

# Vital children's cancer drug being underdosed

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(Medical Xpress)—A study has found that many patients receiving a potentially life-saving drug for the childhood cancer neuroblastoma are potentially being under-dosed.

Every year in the UK approximately 100 children aged between 0-15 are diagnosed with neuroblastoma and currently only half of those will survive. The drug, 13-cis-retinoic acid, has been used in high doses to treat children with the disease for the last ten years. It plays a key role in stopping cancer returning after tumours are treated by surgery, chemotherapy and radiotherapy.

In the paper, published today in the journal [Clinical Cancer Research](#), the team at Newcastle University describe how, when they looked at a large number of cases of neuroblastoma over a three year period, they found that in three quarters of cases the patients were achieving drug exposures which may not be beneficial.

Although there are few side effects with the treatment, the main challenge to giving the drug is that it only comes in capsule form. As most children with neuroblastoma are too young to swallow the capsules, they have to be opened up and the contents either put down the child's feeding tube or mixed with food such as [yoghurt](#) or ice cream. This means it's very hard to control exact doses, as some medicine can be left in the capsule or not transferred efficiently.

It is believed this under-dosing could have a significant impact on the child's recovery, although the exact impact has yet to be assessed.

As a result of the study, patients are now being prescribed extra medication.

Lead researcher on the project, Dr Gareth Veal, senior lecturer at the Northern Institute of Cancer Research at Newcastle University, said: "This could have serious [repercussions](#) for the outcome of the child in terms of long-term survival. We have now started increasing dose levels so that patients receive a personalised dose that leads to drug exposures that we hope will be beneficial. We will be following up these patients to see if it makes a difference to survival rates for a disease which is incredibly challenging to treat successfully."

"It's too early to say if these changes will improve long-term outcome for this type of cancer but I would anticipate that increasing the dose of this drug could lead to an increased chance of survival for many children."

Dr Veal and colleagues studied 70 patients from The Newcastle upon Tyne Hospitals NHS Foundation Trust receiving 13-cis-retinoic acid from hospitals around the UK and found that particularly in babies, where doses prescribed are often lower than those received by older children, levels of 13-cis-retinoic acid in the blood were frequently much lower than those thought to be effective. As a result of this the researchers recommended 25-50% dose increases in patients who experienced low drug exposures, in order for all patients to achieve the correct blood levels.

The study has led to changes in the way that this important drug is dosed in the majority of [neuroblastoma](#) patients, with babies now given the same dose as older children and patients who are not able to swallow the 13-cis-retinoic acid capsules also prescribed an increased dose level.

**More information:** Gareth, J. et al., Adaptive Dosing Approaches to the Individualization of 13-Cis-Retinoic Acid (Isotretinoin) Treatment

for Children with High-Risk Neuroblastoma, *Clinical Cancer Research*.  
January 17, 2013. [clincancerres.aacrjournals.org/content/19/2/469](http://clincancerres.aacrjournals.org/content/19/2/469)

Provided by Newcastle University

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