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**BBC**

**Africa trial questions shock treatment for children**



A trial in East Africa has raised questions about an internationally accepted emergency treatment for children suffering from shock.

It involves injecting a large volume of fluid rapidly, through a drip, and is used widely in Europe and the US.

But researchers say it could be linked to additional deaths of children with severe infections like malaria.

They called for a rethink of UN World Health Organization guidelines that recommend the "fluid bolus" treatment.

'Not safe'

[The Fluid Expansion as Supportive Therapy (Feast) trial, published in the New England Journal of Medicine](http://www.nejm.org/doi/full/10.1056/NEJMoa1101549?query=featured_home), studied 3,170 children in hospitals across Uganda, Kenya and Tanzania.

All children had shock - a potentially fatal condition in which the body restricts the flow of blood to vital organs, shutting down certain organs to spare blood flow for others.

The children, suffering from fevers and severe infections such as malaria, were allocated to three treatment groups, randomly.

Two groups received rapid rehydration with fluid boluses in the first hour after admission to hospital.

The other group were given fluids more slowly, replacing the amounts needed by a sick child who cannot drink.

The study, funded by the UK's Medical Research Council, found the children who were given fluid slowly did better.

The research suggests the addition of boluses led to an extra three child deaths out of every 100 children treated.

"Giving big boluses very quickly to very sick children in the African setting is not safe; however, fluids work if they're given more slowly," the principal investigator in Uganda, Professor Sarah Kiguli, told the BBC's Network Africa programme.

She said there was a need to continue the use of fluid boluses to treat certain types of shock, including those involving burns and trauma and in the treatment of diarrhoea, but the WHO guidelines should be revised in light of the study.

"The results went against recommendations of the WHO and the normal practice in wealthy countries, and this surprised me greatly," she added in a statement.

Though the results may not be directly applicable to other areas, where advanced life support equipment is more widely available, the researchers are calling for further investigations into the worldwide use of this treatment.

"The treatment may not carry the same risks in wealthy countries because children are healthier, and in particular have fewer problems of underlying long-standing malnutrition or anaemia," Professor Diana Gibb from the Medical Research Council said.

"However, the clear findings from the Feast trial do question the use of boluses for severe infections even in wealthy countries and more research is needed."

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**Safety questions over common treatment for shock in children: Doctors stunned by results of trial carried out in Africa Tests stopped after results showed excess deaths**  
**BYLINE:** Sarah Boseley Health editor  
  
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A trial in Africa has raised major questions about the safety of the routine treatment given to children suffering from shock in the UK and other developed countries.

It is normal in the UK to inject large amounts of fluid very rapidly into children suffering from shock as a result of, for example, septicaemia (blood poisoning) linked to meningitis.

But doctors testing the feasibility of this fast rehydration in Africa have found that more children treated this way died than among those who were not.

The outcome of the Fluid Expansion As Supportive Therapy (Feast) trial, funded by the UK's Medical Research Council, took doctors by surprise and will lead to a rethink of the practice around the world.

Fluid resuscitation for shock was introduced in Europe and the US several decades ago without a trial, on the basis that it worked for children in shock who were seriously dehydrated from conditions such as gastroenteritis.

The Feast trial was stopped early when the excessive number of deaths became apparent. Scientists are now urging the World Health Organisation, which recommends it, to revisit its guidelines.

While it is possible children are more vulnerable in Africa because of malnutrition and the severity of diseases such as malaria, doctors say there is no clear reason why an injection of a large amount of fluid through a 15-minute drip - known as a bolus - would be more dangerous in Africa than in Europe.

Children in the trial were getting a high standard of care.

It is possible that the potential harm has been masked in rich countries by the availability of ventilators to keep children alive.

The trial is the result of 10 years' work led by Kathryn Maitland, a renowned expert on the use of rehydrating fluids who had hoped to save many children's lives in Africa by introducing what she had thought was a safe treatment.

"Emergencies come into hospital all the time," she said.

"Children die within hours of coming into hospital.

Doctors feel powerless."

Maitland and everybody involved in the research were stunned by what they found.

Because staff in the six participating hospitals - in Kenya, Uganda and Tanzania - had been trained in caring for very sick children and had been ensured a constant supply of oxygen and drugs, the death rates among the children generally had gone down.

Doctors assumed it was because of the boluses.

But when the external data monitoring committee looked at the interim results, they told Maitland the trial was being stopped.

Feast monitored the care of 3,170 critically ill children in the six hospitals, all of whom had infections such as malaria and septicaemia which lead to fever.

Those enrolled, with their parents' consent, were divided into three groups.

Two groups were given emergency boluses of 20 to 40 millilitres of fluid per kilogram of bodyweight.

All the children received the normal treatment in Africa, which is the slow administration of fluids through a drip.

The results, published in the New England Journal of Medicine, show survival rates were better than usual.

Among those not given a bolus, 92.7% survived.

But among the bolus groups, that dropped to 89.4%.

That means boluses caused more than three children to die in every hundred treated.

Experts believe a trial is now needed in a developed-world setting.

"Extrapolating directly from Africa has to be done very carefully," said Professor Diana Gibb from the MRC clinical trials unit.

"Here there is a package of care where kids get fluid and if they really don't get better, they will go into intensive care and other things will happen including ventilation.

"But it is also true that a lot of kids in A&E get boluses of fluid if they look particularly unwell and there might be a diagnosis of sepsis.

I suspect because the kids are healthier, it is probably not doing harm but we really don't know the answer to that."