

# When Koko the Gorilla Needs a Checkup, Stanford Docs Swing into Action

By *Mitzi Baker*

**O**n August 8th, Dr. Fred Mihm and a team of Stanford colleagues reported to the nearby Woodside abode of Koko, the 33-year-old lowland gorilla famous for her ability to communicate through American Sign Language.

The medical team's visit was prompted by an aching tooth. Using the gesture for pain and pointing to her mouth, Koko recently told her handlers that her level of pain was an eight or nine on a scale of 10. The Gorilla Foundation contacted Mihm, who has consulted with the San Francisco Zoo for years and has anesthetized lions, tigers, giraffes and elephants in addition to gorillas, about joining a team of veterinarians and dentists to treat Koko's painful tooth. The use of anesthesia can be a risky proposition for animals, so it is used only when deemed essential, Mihm said. Because the dental surgery required anesthesia, doctors felt it would give them the perfect opportunity to take an in-depth look at Koko's overall health. Gorillas suffer from many of the same maladies as humans, Mihm said, so it makes sense for veterinarians and medical doctors to collaborate.



Anesthesiologists Fred Mihm (right) and Ethan Jackson (center), working with veterinarian John Ochsenreifer (left), attend to Koko the gorilla after she has been sedated for a recent medical workup that took five hours. With the exception of dental problems, Koko was found to be in good health. Photo: Courtesy of Ron Cohn, The Gorilla Foundation

For Koko's complete examination, Mihm recruited a team of physicians who were thrilled to volunteer their time for their legendary patient.

"This was an opportunity of a lifetime," said assistant professor of obstetrics and gynecology Bertha Chen, M.D. Because Chen's research focuses on the anatomy and structure of the pelvis and many such studies are done in primates, it was a particularly appealing proposition for her. "Koko presents a unique opportunity for us to learn about gorillas. It was fascinating for me to see the similarities and differences in the primate and how close they are to us."

Koko has told her handlers over the years that she would like to have a baby, so Chen, performing her first non-human gynecologic exam, was asked to

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determine whether biological reasons were preventing Koko from conceiving with her partner of 11 years, Ndume. After a battery of blood tests to check hormone levels and a physical exam, which included ultrasound to look for fibroid tumors, Chen found no obstacles to Koko becoming a mother. Menopause comes very late in life for gorillas, according to Chen, and in captivity they can live into their 50s.

Like humans, gorillas are susceptible to thickening of the arteries and heart disease, so cardiologist David Liang checked out Koko's heart. Liang has previously participated in other gorilla examinations with Mihm at the San Francisco Zoo and is continually amazed at the similarities between gorillas and humans.

"The outside may be very different, but the inside is so much like humans," said Liang, Assistant Professor of Medicine in the Division of Cardiology. "Other than proportion, everything is similar." In fact, he said, another doctor seeing the images taken of Koko would not be able to tell that the heart wasn't human.

During the five-hour medical workup, Koko underwent an echocardiogram; X-rays; ultrasounds; dental work, including removal of an abscessed tooth; orthopedic, gynecologic and dermatologic exams; colonoscopy and bronchoscopy. Mihm plotted out the details of the procedure with Koko's veterinarian, John Ochsenreiter, along with assistant professor of anesthesia, Ethan Jackson, M.D., and senior anesthesia resident, Parag Mathur, M.D. Other members of the Stanford team involved in the medical workup included otolaryngologists Jim Koch, M.D., and Nick Blevins, M.D.

The only problem encountered was periodontal disease which was treated by the dental consultants. Mihm reported that Koko woke up from the anesthesia quickly and was soon moving about, making a purring sound that he interpreted as a sign she was OK.

According to the Gorilla Foundation, Ndume watched Koko's entire procedure from a window and behaved like a nervous boyfriend, pacing and calling out to her until it was clear that she was fine. They report that she is currently taking it easy and enjoying special meals, such as a "gorilla ice cream sundae" consisting of soy ice cream and chocolate sorbet on a bed of soft tofu.

*Note: The Gorilla Foundation's mission is to bring interspecies communication to the public in order to save gorillas from extinction and inspire our children to create a sustainable future for all great apes. Their programs are supported primarily through private donations. To learn more, visit <http://www.koko.org>.*

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