.
3. Take the first NG pill and place it under your tongue to dissolve.
4. If symptoms continue after five minutes, take the second NG pill and place it under your tongue to dissolve.
5. If symptoms continue after another five minutes, take the third and final NG pill and place it under your tongue to dissolve and access emergency medical care (call 911).

## How long does a filled SMHeartCard last?

SMHeartCard has been shown to effectively store the NG pills for six months. The team recommends a refill of NG tablets every six months.