

The mystery of the 'shaken' babies

As doubt is cast over the scientific evidence that underpins convictions in shaken baby cases, Keran Henderson tells her story for the first time

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Breakfast in Keran Henderson's household was always a lively affair. From 7.30am, as her two sons got ready for school, parents would arrive to drop off the children she was caring for until they were collected at tea time. For Keran, her friends say, looking after children was the key to who she was. She and her husband, Iain, a policeman, moved south to Iver Heath, Bucks, from Yorkshire in 1992. Keran trained as a legal secretary but after having her sons, Cameron and Jamie, became a registered childminder in 1999, aged 31. "Children were my life," she says. "Our house was full of kids and it was lovely to see them growing up."

With her bubbly, outgoing nature she was a popular figure in the local community, running the Beaver Scouts (there was always a long waiting list) and prominent in fundraising for disaster appeals. Her former boss said of her: "It's Keran by name and caring by nature." Her husband, Iain, calls her "a real free spirit".

On the morning of March 2, 2005, Keran moved into her customary routines: she would take the five children to a toddlers' group at 10am, returning in time for lunch. Her main concern was for 11-month-old Maeve Sheppard. In the two months Keran had been caring for her, Maeve had been a sickly child, often grizzly, unresponsive and reluctant to eat. Twice there were worrying medical incidents, when Maeve seemed to have a seizure, with shallow breathing and a weak pulse. The first time, Keran took her to the local GP; the second time, Maeve's father fetched her. Keran says: "She was hard work and something was not right, but I was determined to get her to normal. I saw her as my challenge."

As Keran tells it, Maeve slept that morning, then played happily. At lunch, Keran tried to feed her as she sat in a baby walker, but she vomited. Then Keran suspected that Maeve's nappy needed changing and laid her on the carpet. Maeve arched her back, her eyes rolled upwards, and she went floppy. "I could hear this gurgling," says Keran. "I will never forget it for the rest of my life." Keran checked to see if she was choking and attempted

resuscitation. Then she called 999. "It was the most petrifying thing I have seen or heard."

It was heartbreaking. I was there to look after her and protect her. I felt I had failed Keran followed the operator's instructions. When an ambulance arrived, Keran handed Maeve to paramedics, who assured her she had done all she could. Two days later, Keran and Iain learnt that Maeve had died. "It was heartbreaking. I was there to look after her and protect her. I felt I had failed, and that's never going to go away."

By Keran's account, that day marked the start of a Kafkaesque nightmare where, having done her utmost to save Maeve's life, she was accused of shaking her to death. In November 2007 she was sentenced to three years in prison for manslaughter, and served 18 months.

Since her release in May 2009, she has attempted to rebuild her life with Iain and their sons. She continues to protest her innocence but her appeal was turned down last year. Her lawyers are now considering an appeal to the Supreme Court.

For Maeve's parents, Ruth and Mark Sheppard, the death of their only child brought profound grief. Their anger towards Keran was clear too. "In 18 months' time she goes home to a loving husband and two loving children," Mark Sheppard said. "I will never have Maeve back."

While the Sheppards believed their baby's killer had been found, others were not so sure. The Henderson case in fact illustrates the doubts that surround cases of so-called shaken babies, over which controversy rages and opinions are polarised.

An estimated 250 shaken-baby cases reach family or criminal courts in Britain each year. In many, injuries such as bruising and fractures leave little doubt that abuse has occurred. The controversy arises in a minority of cases without external injuries, where one side insists that shaking can be detected from a "triad" of injuries to the brain and the eyes.

Shaken-baby syndrome, as the theory is known, has become a medical and judicial orthodoxy and is endorsed by a coterie of experts who regularly appear in court and maintain that the theory is a bulwark against child abuse.

A second, equally determined group contends that shaken-baby syndrome is a deficient theory that results in innocent carers and parents being jailed because of flawed science. "We find ourselves having to defend them against charges which defy all common sense," says Michael Turner QC, who has wide experience in such cases. Defence lawyers see a parallel between shaken babies and Sids (sudden infant death syndrome), which long remained a mystery and saw innocent parents sent to prison.

The shaken-baby deaths are an equivalent enigma, but in these cases the last person known to have handled the child is invariably blamed. This unsolved mystery presents defence lawyers with the difficulty that they are unable to advance a convincing alternative explanation for the deaths or injuries with which their clients are charged. Defence lawyers insist that they should not have to do so, since the prosecution's task is to prove guilt. Turner says: "It should never be for the defence to come up with an answer. There is a problem, which is that we don't know why these children are dying. The answer is not that the last carer is convicted of murder." But battles in and out of court have left defence experts reeling.

Since Keran's conviction, the conflict has intensified. Judges have dismissed triad-based prosecutions without waiting to hear the defence, one observing that he had heard nothing that constituted real evidence. Some police forces prosecute readily, others are reluctant. Some verdicts have been sustained on appeal, others overturned. Meanwhile scientific studies are appearing which, say the sceptics, are steadily eroding the basis of the triad.

Keran Henderson has not told her story before. If her account is false, she has faked both the details of the case and her emotional responses. For someone who comes across as an uncomplicated woman with a love of children, it would be a remarkable performance. In March 2005, the Hendersons were baffled as to why Maeve had died. The local hospital had suspected meningitis, but an initial postmortem proved inconclusive. When the police asked to interview Keran she readily agreed. "I told them everything I could. I was the only person who could help them because I was there. I had no idea there was any suspicion."

Nine months later two police officers arrived at the Hendersons' home. Keran presumed they had come to reveal the cause of Maeve's death: "I thought, at long last we would have some answers." Instead they said they were arresting her for assault. She was taken to Maidenhead police station to give fingerprints and DNA. "They were grilling me and ridiculing me. I couldn't believe that this was happening. I was sobbing and shaking and vomiting."

Keran's trial for manslaughter began in Reading in October 2007. From his police experience, Iain was convinced there was no real evidence against her. Keran says: "We just thought, the judge is going to throw this out, never in a million years will it come to a verdict."

When the prosecution opened its case, medical witnesses described the triad of injuries that Maeve had sustained from her alleged shaking. First were retinal haemorrhages, bleeding at the back of the eyes. Second was bleeding around the dura, a membrane between the skull and the brain. Third was bruising or swelling of the brain. Professor Anthony Risdon, a pathologist who has frequently appeared in shaken-baby cases, said that the components of the triad were "severe". He added: "This is usually an injury perpetrated

by somebody who loses their temper." The Home Office pathologist Dr Nat Cary said the injuries indicated "a great degree of force".

Much of the prosecution's evidence consisted of a theoretical exposition of the triad, leaving Keran bemused. "It was all their opinion, nothing was fact. The worst thing was that I was the only one who knew the truth. I was there and I knew what happened."

As to how Keran could have caused the injuries, accounts varied. She may have shaken Maeve for up to 15 seconds, or just once. She may also have thrown her on to a soft surface. The police had accused Keran of shaking Maeve two weeks before her death, and that suggestion surfaced too. When Keran gave evidence, she repeated her account.

The prosecution claimed that she had lost her temper over Maeve's vomiting and her possibly soiled nappy. "Apparently, that would make us all late for afternoon nursery," says Keran, who points out that she has changed countless nappies. "It takes a nanosecond. And even if it had taken 20 minutes, we wouldn't have been late." Keran is 5ft tall, and since Maeve weighed over 20lb, the idea that Keran could have held her out and shaken her for even a few seconds "was just absurd".

The jurors wrangled for two days before finding her guilty by 10 votes to two. She was sentenced to three years and taken to Bronzefield prison. Iain remembers "a shrunken little figure huddled in a corner". Keran says: "I completely shut down. I couldn't understand why this was happening to me."

In the new year, Keran was transferred to Send prison, Surrey. Although she had her own cell, she was threatened, spat at, and had food thrown at her. Relief finally came via a Panorama documentary which cast doubt on her conviction. "From then on, I was left alone."

The theory of the triad originated in the US in the late 1960s, and states that the whiplash and/or rotational motion of shaking bruises the brain and tears blood vessels, causing often irreparable harm. This can be diagnosed, advocates insist, without external injuries, and occurs when a parent or carer loses their temper and shakes or throws the child, often "in the flick of an instant", as one advocate puts it.

The growing number of sceptics include pathologists, biomechanical experts and high-profile converts such as Dr Patrick Barnes, a paediatric radiologist who testified against the British nanny Louise Woodward in the US in 1997. Woodward was convicted in Massachusetts of murdering eight-month-old Matthew Eappen and faced 15 years in jail. Her conviction was reduced to involuntary manslaughter on appeal and she was freed having served 279

days. Barnes now doubts Woodward's guilt and says that shaken-baby syndrome is often misdiagnosed.

A leading British sceptic is Dr Waney Squier, a neuropathologist based in Oxford. After giving evidence for the prosecution in shaken-baby cases, she concluded the triad was not valid. Her postmortem observations showed a different pattern of bleeding in the dura from the kind described in the triad, and she did not believe this could be caused by shaking. Squier conducted the postmortem on Maeve Sheppard in March 2005 and attended the first prosecution case conference. "I was extraordinarily unpopular because I refused to say it was to do with shaking."

Sceptics point out that there is no known witnessed case where shaking has caused a well baby to collapse. The doubts were echoed by the Law Commission in a report in February which referred to "the limited research data supporting the hypothesis, and evidence that the triad can have some other cause". The detailed arguments in two areas are illuminating.

One concerns biomechanics, where an early experiment provided a key element of the theory. In the US, in 1968, the neurosurgeon Ayub Ommaya used a trolley to slam rhesus monkeys into a wall at 30mph, causing cerebral haemorrhages. A paediatric radiologist, John Caffey, used Ommaya's findings to advance the shaken-baby hypothesis. Ommaya had warned Caffey that the forces in his experiment far exceeded those that could be involved in shaking, and later repudiated the use of his data. Since then repeated biomechanical experiments have failed to generate the forces required to cause the triad injuries.

The second concerns confessions. If a substantial number of people have admitted shaking babies to death where the triad was the only evidence, would this not settle the matter? At Keran's trial, Professor Risdon referred to "confessional evidence" but then described a single case in which a father had reportedly confessed, not to shaking, but to throwing his child across a room on to a bed, producing injuries "similar to" Maeve's.

The prosecution cited a study by an American ophthalmologist, M Vaughn Emerson, which supposedly contained seven cases of admitted shaking. In fact, only one was a pure triad with no external injuries; and the child may have had pre-existing injuries from being dropped into a bathtub. Other confession studies are similarly flawed, particularly because there are no scientific controls over how the "confessions" were obtained.

If shaking does not cause the triad injuries, what does? The search for that explanation has preoccupied researchers accustomed to the ebb and flow of scientific argument. But when science and the law meet in the adversarial setting of the court, the quest for the truth appears at risk. Ten years ago Dr Jennian Geddes, a neuropathologist at the Royal London Hospital, became

troubled after giving evidence for the prosecution in shaken-baby cases. She compared the brains of babies who had died from natural causes with those believed to have died from trauma, including shaking. She proposed that the subdural bleeding could be caused by a lack of oxygen, known as hypoxia, which could result from coughing or choking. Later she argued that these could also result in intracranial pressure that would lead to bleeding.

The hypoxia and brain swelling could also cause the retinal bleeding, and so explain how the triad could be caused without shaking or impact. Geddes's theory offered the explanation the sceptics were seeking, and she believed that she was taking part in a reasoned scientific debate. But when she gave evidence for the defence in a criminal trial she was aggressively cross-examined and conceded that her theory remained an incomplete hypothesis. In a crucial judgment in 2005, the appeal court ruled that her theory could no longer be argued by the defence. Geddes later protested that the triad was no less of a hypothesis than hers; she stands by her theory, pointing out that it is backed by further studies by other pathologists.

The conundrum was at the core of Keran's appeal. She spent 18 months in prison, where Iain and their two sons visited her regularly. "I tried to be strong so that they saw the mummy they knew. After I said goodbye, I sobbed my heart out." At the appeal in March 2010, Michael Topolski QC, defending, said that Keran faced the classic dilemma in triad cases: whereas the prosecution had proposed a cause of death, the defence was unable to suggest an alternative. "We are in the 'don't know' category," he said. "One is left in the position of saying: 'One just can't explain.' What is the innocent carer to do in these circumstances?" Lord Justice Moses admitted: "None of us are happy about these cases."

But Topolski had to contend with two sets of internal injuries besides the triad. One consisted of folds in Maeve's retina near an area known as the macula, which an expert had insisted could only be caused by shaking or impact. Here, the ground had shifted in Keran's favour, as a new study had shown that they could also be caused by leukaemia. The second consisted of axonal damage to nerves in Maeve's spinal cord, with rival experts disputing when this was caused. The appeal judges reassured Keran that their minds remained open. But three months later they rejected her appeal, saying that although valid doubts had been raised about the medical evidence, these were not enough to overturn the jury's verdict. They added the gnomic rider that there was still "the unsolved mystery of how so admired a childminder should have been responsible for the use of excessive force, even momentarily, when handling this baby".

The judges' words brought Keran scant comfort. "This whole thing hasn't been about the facts. It's just been about medical opinion. Whatever I've said or done hasn't come into it. I felt as if I had been found guilty from the start."

Meanwhile the legal and scientific battles continued. Waney Squier, together with Dr Marta Cohen, a forensic paediatric pathologist whose findings supported Geddes, were criticised by a family court judge as being zealots. Yet several shaken-baby cases were halted, and one Old Bailey case was abandoned shortly before it was due to start. At a conference in Atlanta last year, Detective Inspector Colin Welsh, head of the Met's child abuse team, complained that defence experts were confusing juries over "the complexity of science". "Question everything," he reportedly said. "Qualifications, employment history, testimony, research, papers presented by these experts – go to their bodies to see if we can turn up anything unusual." The sceptics found themselves under investigation. Squier and Cohen were the subject of an inquiry by the General Medical Council (GMC), with Welsh appearing as an "interested party", citing the criticisms of the family court judge. Squier and the pathologist Dr Irene Scheimberg, a colleague of Cohen, were also referred to the Human Tissue Authority (HTA), by an unnamed police officer and Professor Anthony Risdon, on the grounds that they had improperly used human tissue when preparing their papers. Cohen says the HTA complaints were absurd, since their studies were based on existing postmortem findings rather than new research.

The HTA complaints were dismissed, but the GMC case is still pending. All three are now reluctant to appear in family court. "You will be accused of being dogmatic and unbalanced," says Cohen. "You can't say what you think." These experts' withdrawal from family court cases raises fresh concerns.

Defendants face daunting odds, as allegations can be based on just one element of the triad, and judges, sitting without juries, decide on the balance of probabilities rather than the more rigorous criterion of reasonable doubt used in criminal cases.

The result, say defence lawyers, is that parents who have taken a child to hospital following a fall or collapse may have their other children taken into care. They are likely to face the same array of experts who appeared in the Henderson case, and may face a criminal trial too. Even if they are later acquitted or win an appeal, they may have enormous difficulty recovering their children.

In January, the CPS published new guidelines on shaken-baby cases – now called Non-Accidental Head Injuries (NAHI). The guidelines assert that NAHI would usually be "diagnosed" by the triad, adding that other "non-medical facts" could provide "appropriate supporting evidence". Defence lawyers object that the appeal court has ruled that the triad is not diagnostic but indicative – ie, pointing to shaking rather than proving it. And because the guidelines asserted the primacy of the triad, the danger remained that "non-medical facts" could be made to fit.

The CPS declined to discuss the detailed arguments over the triad. It pointed to proposed reforms that would streamline expert evidence in what it termed “these difficult and sensitive cases”. As for the disputes involving defence specialists, where “the mainstream view has been challenged... the argument is worth having and it is good to do so”.

The debate continues. Squier has conducted studies that show that two pathological findings – subcortical contusions and nerve-root injuries, previously used to support diagnoses of shaking – can have natural causes. Scheimberg is supervising a study that is likely to confirm a strong link between infection and subdural haemorrhages, hitherto a key element of the triad.

Keran has studied the CPS list of 11 “additional factors” that could indicate guilt, among them a history of violence to children, appearance of atypical bruises, inconsistent accounts, mental-health issues, history of domestic alcohol or drug abuse, conflicting accounts for time of death and previous convictions. None, she points out, applied to her in any way.