

Telemedicine consultations significantly improve pediatric care in rural emergency rooms

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Telemedicine consultations with pediatric critical-care medicine physicians significantly improve the quality of care for seriously ill and injured children treated in remote rural emergency rooms, where pediatricians and pediatric specialists are scarce, a study by researchers at UC Davis Children's Hospital has found.

The study also found that rural [emergency room](#) physicians are more likely to adjust their pediatric patients' diagnoses and course of treatment after a live, interactive videoconference with a specialist. Parents' satisfaction and perception of the quality of their child's care also are significantly improved when consultations are provided using telemedicine, rather than telephone, and aid emergency room treatment, the study found.

The research is published online today in *Critical Care Medicine*.

"The bottom line is that this readily available technology can and should be used to improve the quality of care delivered to critically ill children when there are no pediatric specialists available in their own communities," said James Marcin, director of the UC Davis Children's Hospital Pediatric Telemedicine Program and the study's senior author.

"People say a picture is worth a thousand words," said Marcin, professor in the Department of Pediatrics, "With medicine, [video conferencing](#) brings us right to the bedside, allowing us to see what's happening and collaborate with on-site doctors to provide the best possible care to our patients."

The use of technology to link far-distant practitioners has been steadily increasing in American medicine, particularly as a tool to provide

rural and underserved communities with access to specialty physicians. More recently, telemedicine has been used for consultations to emergency rooms, and is particularly recommended for use in the area of [stroke care](#).

Despite the expansion of telemedicine, studies of its effect on the quality of medical care remain scarce, with publications mostly limited to anecdotal reports or issues of technological feasibility and its potential to reduce health care costs. The researchers sought to measure the impact of telemedicine consultations compared to other modes of treatment, such as telephone consultations, or treatment without consultations.

The study involved 320 seriously ill or injured patients 17 years old and younger. The patients were treated at five rural Northern California emergency departments between 2003 and 2007. The rural hospitals' emergency departments were equipped with videoconferencing units to facilitate telemedicine consultations. The interactive audiovisual communications involved the rural emergency room physicians, pediatric critical-care medicine specialists at UC Davis Children's Hospital, nurses, the patients and their parents.

Fifty-eight consultations were conducted using telemedicine consultations and 63 consultations were conducted using telephone; 199 participants did not receive specialist consultations. The researchers compared the quality of care, accuracy of diagnosis and course of treatment, and overall satisfaction for all of the patients included in the study. Quality of care was evaluated using medical record review by two independent, unbiased emergency medicine physician experts.

Overall, cases involving a telemedicine consultation received significantly higher quality-of-care scores

than did those involving a telephone consultation or no consultation. In addition, rural emergency room physicians were far more likely to change their diagnosis and treatment plans when consultations were provided using telemedicine, rather than telephone. Parents' satisfaction and perception of the quality of care also were significantly greater when telemedicine was used, compared to telephone guidance.

Madan Dharmar, assistant research professor in the pediatric telemedicine program and lead author of the study, said the results underscore the important role telemedicine can play in rural emergency departments, which often lack specialists and tools needed to treat pediatric patients, such as specially sized pediatric ventilators, to treat critically ill children. While 21 percent of children in the United States live in rural areas, only 3 percent of pediatric [critical-care medicine](#) specialists practice in such areas, Dharmar said.

"This research is important," Dharmar said, "because it is one of the first published studies that has evaluated the value of telemedicine against the current standards of care from three different viewpoints—the emergency room physician; the parents of the patients; and the actual quality of care and patient outcome."

He noted that future research efforts will focus on how telemedicine can affect patient safety and cut health care costs, by reducing the numbers of children unnecessarily transported to tertiary care hospitals in metropolitan areas.

Founded under Marcin's leadership, the UC Davis pediatric critical-care telemedicine program is the first of its kind in the United States. He said that, in partnership with the UC Davis Center for Health and Technology, more than 5,500 pediatric telemedicine consultations have been provided to rural hospitals throughout Northern California.

Provided by UC Davis

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