



Human botulism in Belgium: two atypical cases in 2022

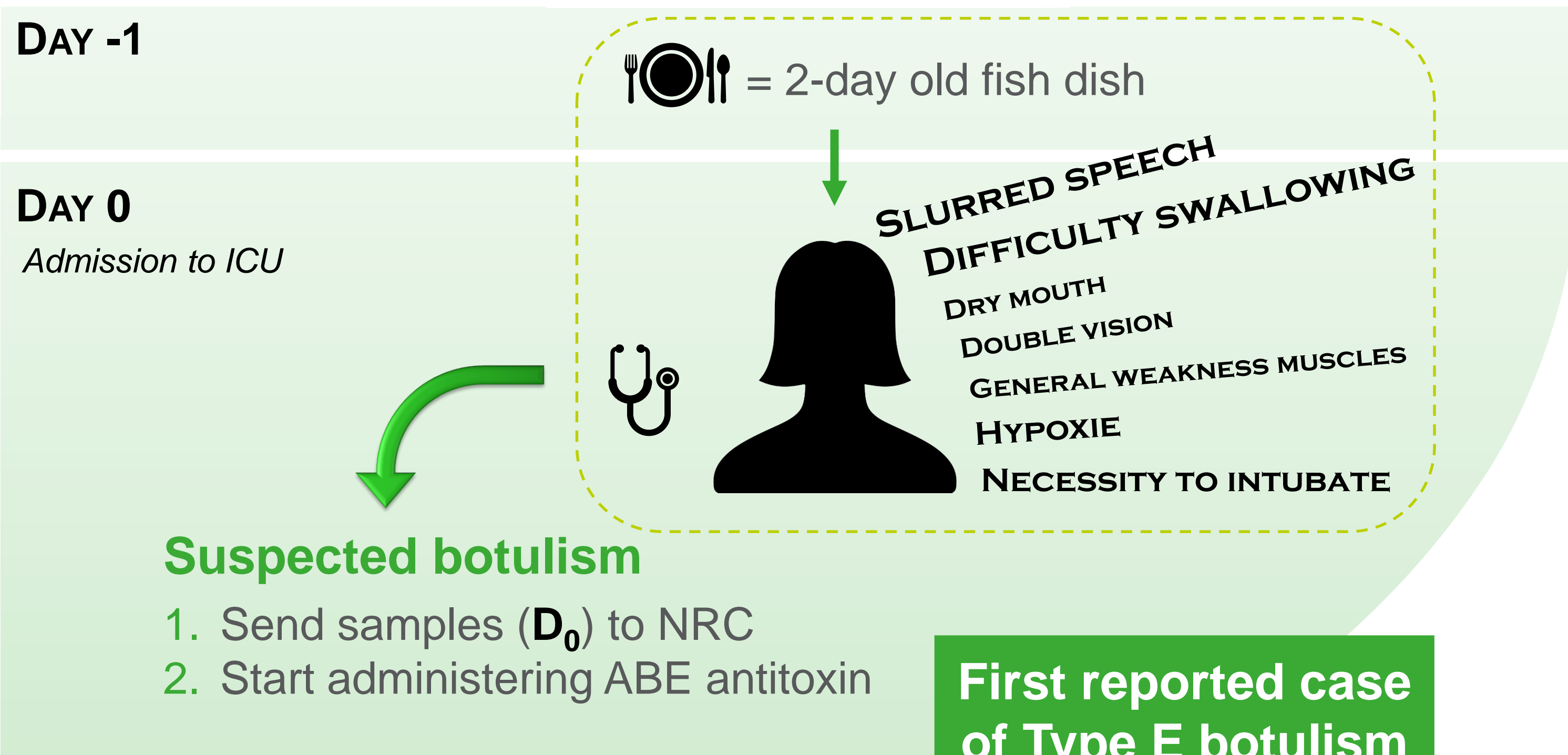
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INTRODUCTION - Botulism is a paralyzing and potentially fatal disease caused by botulinum neurotoxins (BoNTs) produced by the *Clostridium botulinum* bacterium and more rarely by *C. argentinense*, *C. baratii* or *C. butyricum*. Sciensano performs the role of National Reference Center (NRC) for *C. botulinum*, *C. perfringens* and *C. tetani* with key assignments such as the diagnosis, confirmation and surveillance of human botulism. The NRC has various validated and accredited methods (ISO 15189) for the laboratory diagnosis of botulism (*in vivo* reference method and molecular qPCR method).

In 2022, the NRC confirmed three cases of human botulism. Because of their very distinct progression, two of these cases will be presented below.

Case 1 – June 2022



DAY 8
Patient can be extubated

→ Follow-up samples (**D₈**) are sent to NRC

		Stomach fluid	Serum	Stool
D₀	Detection of BoNT (in vivo)	-	+	-
	Detection <i>C. botulinum</i> (in vivo/PCR)	+	N/A	-
D₈	Detection of BoNT (in vivo)	N/A	-	+
	Detection <i>C. botulinum</i> (in vivo/PCR)	N/A	N/A	+

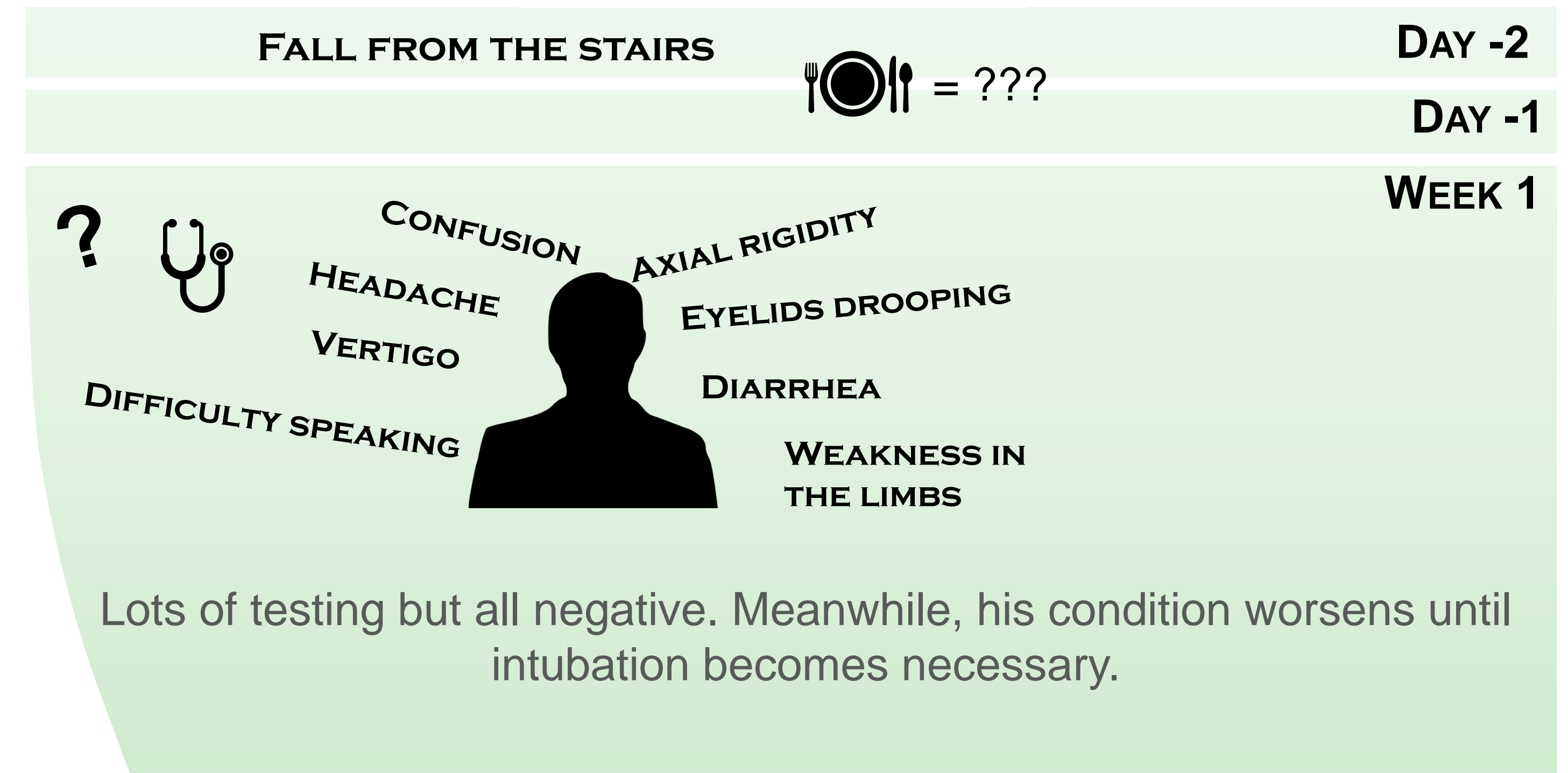
= Lab confirmation botulism

Interpretation:

D₀ - The germ and toxin have recently been ingested and are present in the stomach. The toxin has been translocated from the digestive tract to the blood circulation where it blocks the neurotransmitter release at the neuromuscular junctions. Antitoxin captures the free BoNTs in the blood and prevents further paralysis.

D₈ - The patient is still being treated with antitoxins, which is why the serum is negative at this point. The toxin and toxin-producing germ can now be detected at the end of the digestive tract.

Case 2 – November/December 2022 (forthcoming)



Daily minimal recuperation of power **WEEK 2 - 6**

After repeating an EMG a second time, **botulism was suspected** for the first time. **WEEK 7**

1. Samples (**D₄₆**) are sent to NRC

		Serum	Stool
D₄₆	Detection of BoNT (in vivo)	-	+
	Detection <i>C. botulinum</i> (in vivo/ PCR)	N/A	-

= Lab confirmation botulism

Conclusion

- Case 2 shows that botulism is likely underdiagnosed in Belgium precisely because it is so rare.
- Case 1 demonstrates the importance that a doctor recognizes the symptoms at an early stage so that antitoxin can be administered as soon as possible to prevent further progression of the disease.
- For laboratory confirmation of the diagnosis, both a serum and stool sample should be taken as soon as possible before antitoxin is administered. Both cases illustrate this statement.

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