Oxytocin in France: a quite limited issue

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(Preventing the Preventable)

Quick overview of the French situation

- Oxytocin related errors
  - Mix-ups with neuromuscular blocker
  - Mix-up between peridural and IV lines during an anesthetic procedure
- The French context of oxytocin use
  - The French National Perinatal Surveys (NPS)
  - Drop of oxytocin use during labor in France
  - Implementation of recommendations: more proactive than expected
- Questions raised by the French situation

Oxytocin related errors (1) mix-up with a neuromuscular blocker *at the administration stage*

A 29-year-old woman was admitted to the maternity ward with a spontaneous rupturing of the membranes at 6:15 am.
At 14:47, with complete dilation of the cervix and an engaged cephalic presentation, the midwife asked her colleagues to prepare the delivery table.
A syringe of oxytocin (Syntocinon°) was prepared by another midwife. At 3:41 pm, following the birth of the baby, the midwife injects the syringe to facilitate the expulsion of the placenta.
Very quickly after the injection, the patient reports feeling unwell and then goes into cardiorespiratory arrest.
She was finally resuscitated after intubation and mechanical ventilation.
Following the incident, the midwife who prepared the syringe checked the waste and found an ampoule of suxamethonium (Celocurine°).

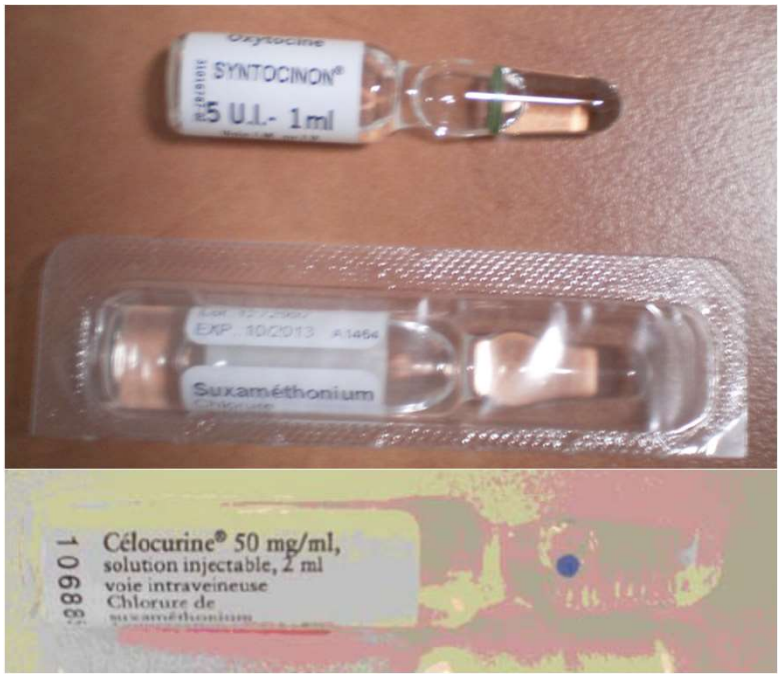
Same case reported in 2020 by a regional PV centre and in 2022 by the French National Authority for Health (HAS)

Oxytocin related errors (1) mix-up with a neuromuscular blocker at the dispensing stage

Common causes identified:

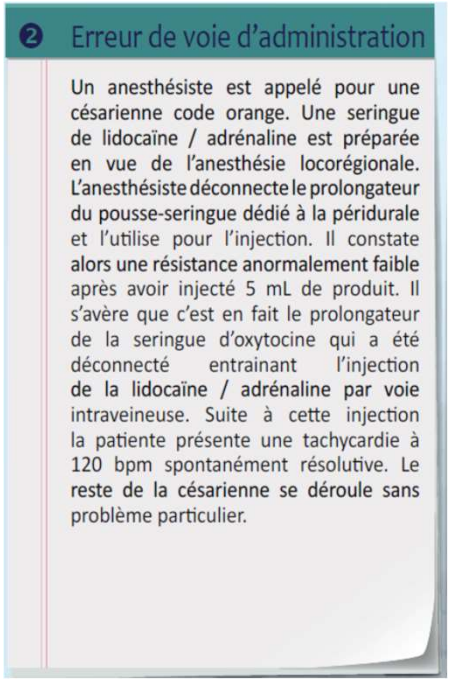
- similar one neck glass ampoules
- similar white paper labels
- closer similarity if the ampoule is removed from the blister
- close proximity of names suxamethonium#Syntocinon°
- enhancing close proximity of storage (both in fridge at 4°C)
- lack of labeling after extemporaneous preparation of the syringe
- lack of, or inefficient double checking

In 2014, the **Programme *Prescrire* Éviter l'Évitable** received following report:
"Delivery of Suxamethonium Biocodex° instead of Syntocinon° : a dispensing error intercepted in time"



Oxytocin related adverse events (2) mix-up with a peridural anesthetic

An anesthesiologist is called for a Code Orange C-section. A syringe of lidocaine/adrenaline is prepared for local anesthesia.
The anesthesiologist disconnects the epidural syringe pump extension and uses it for the injection. He then notices an abnormally low resistance after injecting 5 mL of product.
It turns out that it is in fact the extension of the oxytocin syringe that has been disconnected, resulting in the injection of lidocaine/adrenaline intravenously.
Following this injection, the patient presented a spontaneously resolving tachycardia at 120 bpm.
The rest of the caesarean section went on without any particular problem



❷ Erreur de voie d'administration

Un anesthésiste est appelé pour une césarienne code orange. Une seringue de lidocaïne / adrénaline est préparée en vue de l'anesthésie locorégionale. L'anesthésiste déconnecte le prolongateur du pousse-seringue dédié à la péridurale et l'utilise pour l'injection. Il constate alors une résistance anormalement faible après avoir injecté 5 mL de produit. Il s'avère que c'est en fait le prolongateur de la seringue d'oxytocine qui a été déconnecté entrainant l'injection de la lidocaïne / adrénaline par voie intraveineuse. Suite à cette injection la patiente présente une tachycardie à 120 bpm spontanément résolutive. Le reste de la césarienne se déroule sans problème particulier.

The French National Perinatal Surveys (NPS)

Main objectives of the French National Perinatal Surveys (NPS):

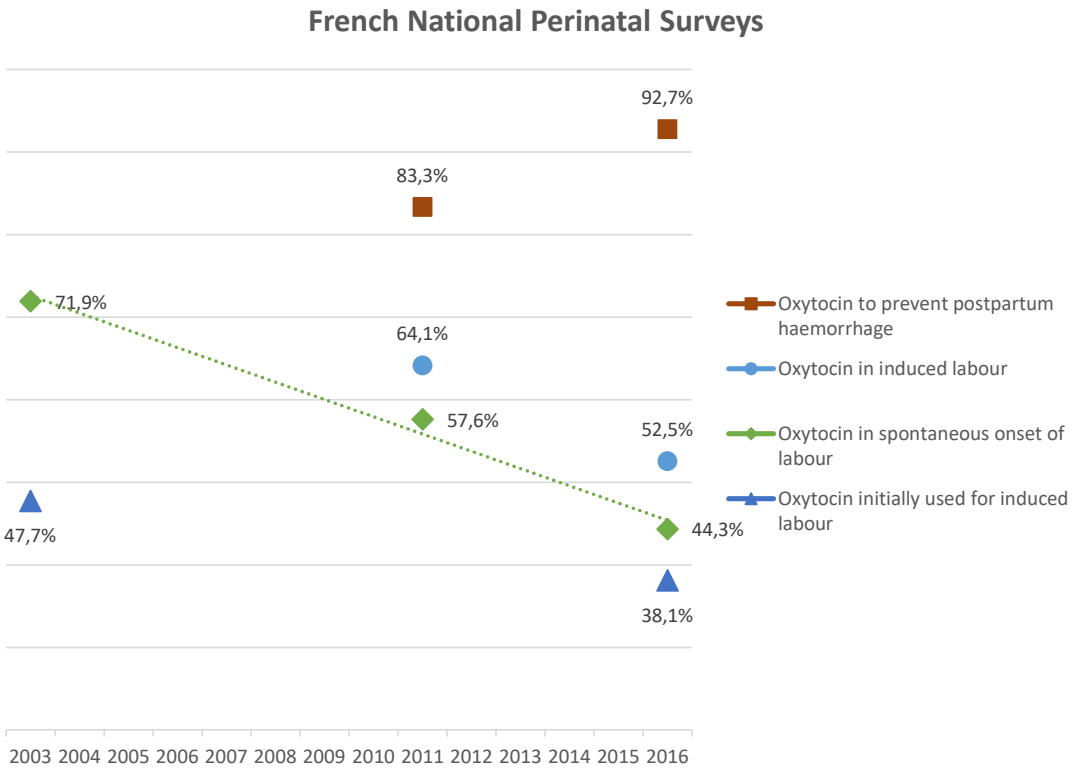
- to measure the indicators of health status, medical practices, and perinatal risk factors
- to follow trends over time
- to enable comparisons with data from other countries

Surveys by a research team in the *Center for Research on Epidemiology and Statistics Sorbonne Paris Cité* (CRESS) at the *National Institute for Health and Medical Research* (INSERM) (http://www.epopé-inserm.fr/en/)
in 1995, 1998, 2003, 2010, 2016 and 2021 (last results not yet available)

Samples include all births in France over 1 full week, supposed representative of all births in France that year. Data are collected from medical records and postpartum interviews of mothers before discharge

Drop of oxytocin use during labor in France

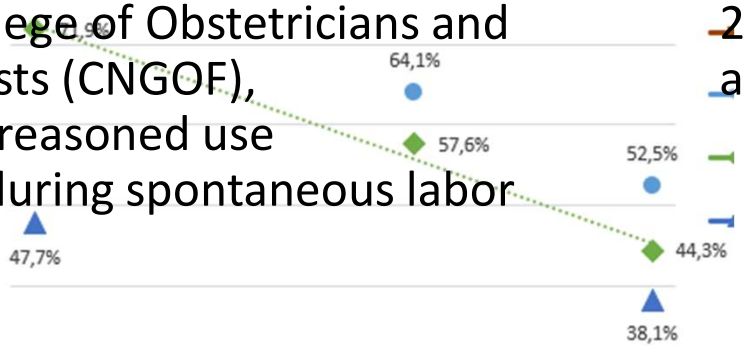
- **Labor induction or augmentation: at high doses by obstetricians and midwifes** Professional awareness of the abnormally high use, and its risks to maternal health, has led to a decline in its use in France
  - among women in **spontaneous labor or with labor induction**, there was a significant decrease in the use of oxytocin, from 64.1% of women involved in 2010 to 52.5% in 2016
  - among women in **spontaneous labor**, these rates decreased from 57.6% in 2010 to 44.3% in 2016
- **Preventing postpartum hemorrhage (PPH): at low doses by anesthesiologists** prophylactic oxytocin administration to prevent postpartum hemorrhage (PPH) increased from 83.3% in 2010 to 92.7% in 2016



Implementation of recommendations: more proactive than expected

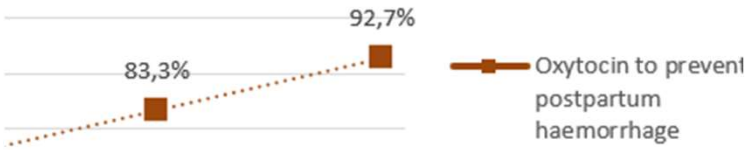
Labor induction or augmentation (high doses by obstetricians and midwifes)

Less frequent use of oxytocin was thus observed **before** the dissemination of the recommendations issued in late 2016 by the National College of Midwives of France and by the French National College of Obstetricians and Gynaecologists (CNGOF), in favor of a reasoned use of oxytocin during spontaneous labor



Postpartum hemorrhage prevention (low doses by anesthesiologists)

The later results show that the 2004 CNGOF clinical practice recommendations on systematic administration of oxytocin to prevent postpartum hemorrhage, updated in 2014, have become widespread and is almost universal



Questions raised by the French situation

- Are international comparisons available? If so, they should introduce the presentation of the IMSN recommendations for a safer use of oxytocin
- The patient safety risks do not appear to be the same depending on the indication:
  - For labor induction or augmentation, at high doses by obstetricians and midwifes: oxytocin appears to be a very high risk / high alert medication. Its use should be questioned during spontaneous labor with regard to unfavorable benefit/risk balance
  - For preventing postpartum hemorrhage (PPH), at low doses by anesthesiologists:
    - Oxytocin offers a more favourable benefit/risk balance, but is still prone to errors
    - Tranexamic acid is a challenging alternative, still under assessment, but a very high risk / high alert medication in case of intrathecal erroneous administration, introducing new risks
- The IMSN recommendations for a safer use of oxytocin should distinguish between these indications, adding to safe practices proposals a call for the avoidance of exposing parturients to those with the least evidence

Thank you!