Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists

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DO BABIES AND CHILDREN NEED INDIVIDUALISED DRUG DOSES?

As babies grow through childhood and become adults the way that drugs are used and eliminated from the body changes. They pass through the body at a much slower rate in babies, and surprisingly faster in children than in adults.

Dr Anderson from the University of Auckland, New Zealand will present his work at the ASCEPT Annual Scientific Meeting which is being held at the Sydney Convention Centre, Darling Harbour between 29 November and 2 December 2009.

Dr Anderson and his colleagues have looked at these differences using the same mathematic principles used to explain why branching networks are common in nature. Some examples of this are tree roots, river deltas and blood vessels.

They have shown that many of these elimination processes mature within the first year of life. For example, many drugs are got rid of by the kidneys. These organs only function at one tenth that of adults in premature babies, but they mature rapidly, and in healthy babies born at full term are one third that of adults. The kidneys continue to mature until they are similar to adults by one year of age.

This knowledge about kidney maturation improves the use of drugs that are eliminated by the kidneys. Gentamicin, a strong antibiotic commonly used in critically ill babies, is a good example of such a drug. Similar patterns of maturation are seen with morphine, a pain killer removed from the body by the liver.

The good news for doctors and their patients is that by understanding this process the right dose of drugs can be prescribed for different ages, even in premature babies.

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