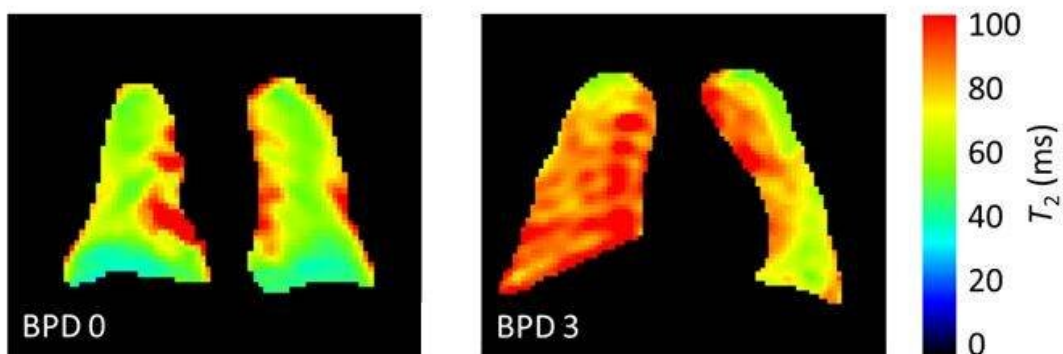


Specific identification of chronic lung disease in premature babies

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The red marking in the MRT on the right shows the increased T2 relaxation times, which indicates bronchopulmonary dysplasia. Credit: Klinikum Universität München

Infants born prematurely frequently develop a form of chronic lung disease known as Bronchopulmonary Dysplasia. Previously, this disease could only be diagnosed clinically and with a low degree of differentiation. Researchers at the Helmholtz Zentrum München and the

University Hospital of the Ludwig-Maximilians University – partner in the German Center for Lung Research (DZL) – have now successfully developed a new protocol for identifying neonatal patients with the disease by the use of magnetic resonance imaging (MRI). Their findings have now been published in *Thorax*.

Between 15 and 30 percent of all preterm babies with a [birth weight](#) of less than 1000 grams or who are born before the 32nd week of pregnancy develop Bronchopulmonary Dysplasia. Depending on [disease](#) severity, BPD can lead to [lung](#) dysfunction that continues into adulthood, and in some cases also leads to death. "Up until now it has only been possible to diagnose according to clinical criteria that only allow for a low degree of differentiation," reports Dr. Anne Hilgendorff, head of the working group "Mechanisms of Neonatal Chronic Lung Disease" at the Institute of Lung Biology (ILBD) and the Comprehensive Pneumology Center (CPC) at the Helmholtz Zentrum München and Director of the Center for Comprehensive Developmental Care (CDeCLMU) providing care for high-risk preterm and term neonates at Munich University Hospital (LMU). Dr. Hilgendorff: "Up to now there has been a lack of specific options for assessing structural changes in the lungs while avoiding the harmful effects of radiation, and this has made personalized treatment and follow-up monitoring more difficult." A new MRT protocol could now close this gap.

Study involving 61 at-risk patients

"With our team of scientists in closest collaboration with our clinical colleagues in the Perinatal Center at the LMU and the Department of Radiology we have evaluated the imaging studies of 61 neonates," reports Dr. Kai Förster, a physician-scientist in Dr. Hilgendorff's working group. All the infants involved in the study were born before the 32nd week of pregnancy. During the examination, which took place close to the date of birth, they were already able to breathe

independently and underwent MRI scanning during spontaneous sleep. Statistical analysis of the MRI data performed by colleagues from the Institute for Computational Biology at the Helmholtz Zentrum revealed increased T2 and decreased T1 relaxation times, indicating the presence of Bronchopulmonary Dysplasia. "Our results mark an important step towards improving image-based phenotyping of infants who are at risk or have developed the disease," comments Dr. Hilgendorff. "In future, individual treatment and monitoring strategies will thus be possible." It is important, she stresses, that large perinatal centers now use this method and evaluate it jointly aiming at identifying potential subtypes of Bronchopulmonary Dysplasia.

More information: Kai Förster et al. Altered relaxation times in MRI indicate bronchopulmonary dysplasia, *Thorax* (2019). [DOI: 10.1136/thoraxjnl-2018-212384](https://doi.org/10.1136/thoraxjnl-2018-212384)

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