

Applications and Markets

Therapeutic Drug Monitoring (TDM)

Drugs are only effective when the right drug is given to the right patient, at the right time, in the right dose, by the right route and right preparation. Many drugs have a narrow therapeutic window and inappropriate administration (the wrong drug, dose, time, route or preparation) for example, too little drug given results in ineffectual treatment leading to, at best, slower recovery, longer hospital stay

and greater costs, or at worst, death of the patient or increased spread of infection, if the drug is an anti-infection agent. If too much drug is used this can cause toxicity (side-effects) again leading to poorer outcomes. So for drugs with a narrow therapeutic window getting the dose right is vital, but the same principles should be applied to vitally all drugs as too much can cause side-effects and too little can be ineffectual and both increase healthcare costs.

Unfortunately getting the dose right can be very difficult and frequently the clinician is left to empirically figure out what may work. This is complicated further by the fact that the way our bodies handle drugs is hugely different, very complex and frequently dynamic (e.g. drug metabolism changes over the duration of drug therapy). When combinations of drugs are used the situation becomes even more hazardous as drug-on-drug interactions can occur.

A study in 2004 involving 1,029 hospitals in the US found a decrease of 128.1 deaths per year per hospital in institutions where pharmacists conducted admission drug histories compared with those where they did not.

