Study highlights implications of influenza pandemics on blood supplies

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A German research team has examined data on supply and demand for blood transfusions against a computer simulation of an influenza pandemic, and discovered that a severe pandemic scenario could quickly lead to a deficit of up to 96,000 red blood cell (RBC) transfusion units in Germany alone, creating potentially fatal outcomes. Their study is published today in the journal *TRANSFUSION*.

"The pandemic model showed that after five to six weeks of a severe pandemic, there would be 220,000 fewer units than the normal supply, a reduction of 40-50 percent," said lead researcher Dr. Christel Kamp, of the Paul-Ehrlich Institute, Germany. "If we assume that 70 percent of required transfusion units are urgent and cannot wait, this could lead to approximately 100,000 units being denied to people who need them."

The supply of RBCs requires a delicate balance. RBCs need to be applied in life-threatening situations but can neither be synthetically produced nor be kept in stock for more than six weeks. This makes them an especially precious resource in situations of crisis such as an influenza pandemic because availability is dependent on the health of donors.

The researchers identified regular fluctuations of up to 10 percent in the numbers of supplied and transfused RBCs. They also found that non-urgent transfusions are, to some extent, synchronized with the overall availability of RBCs, which allows enough "elasticity" to cover the annual influenza season.

"Although current interventions to limit the spread of influenza might reduce the scale of a pandemic to that experienced during seasonal influenza epidemics, continued alertness should be mandatory and should be implemented within the regulatory framework," added Kamp. "It will be equally important to better understand the demand for RBCs to define prioritization schemes."

The study also highlighted parallel issues that could affect the supply of RBC units in a pandemic, such as blood collection staff staying home due to illness. In addition, the study identified the need to conduct smaller and more frequent blood donor collection activities at fixed sites or mobile locations to reduce the risk of spreading influenza while still maintaining adequate blood inventories.

Source: Wiley (news : web)