

Retrospective evaluation of the clinical use of prothrombin complex concentrate for the reversal of oral anticoagulation

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Four-factor prothrombin complex concentrate (PCC) can be used for replacement of congenital or acquired vitamine K-dependent clotting factor deficiency. Its main indication is to obtain a rapid reversal of oral anticoagulation therapy : vitamin K antagonist (VKA).

In light of increase of PCC consummation in our hospital (2019 beds) during last 2 years (maybe due to a new use in reversal of new oral anticoagulants (NOACs)) and to promote the respect of recommended indications (AMM : marketing authorization), we evaluated the clinical use of PCC for the reversal of oral anticoagulation.

We retrospectively recorded orders of PPC between January and December 2014.

We evaluated pertinence of indication for anticoagulation reversal according to **national recommendations**. According to the french guidelines PCC is recommended in anticoagulated patients with vitamin K antagonists, who present a serious or life threatening bleed or who need a surgery emergency. PCC administration must always be combined with 10 mg vitamin K.

If INR is measured (SPC) :

Doses recommended to obtain target INR ≤ 1,5

Initial INR	2-2,5	2,5-3	3,0-3,5	>3,5
approximated dose to administer (ml/kg)	0,7	0,9	1	1,3

Doses recommended to obtain target INR ≤ 2,5

Initial INR	2-2,5	2,5-3	3,0-3,5	>3,5
approximated dose to administer (ml/kg)	-	0,4	0,5	0,8

if INR is not measured :

The convention is to administer PCC at dose of 1mL/kg in reversal of AVK and 2 mL/kg in reversal of NOACs (recommendation GIHP)

We also assessed the prescription quality according to **dosage, initial INR** (International Normalized Ratio), **patient's weight, vitamin K association, severity of hemorrhage** and initial anticoagulation therapy of every patient in accordance with national recommendations, literature recommendations and medication label.

There were 106 patients included in this study which 95% were associated with VKA treatment.

The most of prescription concern operating room and emergency unit.

Majority of indications were justified (80%): 50% for serious hemorrhage and 38% for patients who needed urgent surgery. 20% of indications were not justified : administration of PCC to patients who had only high INR, without serious hemorrhage or urgent surgery.

Troubles about PCC dosage used

41% were not adjusted to weight or initial INR, principally sub-therapeutic dose in 80% of cases.

In reversal of AVK (95 % of prescriptions) : 45 % of prescriptions were not adjusted to weight or INR (if available).

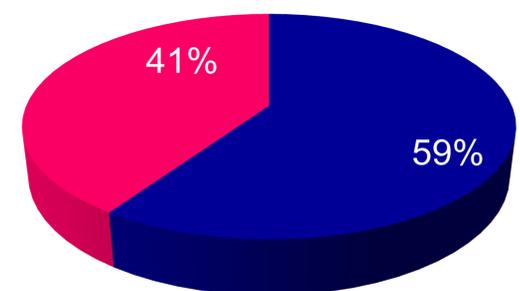
In reversal of NACOs (5% of prescriptions) : 60% of prescriptions were not adjusted to weight.

Troubles about association with Vitamin K

45% of PCC administration was not associated with vitamin K.

Dosage adjustment of PCC

- Adjusted doses (with weigh or INR)
- Non adjusted doses



Thanks to this retrospective evaluation, we realized that majority of PCC prescriptions was well justified and into recommended situations, only 5% were used for NOACs reversal.

But the study also shows a **lack of knowledge about the best dosage of PCC to administrate and the correct therapeutics to associate in those situations**. These results have been introduced to emergency ward and the protocol of use of the PCC in association with vitamin K has been updated.

New agents are recently appeared (commercialized or still in study) and are indicated especially in reversal of NACOs.

In the future PCC will be not used anymore in reversal of NOACs. The management of reversal of Noacs has to be modified with the apparition of new drugs, the healthcare professional also has to be trained.

The pharmacist role is very important in order to promote a good clinical drug use and to alert prescribers about PCC prescription recommendations. **He has to check the dosage adjustment with patient's weight or INR and recommend the use of new drugs in reversal of NOACs.** Another evaluation of management of AVK or NACOs associated bleeding should be realized in order to evaluate the place of every drug in the reversal.