



## Paediatric Cancer Patients: Quick Antibiotics Reduce Mortality



According to researchers, paediatric cancer patients who receive antibiotics within 60 minutes of reporting fever and showing neutropenia (low neutrophil count), go on to have decreased intensive care consultation rate and lower mortality compared with patients who receive antibiotics outside the 60-minute window. Their study showed in a sample of 220 children that mortality was 3.9 percent for patients who received antibiotics outside 60 minutes and only 0.7 percent for those who received antibiotics within the hour. The finding is reported in the journal *Pediatric Blood & Cancer*.

"We're talking about kids who have gone home after chemotherapy and then a parent calls the hospital reporting a fever. The question is can we get the patient back to the hospital, then get a white cell count, and get antibiotics on board when needed all within an hour of their arrival? It's a huge challenge," said senior author Joanne Hilden, MD, investigator at the University of Colorado Cancer Center. "This study shows that it's important we make it happen: there's less intensive care and fewer fatalities for kids who get antibiotics sooner."

The study was part of Children's Hospital Colorado initiative to improve time-to-delivery of antibiotics in cases of fever and neutropenia in paediatric cancer patients, which at study outset took an average 150 minutes. Procedural changes were made such as prescribing antibiotics upon a paediatric cancer patient's arrival to the hospital, holding that order, then allowing the delivery of antibiotics to start immediately after learning the results of neutrophil count testing (eliminating the need to find a prescriber once the white blood cell count was known).

Another intervention describes speeding the time required to determine the neutrophil count. Traditionally, determining neutropenia requires a full white blood cell count followed by "differential" (counting the percent neutrophils) by a human technician. Notably, human verification reverses the preliminary, machine results in less than 0.5 percent of cases. Analysis showed that the benefit of speed outweighed the risk of administering unneeded antibiotics in these very few cases. Relying on preliminary rather than technician-verified results of white cell counts reduced the time of testing from 45 minutes to 20.

"Another thing we show is that just increasing the awareness of how important it is to get antibiotics on board quickly in these cases speeds delivery," explained Dr. Hilden, who is also director of clinical services for paediatric oncology at Children's Hospital Colorado.

Taken together, along with changes to clinic flow procedures that included notifying the full care team as soon as the family is advised to come into the hospital and a STAT intake, Children's Hospital Colorado was able to reduce its time to delivery of antibiotics to a median 46 minutes, with nearly 100 percent of paediatric patients with fever and neutropenia receiving antibiotics within 60 minutes.

"Only eleven percent of paediatric cancer patients with fever and neutropenia have serious complications. That's low. But we can make it zero, and this study shows that getting antibiotics onboard quickly goes a long way toward that goal," Dr. Hilden added.

Source: [University of Colorado Cancer Center](#)

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