



## Explaining the unexplained: the link between panic and non-cardiac chest pain

**Dr Guillaume Foldes-Busque** is an assistant professor in the School of psychology at Université Laval (Laval University). His research focuses on the association between panic and non-cardiac chest pain, and is paving the way for effective screening techniques used in clinical environments.

**C**hest pain is a frequent cause of visits to the accident and emergency departments of hospitals. This is because chest pain is often associated with heart problems, and many people believe they are having a heart attack when they experience it. However, it is not always a sign of cardiac problems – any chest pain that isn't related to cardiac issues is called non-cardiac chest pain (NCCP), or unexplained chest pain.

NCCP is generally not life-threatening, nor particularly medically dangerous, but it can have a significant impact on patients' quality of life and day-to-day function. Estimates suggest that 41–60% of people who have had NCCP report some kind of constraint on their daily activities, such as exercise, housework or walking, and that 17–35% of sufferers are prevented from going to work by their chest pain. These negative effects can persist for up to 10 years after the symptoms occur.

In the US, the estimated total annual healthcare cost for NCCP is greater than the combined costs associated with myocardial infarction (heart attack) and angina. These patients are also more likely to be frequent

users of healthcare services, and to have a greater fear of developing serious health conditions.

### PANIC AND NCCP

Often, NCCP is related to panic-like anxiety – a much larger number of patients presenting with NCCP have panic attacks or panic disorder than in the general population. In fact, panic attacks and panic disorder are up to 11 times more prevalent in patients with NCCP. However, despite this impressive statistic, approximately 92% of cases of panic remain undiagnosed when a patient is discharged from hospital.

It is unclear what causes this co-occurrence of panic and NCCP, but it may be because there are shared vulnerabilities, underlying causes, or because patients with panic-like anxiety are more sensitive to anxiety and pain.

### WHAT ARE PANIC ATTACKS AND PANIC DISORDER?

Panic attacks cause patients to abruptly feel physical symptoms such as chest pain, nausea, or heart palpitations, and mental symptoms such as a fear of dying, 'going crazy', or a detachment from reality. The name 'panic attack' comes from the

**Dr Foldes-Busque has carried out numerous studies in hospitals, examining the link between non-cardiac chest pain and panic-like anxiety**



symptoms that generally characterise them: namely an overwhelming sense of fear, apprehension or anxiety. People may experience panic attacks with varying frequency and intensity, and they may occur in a variety of contexts. Some will develop panic disorder which is a condition characterised by recurring panic attacks and persistent concerns about the consequences or the recurrence of these attacks.

#### CHEST PAIN AND PSYCHIATRIC DISORDERS

In the studies conducted by Dr Foldes-Busque and his team, patients with panic attacks were more likely to suffer negative impacts of NCCP on their daily lives, and to have suicidal thoughts. Approximately 20–44% of those who present with NCCP have some kind of psychiatric condition including panic attacks and panic disorder, and 15% have what is referred to as ‘suicidal ideation’. Despite this, fewer than 5% of patients receive a referral to a psychiatric specialist.

With these shocking statistics in mind, the importance of identifying panic attacks in emergency departments is evident. However, panic attacks or panic disorder are rarely diagnosed. Even doctors participating in Dr Foldes-Busque’s studies rarely diagnosed panic in patients with NCCP, even when they were explicitly aware of the purposes and objectives of the study. This may be partly explained by the fact that physicians often have limited time to make a diagnosis, and are usually focused on physical conditions. On top of this, the somatic symptoms of panic frequently resemble those of other disorders, such as coronary artery disease, therefore making it more difficult to make an accurate diagnosis.

#### CUTTING EDGE RESEARCH

Dr Foldes-Busque has carried out numerous studies in hospitals over the last few years, examining the link between NCCP and panic, to find methods that will allow earlier diagnosis of panic attacks and panic disorder. His team have been at the forefront of research into NCCP and panic, and many of their papers have been the first of their kind.

Early diagnosis improves patients’ prognoses and minimises the strain on the health service caused by repeated visits to emergency departments. Dr Foldes-Busque participated in research showing that



NCCP patients with panic disorder showed significant improvement in their condition following post-diagnosis treatment with cognitive behavioral therapy.

As well as the connection between panic and NCCP, they have also found a strong link with non-fearful panic attacks, a variation of panic where sufferers do not feel fear or anxiety, but do feel physical symptoms, like chest pain, during panic attacks. While these patients are less likely to have other psychiatric complaints, the condition can still be distressing and cause problems.

Dr Foldes-Busque’s team have developed two assessment methods for diagnosing panic, one of which is called the Panic Screening Score, which was first developed in 2011. This method is designed for patients with NCCP, and has been shown

to be up to eight times more effective at diagnosing panic attacks than a doctor’s clinical evaluation. It involves a short series of questions that can be completed quickly in an A&E situation, making it more likely to be used in a clinical setting. The Panic Screening Score is in the process of further validation and the results from this research will be available this year.

Dr Foldes-Busque’s team have been leading research in this field, identifying the barriers that prevent the diagnosis of panic in NCCP patients. They have established that panic can explain a larger proportion of NCCP than was previously thought, and have devised methods to improve diagnosis. Their most recent work examines in more depth the factors that contribute to a patient’s experience of pain, and consequently how to reduce it.

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## Q&A

#### What first prompted you to investigate the link between panic and NCCP?

I had the incredible opportunity to work with Drs Fleet and Marchand during my PhD studies in Montreal. They were the ones who introduced me to this topic. I was rapidly struck by the idea that so many patients were seeking care in A&E but presented severe psychological problems that often remained undiagnosed. This also meant that they often did not receive the treatment they needed for this psychological problem in a timely manner. That is what motivated me then and still motivates me now to pursue this field of research: to improve care for patients with panic and NCCP.

#### Were you surprised that the doctors involved in your studies largely failed to diagnose panic in NCCP patients, despite being aware of the study’s objectives?

The diagnostic rate was certainly lower than expected as there was a lot of attention on the problem of panic in patients with NCCP following the ground-breaking works on the topic that were published in the late 1980s and during the 1990s. Still, we must acknowledge that A&E physicians have to tend to multiple competing demands and have limited time to tend to each patient. Furthermore, A&E physicians are not typically extensively trained in assessing psychological conditions such as panic disorder. In that context, assessing psychological conditions such as panic can be quite challenging. I think this is why a brief and easy to administer screening instrument such as the Panic Screening Score is so important.

#### Do you see direct improvements in clinical outcomes as a result of the deployment of your diagnostic tools, like the Panic Screening Score?

At this point in time, the Panic Screening Score has only been implemented in the context of research. The results are very promising and we are really looking forward to presenting the research to the clinical community in the next few months. In the course of our recent research, we observed that awareness of panic and its association with NCCP increased in some of the A&E

physicians. However, we also recognised that there are multiples barriers to panic screening in A&E patients with NCCP. While a screening instrument such as the Panic Screening Score is an important part of the puzzle, educational intervention as well as systemic changes, such as improved access to mental health professionals, are also very important factors that need to be addressed to improve care of A&E patients with NCCP.

#### Has awareness of the link between panic and chest pain increased in the time that you have been working in the area?

From my many exchanges with A&E physicians, they really seem more aware of this link than they were when I began working in this field. In the last five years, we can also see that more and more research is being conducted on this topic. This is all very encouraging as there is a lot of work to be done.

#### Do you have any explanation of the mechanisms underlying the connection between panic and chest pain?

As yet, there is no scientific or clinical consensus on this topic. The most likely answer is that there are multiple and overlapping mechanisms. One of these is that the rapid and significant increase in respiratory rhythm that occurs during panic attacks can cause benign intercostal muscular spasms that may cause chest pain. Another possibility is that some minor medical condition or benign physiological change, such as chest muscle soreness or minor injury, provokes the NCCP symptoms. Then patients with panic disorder, being more attentive and fearful of somatic symptoms, may be more likely than other patients to perceive these symptoms as potentially dangerous and to visit the A&E for medical assessment. Still, it is always possible that patients present a yet undiagnosed medical condition such as gastro oesophageal reflux or some form of cardiac condition, and just happen to also suffer from panic attacks. This is why we recommend that screening of NCCP for panic be made part of medical assessment by A&E physicians.

## Detail

#### RESEARCH OBJECTIVES

Dr Foldes-Busque’s research and clinical interests generally focus on anxiety disorders and health psychology. More specifically, he is interested in the relationship between anxiety and medically unexplained symptoms. He is also very active in student supervision and in clinical training, using the cognitive and behavioural approach.

#### FUNDING

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#### COLLABORATORS

Dr Patrick Archambault, Dr Fleet and Dr Poitras. All three are ED physicians and researcher who contributed to the research project. Dr Isabelle Denis, a fellow psychologist, researcher and professor at Université Laval. Dr Clermont Dionne, clinical epidemiologist, researcher and professor at Université Laval. Dr André Marchand, psychologist, researcher and professor at the Université du Québec à Montréal.

#### BIO

Dr Guillaume Foldes-Busque has been a psychologist since 2009, specialising in cognitive-behaviourally oriented interventions. He obtained his PhD in psychology from the Université du Québec à Montréal before completing a postdoctoral fellowship in clinical epidemiology at both the Research Centre of the Québec University Hospital, and the Centre de recherche du Centre hospitalier affilié universitaire de Lévisin Québec, Canada.

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