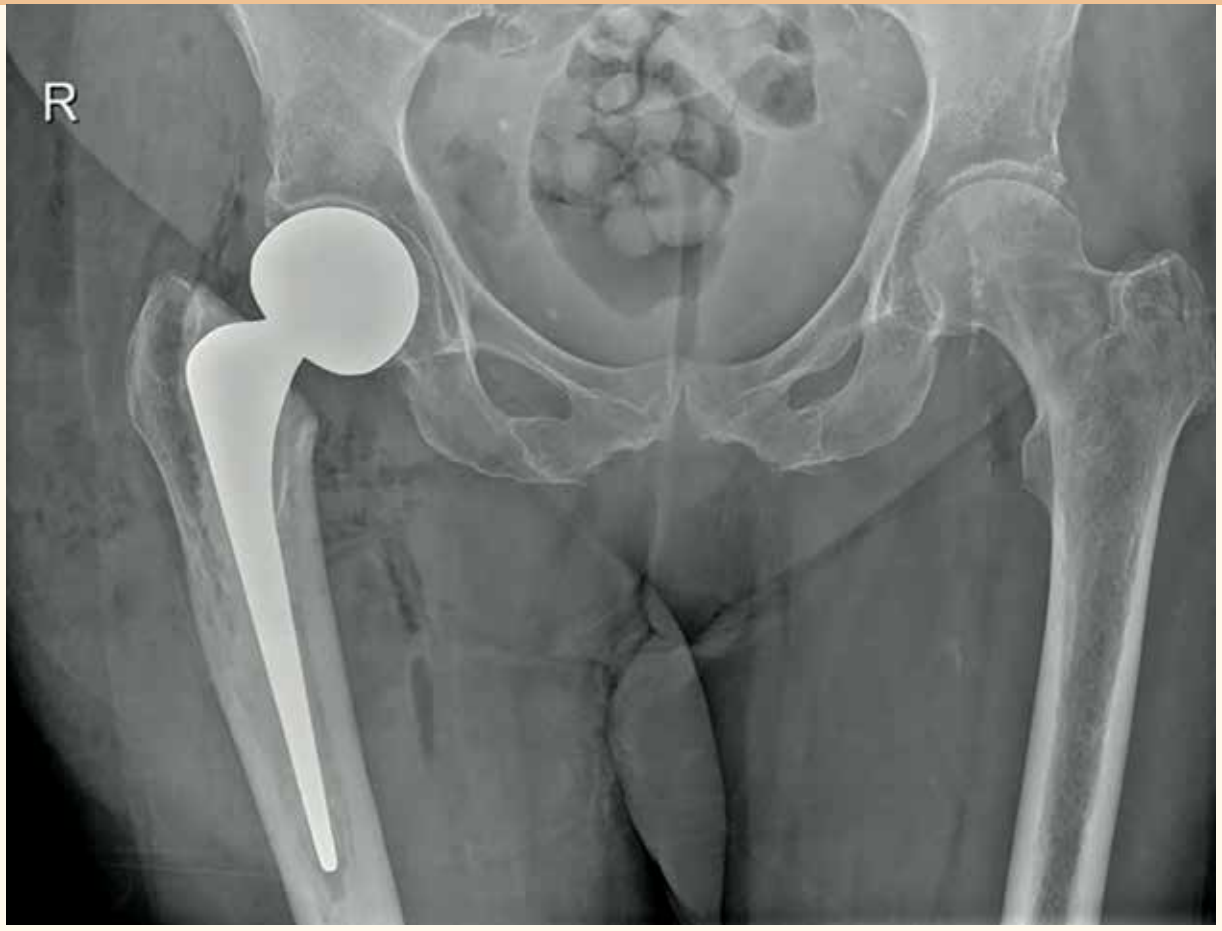
Making trauma research more patient focused

Matthew Costa is Professor of Orthopaedic Trauma Surgery at Oxford and an Honorary Consultant Trauma Surgeon at John Radcliffe Hospital. He will head the College's newly proposed Trauma Cluster. Editor Jackie Morgan talked to Matt about his research and how he is involving the patient.

JM: What is meant by trauma?

MC: What most people think about is something like a very big car crash – the sort of thing you see in TV hospital dramas. But it's a very broad spectrum involving any acute injury; that is an injury that happens suddenly, out of the blue. It can range from a simple fall from a standing height to a fall off a tall building, or from a sprained wrist to multiple injuries in the big car crash. The severity of the injury is not just about the energy transfer. An older person with weak bones may sustain broken bones from a simple fall at home whereas, with younger people it takes a lot more energy for the fall to harm them. My specialism is musculoskeletal, that is mostly arms and legs – but trauma includes head and chest injuries, or injuries to the abdomen. Trauma is not something most people think about from day-to-day, but it's the leading cause of death in people under 45.



A partial hip replacement which has replaced the broken part of the hip

JM: I find that surprising – is that mainly deaths arising from accidents?

MC: Under 45, you are much more likely to die from an injury that occurs in an accident than you are to die of cancer or heart disease and this is particularly true in the developing world. We are talking about road accidents or accidents sustained in agriculture or industry.

JM: What about the effect on older people?

MC: Trauma in older people is very important and an increasing problem as our society gets older. Hip fractures are a good example: 25% of people with hip fractures die within a year of the injury. Hip fractures are most common in older, frail people – indeed, it's unusual under the age of 60. The fact that our bones get thinner and our balance is not so good as we get older is part of the problem, but patients with hip fracture often also have several other medical problems such as heart or breathing problems. Hip fractures create life-changing injuries – not only do the patients themselves suffer but they also may not be able to look after themselves so they need extra help or care, and this creates a huge pressure on the health and social care services.

JM: I understand that trauma doesn't attract much research; why is that?

MC: In general, the major focus is on chronic conditions that attract a lot of publicity. Fortunately, with modern treatment, most younger people recover quite well from broken bones and want to forget about it afterwards, so it's not something people think about very much. Also, society seem to accept the incidence of car crashes and falls without much comment, whereas patients dying of heart conditions or cancer creates many more headlines. There are very few charities and lobby groups active in this area – looking at injuries and emergencies – and so there's not much research. The exception is the National Institute of Health Research (NIHR) which has a remit across the whole range of health problems.

JM: Your research uses the James Lind Alliance (JLA) method. What does this involve?

MC: Until recently, most medical research looked at what teams of doctors, nurses, physios and researchers thought important. The JLA approach has turned this around to make sure research is driven by the views of patients and carers. The James Lind Alliance is a process to create a 'research priority list' of what patients see as the biggest problems in a particular area of healthcare. We then

turn these into research questions that we present to professional and funding bodies. In trauma, we are organising several JLA processes. The first looks at research questions in lower limb fractures in older people, including hip fractures. The result will be a series of research projects driven by the needs and interests of patients.

JM: How do you find your patient group for the research?

MC: We have established a UK-wide 'public involvement group' of patients and carers who have expressed interest in the trauma research agenda. We work with them to design surveys to address the priorities they've identified. They write and review lay summaries of research questions. They also help spread the word, bringing together patients, carers and health care workers to take part in a research project. They then help to disseminate the results through research journals and to patients themselves through newsletters. Some of the patient members get very involved, and even become patient researchers themselves.

JM: What in your experience are the outcomes that people care about?

MC: It does depend a lot on the patient's pre-injury level of activity and the nature of their injury. My daughter recently sprained her ankle playing netball. Her desired outcome was simply to get back on the netball court as soon as possible. However, if you're over 80 and suffer a hip fracture, this can affect your whole life. So in these instances we are concerned about general quality of life – not just your hip movement but your ability to look after yourself, to be mobile, not to have a fear of falling. The important thing is being able to measure the right thing – the thing that is most important to the patient – otherwise you can't change practice.

JM: What kind of measures do you use in the case of a hip fracture?

MC: We use a general quality of life measure called EuroQol, which is reported by the patient themselves or their carers This score involves just five questions that give a sense of people's mobility, ability to care for themselves, do daily activities, if they are in any pain or suffering from anxiety or depression. From their responses we create a cumulative quality-of-life score based on a simple scale where 0 means dead and 1 perfect health. What we've found is that, even with the best care in the best centres, people lose about 20% of their quality of life after this injury. It's a huge cost to the patient and society as a whole, so getting a good outcome is better for patients and also cheaper.

JM: What would you like to see as the outcome for your work?

MC: Reducing this loss of quality of life and that means moving trauma up the research agenda. There are some areas where we don't even know what the best treatments are. This is quite depressing but also quite exciting because there's so much opportunity to do better.

JM: Are you able to quantify the costs of trauma?

MC: We don't have good numbers on the costs of trauma overall because it's not just a matter of getting your bone fixed but can you get back to work, can you look after your family? You can get a sense of scale by looking at the cost of hip fractures: in the UK, it costs £2 billion every year in terms of hospital and social care for just this one injury.

JM: What is the timescale for making changes in clinical practice?

MC: The JLA process takes 18 months for each exercise, and big country-wide research projects can take five years, so it's a long process. It can take a further five years before we get the right approaches to the right patients at the right time. But sometimes things move quickly. We recently had a trial looking at two ways of treating broken wrists. We found that the more traditional treatment was just as good as the newer, more expensive one and within two years practice had changed around the country. I'm pleased to say that my trauma colleagues do seem to be willing to change their practice quite quickly on the basis of the right sort of evidence. ■

Matthew Costa has been Professor of Orthopaedic Trauma Surgery at Oxford since 2015 and is a Fellow of Wolfson College. His research interest is in clinical and cost effectiveness of musculoskeletal interventions and he is Chief Investigator for a series of randomised trials supported by grants from the UK National Institute of Health Research and musculoskeletal charities. His work has been cited widely, and informs many guidelines from the National Institute for Health and Care Excellence (NICE). ■