COMPATIBILITY OF INTRAVENOUS MEDICATIONS ADMINISTERED VIA Y-SITE

In vitro compatibility testing of selected intravenous medications

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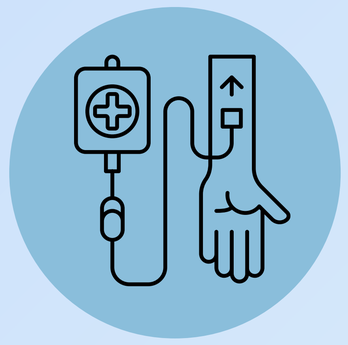


INTRODUCTION:

Intensive care treatments often require continuous administration of multiple intravenous (IV) medications. The limited availability of vascular access requires the administration of different medications through the same catheter lumen. However, this approach carries the risk of administering incompatible medications, which can lead to serious consequences for the patient (therapeutic failures, microembolism, or toxicity). To ensure safe IV administration via a Y-connector, both medications must be physically and chemically compatible (2).

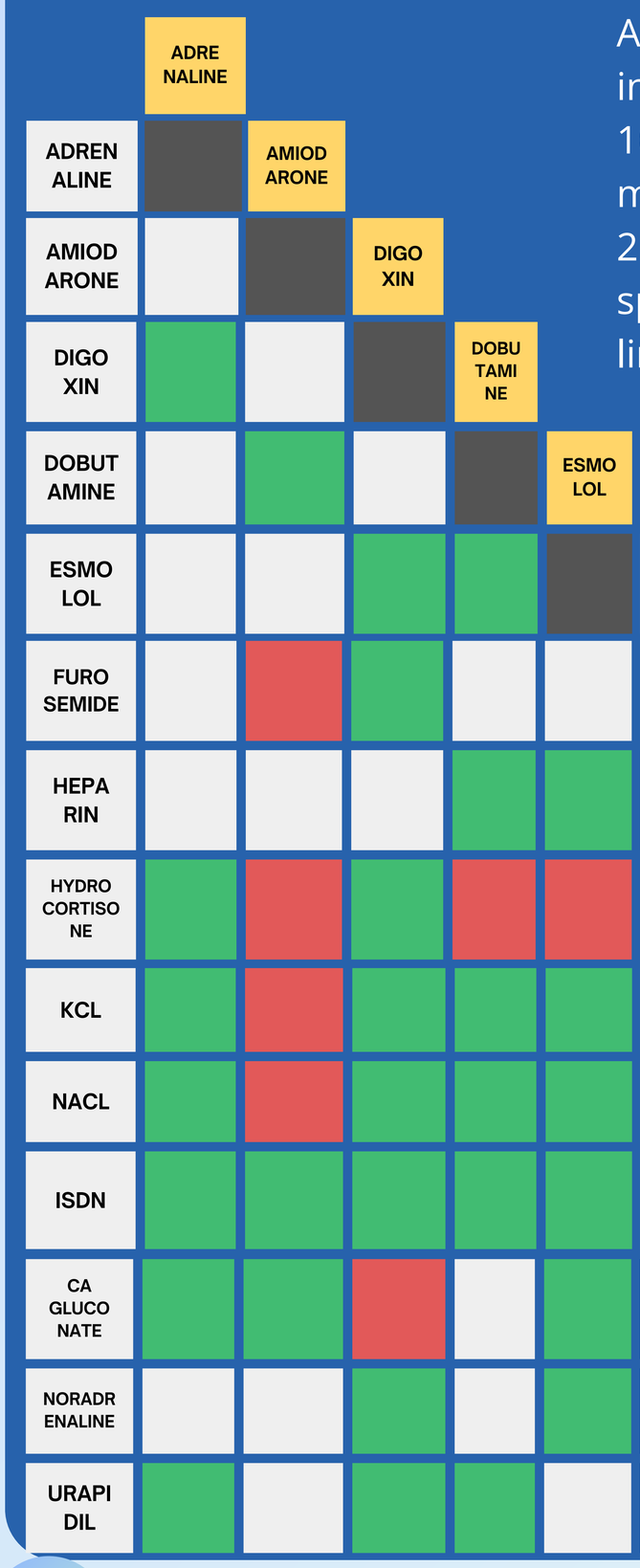
OBJECTIVE:

The aim of the project was to create a compatibility table for IV medications administered via a Y-connector for the needs of the hospital departments.

METHODOLOGY:

The compatibility assessment is based on an extensive literature research (SmPC, ASHP Injectable Drug Information, Stabilis 4.0, compatibility tables from foreign hospitals, and publications). Due to the lack of published data, experimental *in vitro* compatibility tests were conducted for selected medications. The physical compatibility of two medications in a 1:1 ratio was evaluated at concentrations used in departments of the hospital (Table 2). Compatibility was assessed according to the method following 2.9.20. Ph. Eur. 11.5 using visual evaluation against black and white backgrounds under defined lighting conditions (3). Each test was performed in duplicates and compared to the solvent/diluent used for preparation immediately after dilution and 10 minutes later. Physical incompatibility was identified by the presence of precipitate formation, color change, or solution cloudiness.

RESULTS:



A total of 30 medications were evaluated in 435 combinations. The literature research identified 108 compatible and 43 incompatible mixtures of two medications administered via Y-connector. Additionaly, 21 mixtures were deemed compatible only under specific conditions, such as maximum concentration limit for one of the medications.

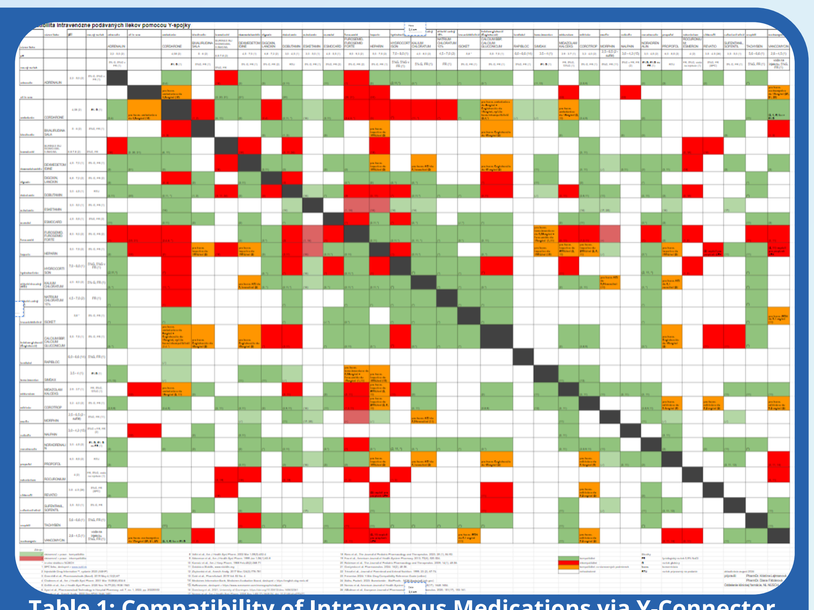


Table 1: Compatibility of Intravenous Medications via Y-Connector (Preview)

An experimental *in vitro* test was conducted on 14 medications in 67 combinations. The visual evaluation of physical compatibility confirmed 59 compatible and 8 incompatible mixtures of two medications. (Table 3). Physical incompatibility was most frequently observed in mixtures containing amiodarone (n = 4) and hydrocortisone (n = 4).

drug	concentration	drug	concentration
adrenaline	0,1 mg/ml	hydrocortisone	25 mg/ml
amiodarone	18 mg/ml	isosorbiddinitrate (ISDN)	1 mg/ml
digoxin	0,25 mg/ml	Ca gluconate	94 mg/ml
dobutamine	5 mg/ml	KCl	1 mmol/ml
esmolol	10 mg/ml	NaCl	100 mg/ml
furosemide	12,5 mg/ml	noradrenaline	0,1 mg/ml
heparin	500 IU/ml	urapidil	5 mg/ml

Table 2: Selected Medications and Concentrations Used for *In Vitro* Compatibility Testing

physically compatible | physically incompatible | not evaluated *in vitro*

Table 3: Results of *In Vitro* Physical Compatibility Testing

CONCLUSION:

Based on a literature review and experimental *in vitro* testing, a document titled Compatibility of IV Medications Administered via Y-Connector was created (Table1). This document serves as an internal standardized protocol for IV medications administration in the departments of National Institute of Cardiovascular Diseases.

REFERENCES:

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Thank you for reading our poster.

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