A645 - Evaluation of drug incompatibilities in ICU: development of an original method.

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Introduction:
In intensive care unit, administration of numerous drugs in ICU patients via a central venous catheter provide a high risk of drugs incompatibilities. It has been reported in experimental studies [1] that particles issued of drug incompatibilities could induce thrombogenesis, microcirculation impairment and inflammatory response which could aggravate the occurrence of organ dysfunctions[2]. The objective of this study was to evaluate the occurrence of particles by reproducing in vitro the intravenous system and the drugs combination used in ICU for patients suffering either septic shock or Acute Respiratory distress Syndrome (ARDS).

Methods:
First, we registered during a period of 6 months the most common central venous catheter system used in patients admitted for septic shock or ARDS in three University Hospital in Lille. The second part of the study was to reproduce in vitro the previous infusion system in order to quantify the amount of particles generated during a simulated period of 8 hours infusion. The egress of the IV line was connected to a dynamic particle counter QicPIC analyser (Sympatec Inc; Clausthal Zellerfeld, Germany).

Results:
The most common intravenous system observed was a three lumen central catheter. The proximal lumen was dedicated for vasoactive agents, the medial lumen for sedation and the distal lumen for the other drugs infused continuously and discontinuously. Among the drugs infused via the distal lumen of the central venous catheter, the most common combinations observed were heparin, piperacillin/tazobactam, esomeprazole and fluconazole administered simultaneously with glucose and parenteral nutrition. These drugs are known to be the cause of incompatibilities. The preliminary in vitro results showed high particulate contamination.

Conclusion:
it is possible to determine a model for the study of drug incompatibilities in ICU

References:

Image 1: Qic PIC particles analyser