



AfterTrauma



RESEARCH IN  
CHILDREN

# *the* PAIR *bulletin*

Patient Public advisors for Injury research

AfterTrauma

is a service and supporting website that connects and supports survivors of traumatic injury and their families.

AfterTrauma online, was the first UK website launched with the intention of supporting survivors of traumatic injury, and their carers and supporters, to help them understand what has happened to them and the resources available to help them recover.

When it was launched in 2015, it was just the first step towards developing more digital resources to help trauma survivors restore optimal health and functioning.

Thanks to a grant from Barts Charity, C4TS have built an AfterTrauma recovery app (for both iOS and Android), with added interactive e-health features, that will better support and motivate trauma survivors after they leave hospital.

The app can be downloaded [here](#) from Google Play (for Android devices) and [here](#) for Apple/ iOS devices. The app has not been updated and unfortunately will not work on recent versions of Android

Our AfterTrauma recovery App is based on the principles of supported self-management. Supported self-management programs aim to educate people about their health condition and care, motivate them to care for themselves in the best possible way and provide them with techniques and tools to enable them to do that.

## Research in children and young people

C4TS have learnt lots about bleeding and clotting problems in adults but we still know relatively little about trauma induced coagulopathy (TIC) in children. The existing studies that have been published either include a small number of children or include very select groups of children sick enough to need intensive care. This makes it difficult to understand how common clotting problems are in children. Current evidence suggests around one third of children develop TIC and it is associated with extremely high mortality, with one study reporting nearly two thirds of coagulopathic children died in hospital.

### Why might ATC be different in children?

Children are injured in different ways to adults with road traffic collisions and falls being the most common causes. Differences in body shape such as relatively large heads and more pliable bones alter the way energy is transferred to the body and its organs in accidents resulting in different patterns of injury. Different body size and composition can also affect the way drugs work.

Children can compensate for injuries better than adults. They might lose a lot of blood and still be able to maintain their blood pressure and heart rate at a relatively normal level for much longer than adults. This means the signs of shock that we associate with TIC in adults may not be seen in children.

Blood clotting varies with age and although the most well known changes happen around birth and in the first year of life, other things alter through childhood and into early adulthood. Several proteins that are implicated in the development of TIC in adults are known to change in youth.

There are also some practical things to take into account. Whilst some young people may be the same size and weight as an adult, very young people are obviously much smaller. This means the 40mls of blood taken from adults may be a significant percentage of the child's blood volume so we must reduce the amount taken in line with age. This changes the way samples are handled, including running some tests by hand as the volumes are too small to use with the automated pipettes.

The (Paediatric ACIT) programme is investigating these differences and trying to identify ways to improve the medical management of children with bleeding after injury. The hope is that findings will improve survival rates and outcomes following childhood trauma.

## Meet the reresearcher



Jared Wohlgemut

I am part of the COMBAT-AID (COMputer Battlefield Assistance in Trauma care and Injury Decision-Support) study group, which is a collaboration between C4TS and researchers from the School of Electrical Engineering and Computer Science at QMUL. We aim to create clinical decision tools using artificial intelligence, to aid decision-making for doctors, nurses and paramedics who care for injured patients. This technology could improve decision-making in the NHS, and in military settings. I am particularly interested in ensuring the system we make is usable and useful to clinicians. Our research group is supported by funding from the United States military, and I have been awarded a research fellowship from the Royal College of Surgeons of England for the study entitled "Usability of an Artificial Intelligence Decision Support System for Trauma".