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Information for hospital wards about the compatibility of parenteral drugs

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To promote the correct use of injectable drugs in hospitals, pharmacists can provide information about - among other things - compatibility.

Introduction

On the wards there is a preference for mixing different drugs in one infusion bag or syringe. This is done to reduce time, the amounts used and the volume of fluid administered to the patient. Compatibility questions concern the manner of preparation, administration and storage of drugs. Sources such as Trissel and Infostab can be consulted [1, 2].

The use of these databases takes time and can delay the response to the wards. In order to improve efficiency and the quality of the information concerning the (in)compatibility of parenteral drugs, the Martini Hospital, Groningen, The Netherlands has developed a "Table of (in)compatibilities" for the wards.

Method

The table is based on an evaluation of parenteral drug use at the Martini Hospital in 2007. To our own data we added other drugs commonly used in combination and drugs used for a short period of time, such as antibiotics. Most literature reports are about visual compatibility of the components rather than inactivation. The biggest risk for a patient is crystals in an infusion. After we had collected the information all head nurses of the wards were asked to select 50 of these drugs to use in the table.

We assumed that drug concentrations in syringes are higher than at Y sites or in infusion bags or lines. So in drawing up the guidelines we allowed extrapolation from data on syringes to lower concentration situations, but not from lower to higher concentration situations. In Excel changes can be made to the table easily. The grade of (in)compatibility is indicated with a code (C, H, etc).

C: drugs are compatible without reservation. They can be mixed in one syringe, Y site or infusion bag. These combinations have been proved stable for 24 hours by at least one study.

S*t*: different drugs combined in one syringe for a syringe pump or in two separate syringes that are combined using a Y site, can be combined for **I*t*** hours at most. The stability of two drugs in one syringe has been proved for at least **I*t*** hours. This assumption can be applied to drugs in two separate syringes that are combined by using a Y site. In the situation of one syringe it is recommended that the solution is discarded after **I*t*** hours and a new solution is prepared. When using two syringes by means of a Y site, the advice is to change the infusion system after **I*t*** hours.

H: drugs can be combined in a Y site or an infusion bag or administered simultaneously with drugs in another infusion bag.

Y: drugs can be combined by using a Y site connected to two infusion bags. Compatibility at the Y site has been proved for at least two hours and the drugs can be combined at the Y site in the infusion line for no longer than two hours.

I: drugs can be combined in an infusion bag. Compatibility in an infusion bag has been proved for at least eight hours.

I*t*: drugs can be combined in an infusion bag for a maximum of **I*t*** hours. The compatibility of the drugs in an infusion bag for more than **I*t*** hours has not been proved.

X: drugs are incompatible. The incompatibility has been proved in more than one study.

If more than one code was applicable after evaluating the results of studies, X was chosen over higher compatibility codes. This implies that a single proven incompatibility, despite other study results, always leads to Code X. Combinations of drugs with no information concerning their (in)compatibility were given no code. The general recommendation for such combinations was not to combine them in one syringe, Y site or infusion bag.

Conclusion

The table of (in)compatibilities and the *Handbook on Parenteral Drugs* are valuable sources of information for the wards. To assist acceptance and use of the table, it was important to involve all the wards in selecting the drugs. The same applies to making changes in the existing table. Developing the table made us look very closely at the study results to translate them into a code. The ultimate goal is to offer clear, relevant and practical information. This table increases the clinical involvement of the hospital pharmacist and helps doctors and nurses. It can be obtained from the hospital or the authors [3].

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References

1. Trissel LA. Handbook on injectible drugs. 13th Ed.
2. www.infostab.com/index.php?lng=en
3. www.martiniziekenhuis.nl/default.cfm?pid=635