



The UK College of Pharmacy Center for Pharmaceutical Science and Technology is one of the college's graduate education and research programs. Photo by Bryan Baylor, UK Medical Center Photography.

the magazine as sharing third place in the "Primary Care Schools" category for U.S. medical schools with Michigan State University — is also included in the guidebook.

*U.S. News & World Report* rankings are compiled through surveys of deans and other top officials of accredited graduate programs.

## Watch the Mail

Soon you'll receive an important questionnaire in the mail. Its purpose is to have the most accurate listing possible for the upcoming new *UK Alumni Directory*. Please be sure to complete and return your form before the deadline indicated!

Once received, your information will be edited and processed by the Bernard C. Harris Publishing Company Inc. Later, you will be contacted by Harris to make sure that no changes are necessary before printing the directory.

If you don't return your questionnaire, you may be inadvertently omitted, or the information printed in the directory may not be correct — so, watch for your questionnaire — and remember to return it promptly!

## Pain Control in a Wristwatch

By Sheila H. Hume

Imagine controlling pain as easily as checking your wristwatch. In a timely leap forward in the battle against pain, researchers at the University of Kentucky designed one of the world's smallest patient-controlled anesthesia (PCA) devices, operated by a wristwatch mechanism.

"The idea was to design a simple alternative to the more complicated, cumbersome PCA equipment which limited patient mobility," says Thomas Foster, who led the UK pharmacy research team that developed the device in conjunction with engineers at Baxter-Travenol Laboratories, Inc. in 1986. "We wanted something totally disposable, cheap, easy to use and simple to operate," Foster says. "We came up with the idea of the wristwatch."

Marketed as the Travenol Infusor, the device uses a special infusor to deliver the proper drug dosage to the patient. A drug solution is injected into the infusor, inflating a special balloon reservoir. As the balloon slowly deflates, the pressure forces the solution through a flow restrictor tube to the wristwatch-like module. The patient presses a button on top of the module which releases a small amount of the drug through a plastic tube into the patient's vein. The device is designed in such a way to allow the patient to administer only one dose of medication every six minutes.

With no electronics or bulky equipment, "It's a low-tech solution to the high-tech problem of pain control," says Foster, director of the UK Center for Pharmaceutical Science and Technology.

Travenol began commercial distribution of the infusor in 1987 for use in post-operative and chronic pain relief and today the device is

marketed worldwide.

Currently, Foster is consulting with an undisclosed manufacturer on a second-generation wristwatch device. This one, he says, will be a completely self-contained unit, capable of delivering measured drug doses by use of a mechanism similar to a painless transdermal patch, rather than an IV line. "It's at least a few years away from being marketed," Foster explains, adding that dosing and "day-in-and-day-out dependability" are still being addressed in the laboratory.

Other PCA research, he adds, is looking at drug administration by using ultrasonic delivery (mixing up drug molecules at a high enough rate to penetrate the skin) and iontophoresis — transmitting drugs through the skin through very mild electrical current. Though they may sound futuristic, Foster predicts even these devices are only years away from commercial application.

*Sheila H. Hume is a contributing writer for Odyssey, the university's magazine about research. Reprinted with permission. © 1995.*

