

Strategies needed to minimise the risks from drug instability and incompatibility

Kevin Taylor reports on the first David Webber memorial lecture

The terms “drug stability” and “drug compatibility” have different meanings for manufacturers and regulators compared with those working in clinical practice. This can lead to medicinal products being marketed with little or no information available about drug stability and incompatibilities when used in real-life situations, according to Lawrence Trissel, former director of clinical pharmaceuticals research at the M. D. Anderson Cancer Centre, University of Texas. Mr Trissel described how, in practice, particularly in intensive care and oncology treatment, drugs are used in a complex and changing milieu of other drugs and biologicals, solutions, delivery systems and materials. The recommendation that each drug should be administered separately is not always achievable or appropriate and the delivery of multiple parenteral drugs through the same administration set or port is common practice. In addition, modern administration equipment is often designed to permit multiple-drug administration, simultaneously, sequentially, or in a variety of pre-programmed patterns. Mr Trissel said the worst case he had witnessed was where a patient was receiving 26 different parenteral medicines daily. Given this reality, problems of drug compatibility and stability are of increasing concern.

Hospital pharmacy staff can have a key role in the identification and evaluation of drug compatibility and stability problems. Currently, within the health care team, pharmacists are best equipped to deal with these issues, Mr Trissel said. Their specialist training, grounded in the pharmaceutical sciences, makes this pharmacists' natural territory and



Lawrence Trissel (right) receiving the David Webber memorial award from Kevin Taylor, professor of clinical pharmaceuticals, School of Pharmacy

it should be their responsibility. “While a variety of information resources developed over many years are available to pharmacists, we will never have all of the answers to problems of stability and compatibility, or even come close to them,” he claimed. Consequently, pharmacy practitioners must develop strategies to minimise risk to the patient from drug instability and incompatibility, while facilitating the patient's optimal therapy, and to do all of this in the absence of complete information — a balancing act that is not easy to accomplish, Mr Trissel said.

Consideration must be given to a drug's chemical stability but the information is expensive and difficult to obtain. Moreover, most practising pharmacists are not in a position routinely to perform drug stability testing. However, Mr Trissel stated that “issues

relating to physical incompatibilities are of at least equal importance and can certainly be evaluated by practising pharmacists, at least in simple aqueous admixtures.” Mr Trissel gave examples of admixtures encountered in clinical practice which result in physical instability, observable as haziness in solutions, precipitation, colour change and gas evolution. “Pharmacists may well be faced with a situation where an admixture or the simultaneous administration of drugs is being contemplated, but inadequate or no information is available,” he warned. However, it is essential to balance all of the therapeutic and pharmaceutical concerns while always keeping the patient's best interests paramount.

Although pharmacy staff might be best placed to evaluate drug stability and compatibility, Mr Trissel highlighted how this solution had been compromised by changes in pharmacy education in the US over the past 20 years. He described how the current pharmacy curriculum now provides only clinical training, with little background information on drug products and formulation, and the reduction or elimination of pharmaceutical calculations. Consequently, US pharmacy graduates, although licensed to compound drugs, no longer have sufficient scientific training with the effect that serious and even fatal errors have occurred.

David Webber

David Webber was an alumnus of The School of Pharmacy, London. After graduating in 1973, he worked in community pharmacy, hospital pharmacy and radiopharmacy until his death in 2005. A fund in Mr Webber's name was set up to help promote pharmacy and the pharmaceutical sciences. Each memorial lecture will showcase an internationally recognised researcher in the pharmaceutical or related basic sciences.

The David Webber memorial lecture, entitled “Clinical pharmaceuticals: challenges present and future”, was given at The School of Pharmacy, University of London on 15 March

Meeting reports

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