

Status epilepticus

Janneke Horn





Belangen

- Onderzoek: ZonMw, Hersenstichting, AmsterdamUMC, RAL fonds
- Aandeelhouder:



FINE CUISINE IN AMSTERDAM

Geniet van ons heerlijke eten

LARS WEER OPEN! | UPDATE

Wij gaan eindelijk weer open. Wij hebben onze gasten heel erg gemist tijdens de feestdagen. Wij zijn druk bezig met het ontwikkelen van nieuwe gerechten en kunnen niet wachten om weer te beginnen.

NIEUWE OPENINGSTIJDEN '22

Lunch: Vrijdag t/m Zondag 12:00-17:00

Diner: Woensdag t/m Zaterdag 18:00-22:00

Op overige dagen zijn wij geopend voor groepsaanvragen vanaf 20 gasten.

MENU '22

Wij serveren tijdens het diner ons 5 of 6 gangen menu



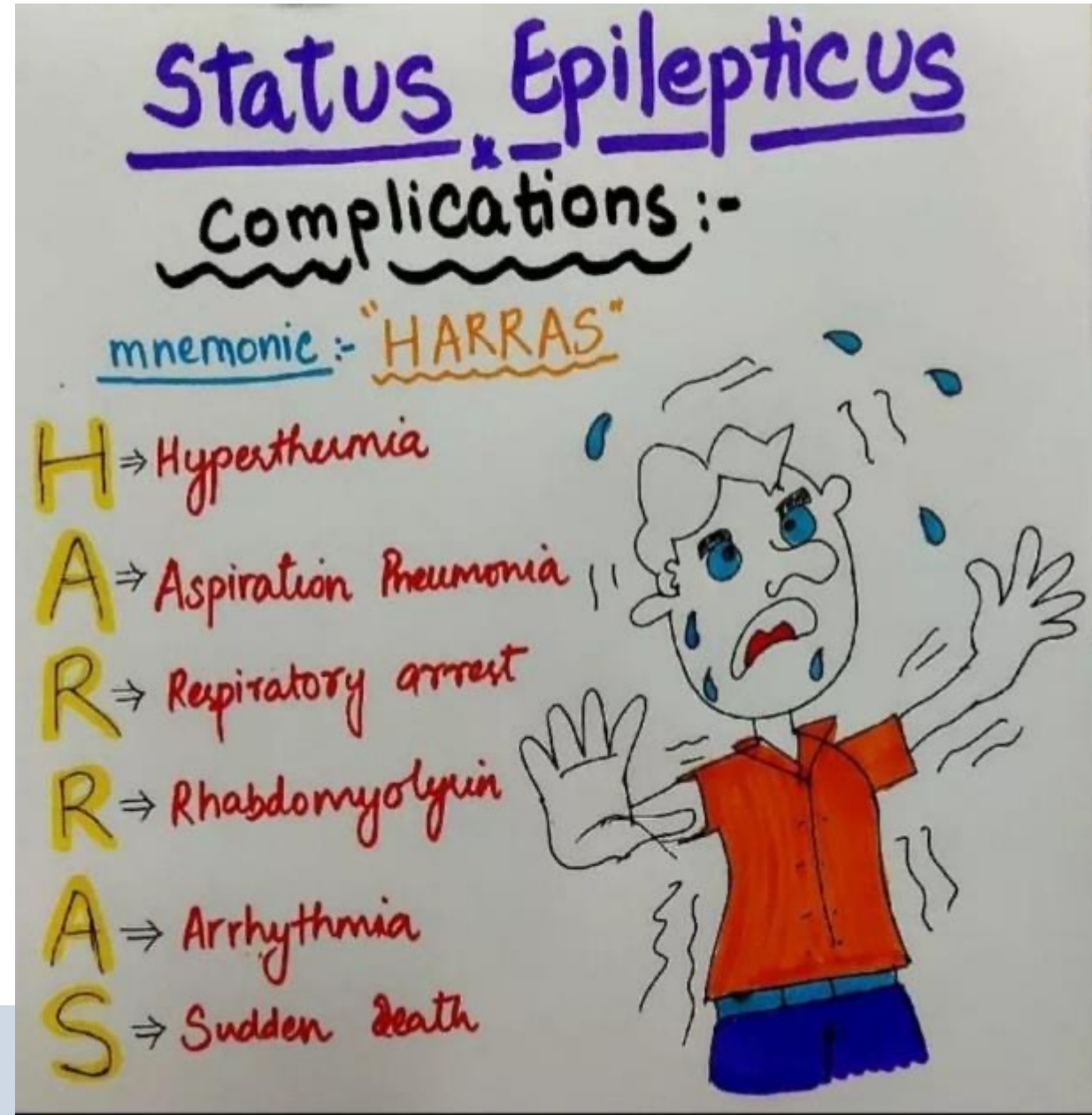
Wie??

- Patient met insult afgelopen maand?
- SE afgelopen maand?



Status epilepticus

- Definities
- Behandeling
- Diagnostiek





A definition and classification of status epilepticus – Report of the ILAE Task Force on Classification of Status Epilepticus

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doi: 10.1111/epi.13121

Definitives

- SE = langdurige aanval = schadelijk

E. Trinka et al.

Table 1. Operational dimensions with t_1 indicating the time that emergency treatment of SE should be started and t_2 indicating the time at which long-term consequences may be expected

Type of SE	Operational dimension 1 Time (t_1), when a seizure is likely to be prolonged leading to continuous seizure activity	Operational dimension 2 Time (t_2), when a seizure may cause long term consequences (including neuronal injury, neuronal death, alteration of neuronal networks and functional deficits)
Tonic-clonic SE	5 min	30 min
Focal SE with impaired consciousness	10 min	>60 min
Absence status epilepticus	10–15 min ^a	Unknown

^aEvidence for the time frame is currently limited and future data may lead to modifications.



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SUMMARY

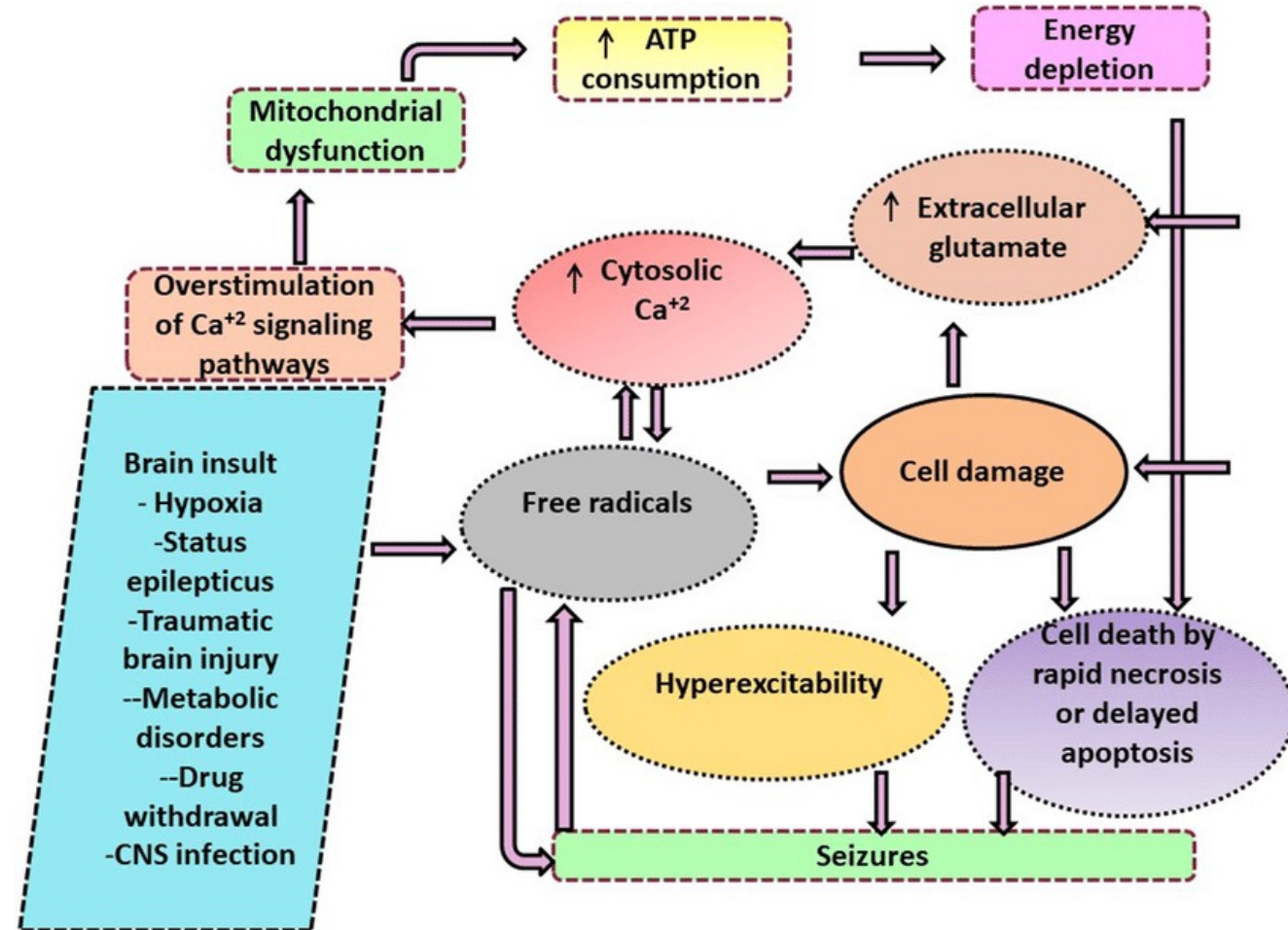
The Commission on Classification and Terminology and the Commission on Epidemiology of the International League Against Epilepsy (ILAE) have charged a Task Force to revise concepts, definition, and classification of status epilepticus (SE). The proposed new definition of SE is as follows: Status epilepticus is a condition resulting either from the failure of the mechanisms responsible for seizure termination or from the initiation of mechanisms, which lead to abnormally prolonged seizures (after time point t_1). It is a condition, which can have long-term consequences (after time point t_2), including neuronal death, neuronal injury, and alteration of neuronal networks, depending on the type and duration of seizures. This definition is conceptual, with two operational dimensions: the first is the length of the seizure and the time point (t_1) beyond which the seizure should be regarded as “continuous seizure activity.” The second time point (t_2) is the time of ongoing seizure activity after which there is a risk of long-term consequences. In the case of convulsive (tonic-clonic) SE, both time points (t_1 at 5 min and t_2 at 30 min) are based on animal experiments and clinical research. This evidence is incomplete, and there is furthermore considerable variation, so these time points should be considered as the best estimates currently available. Data are not yet available for other forms of SE, but as knowledge and understanding increase, time points can be defined for specific forms of SE based on scientific evidence and incorporated into the definition, without changing the underlying concepts. A new diagnostic classification system of SE is proposed, which will provide a framework for clinical diagnosis, investigations, and therapeutic approaches for each patient. There are four axes: (1) semiology; (2) etiology; (3) electroencephalography (EEG) correlates; and (4) age. Axis 1 (semiology) lists different forms of SE divided into those with prominent motor systems, those without prominent motor systems, and currently indeterminate conditions (such as acute confusional states with epileptiform EEG patterns). Axis 2 (etiology) is divided into subcategories of known and unknown causes. Axis 3 (EEG correlates) adopts the latest recommendations by consensus panels to use the following descriptors for the EEG: name of pattern, morphology, location, time-related features, modulation, and effect of intervention. Finally, axis 4 divides age groups into neonatal, infancy, childhood, adolescent and adulthood, and elderly.

KEY WORDS: Status epilepticus, Seizure, Definition, Classification, Seizure duration.



Schadelijk?

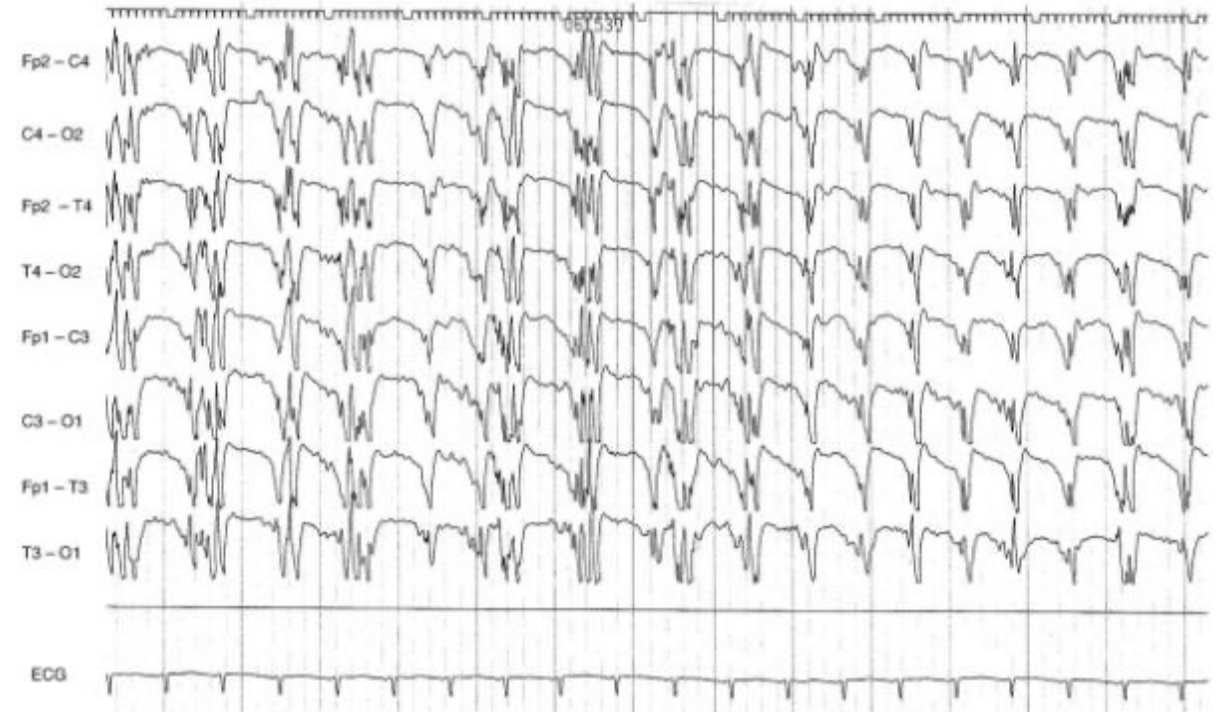
- Rhabdomyolyse & lactaat acidose
- Hypoxemie
- Hersenschade





Definities

- Non-convulsieve SE
 - Geen trekkingen, wel SE
 - EEG diagnose
- Refractaire SE
 - SE gaat door na 2 medicamenten (incl benzo)
- Superrefractaire SE
 - SE duurt >24u ondanks therapie





Opvang op SEH

- Twee sporen
 - ABCDE
 - F = frailty
 - G = glucose
 - Behandeling SE
 - Diagnostiek oorzaak SE





Opvang SEH

- A & B bij Status Epilepticus
- Airway
- Breathing





Behandeling SE

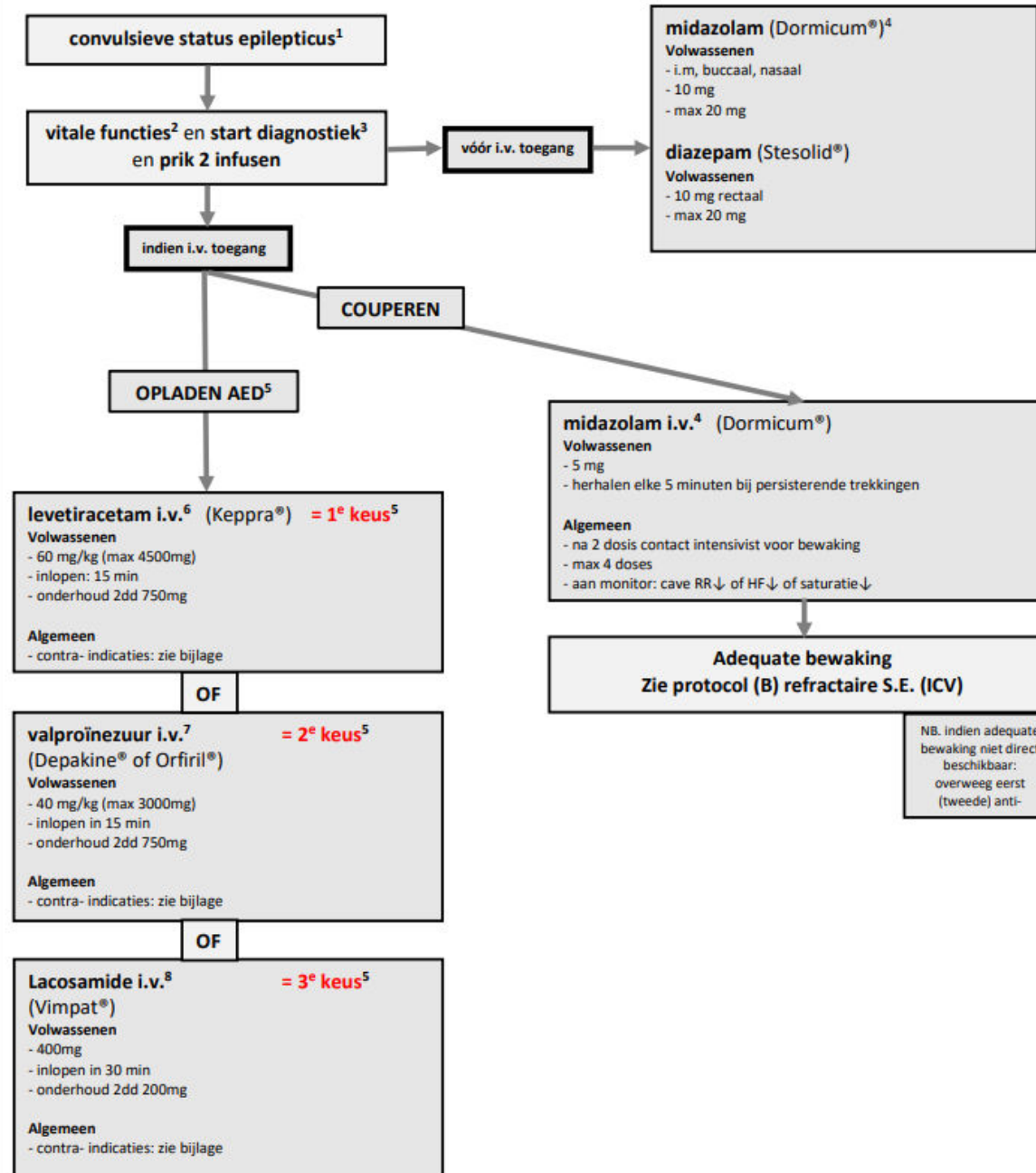
- Lokaal protocol?
- Eerste medicijn?
 - Hoe?
 - Welke AED ?
 - Anti-epileptic drug



Protocol

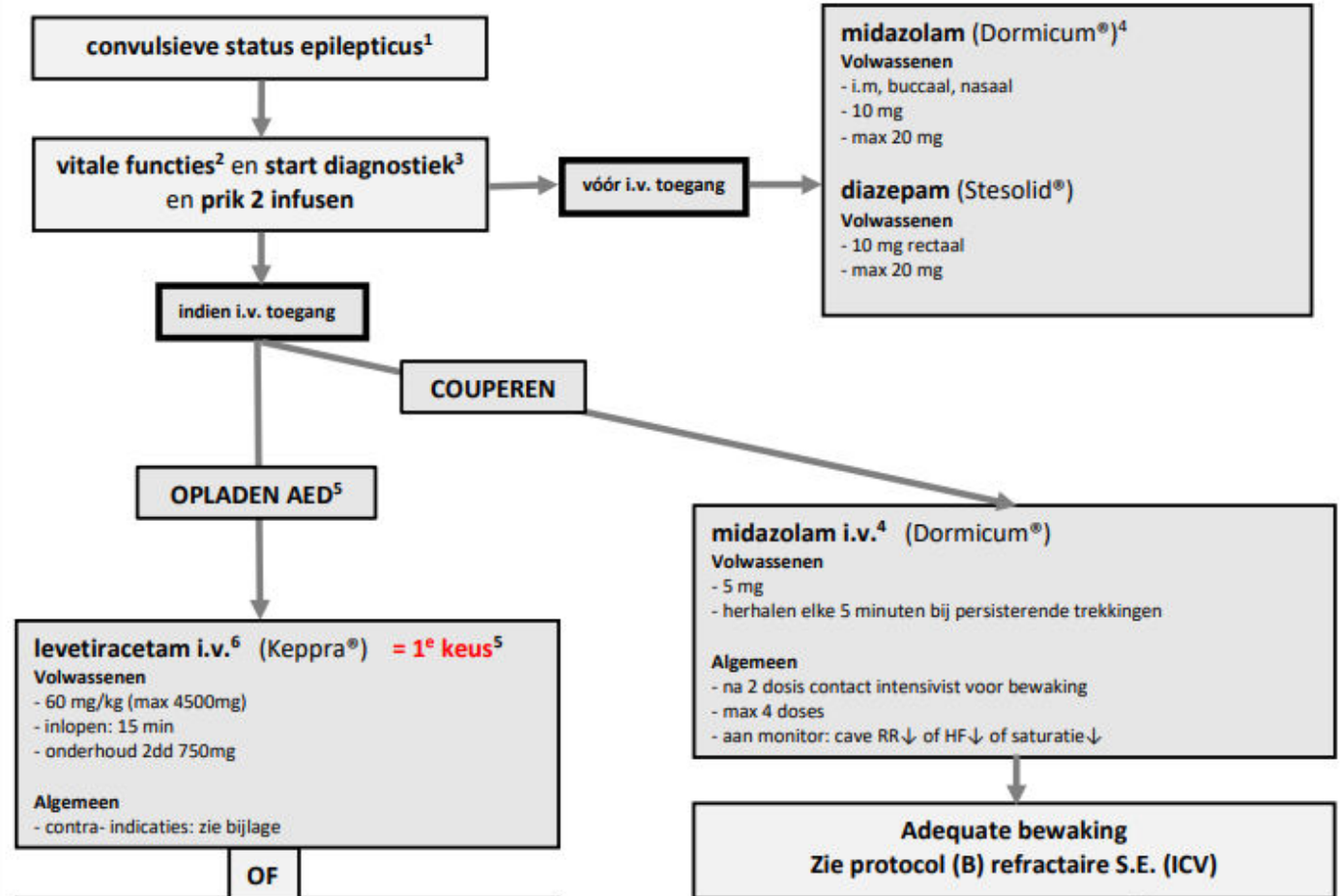
- AmsterdamUMC

Flowdiagram CONVULSIEVE STATUS EPILEPTICUS (volwassenen)





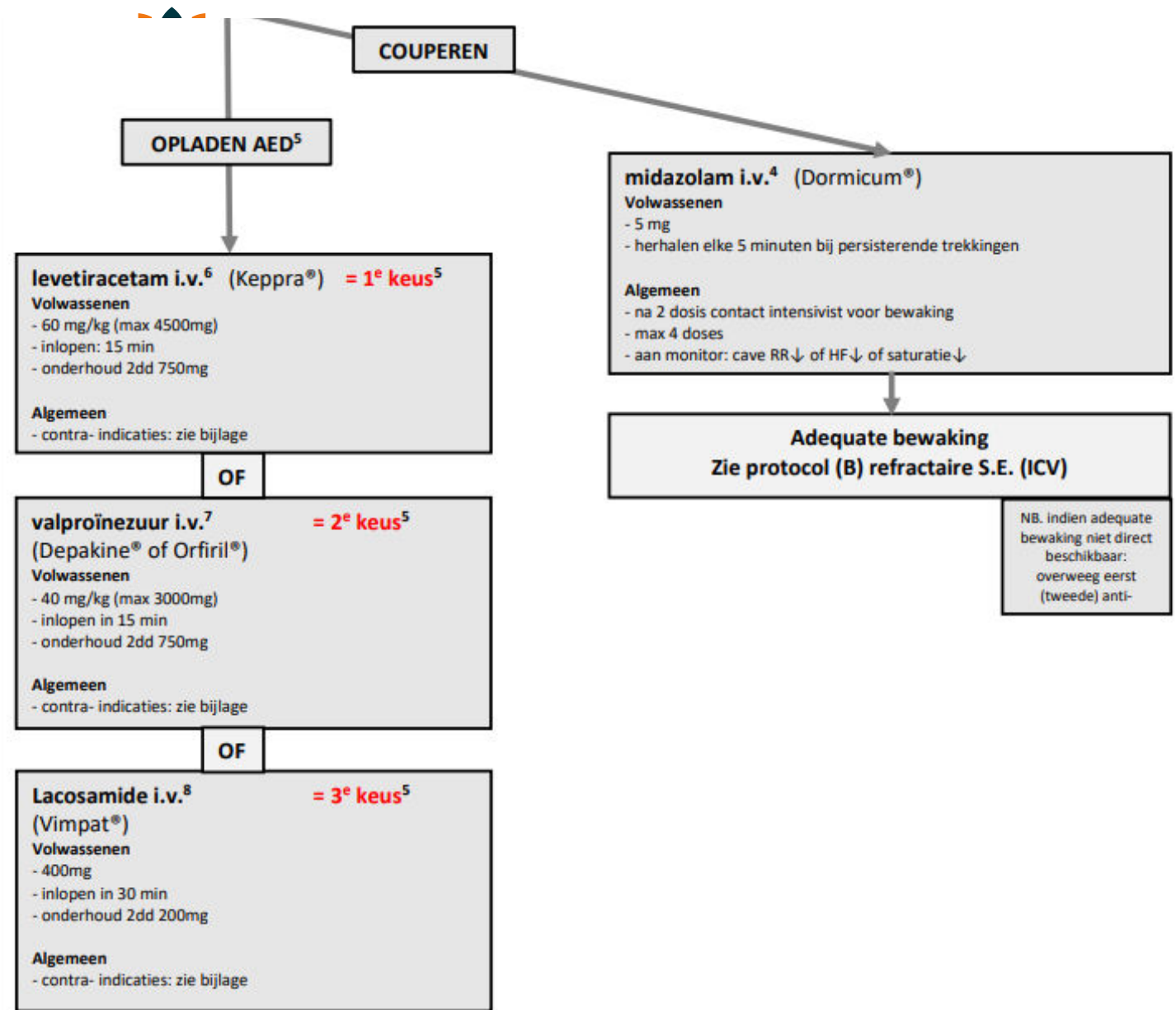
Flowdiagram CONVULSIEVE STATUS EPILEPTICUS (volwassenen)



Eerste middel

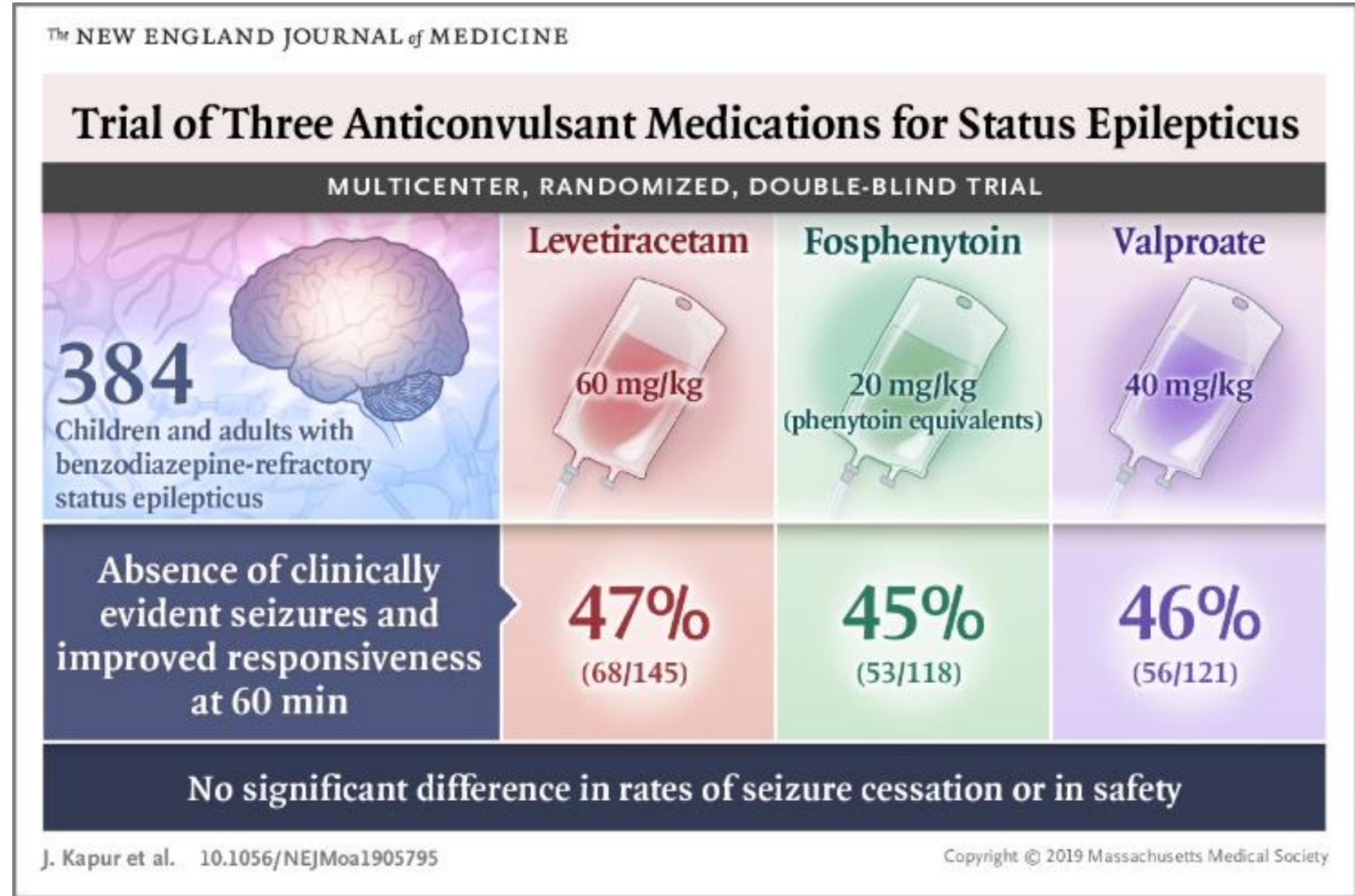
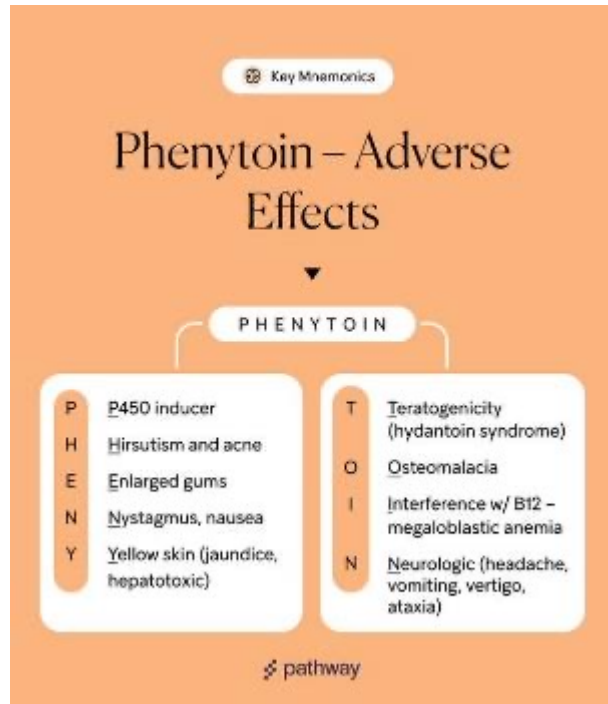
- Benzodiazepine!
- Bijwerking benzo??

AED





Welk AED?





Diagnostiek

- Welk onderzoek?
 - Anamnese
 - CT hersenen
 - LP
 - MRI hersenen

Possible Triggers of Status Epilepticus



Epilepsy syndromes



Cerebral damage



Brain tumor



Electrolyte abnormalities



Drug/alcohol overdose or withdrawal



Encephalitis



Diagnostiek

- Behandelbare aandoeningen
- Encefalitis
 - Viraal / Auto-immuun
- Genetisch

- [NORSE \(New Onset Refractory Status Epilepticus\) and FIRES \(Febrile Infection-Related Epilepsy Syndrome\) - Symptoms, Causes, Treatment | NORD \(rarediseases.org\)](#)

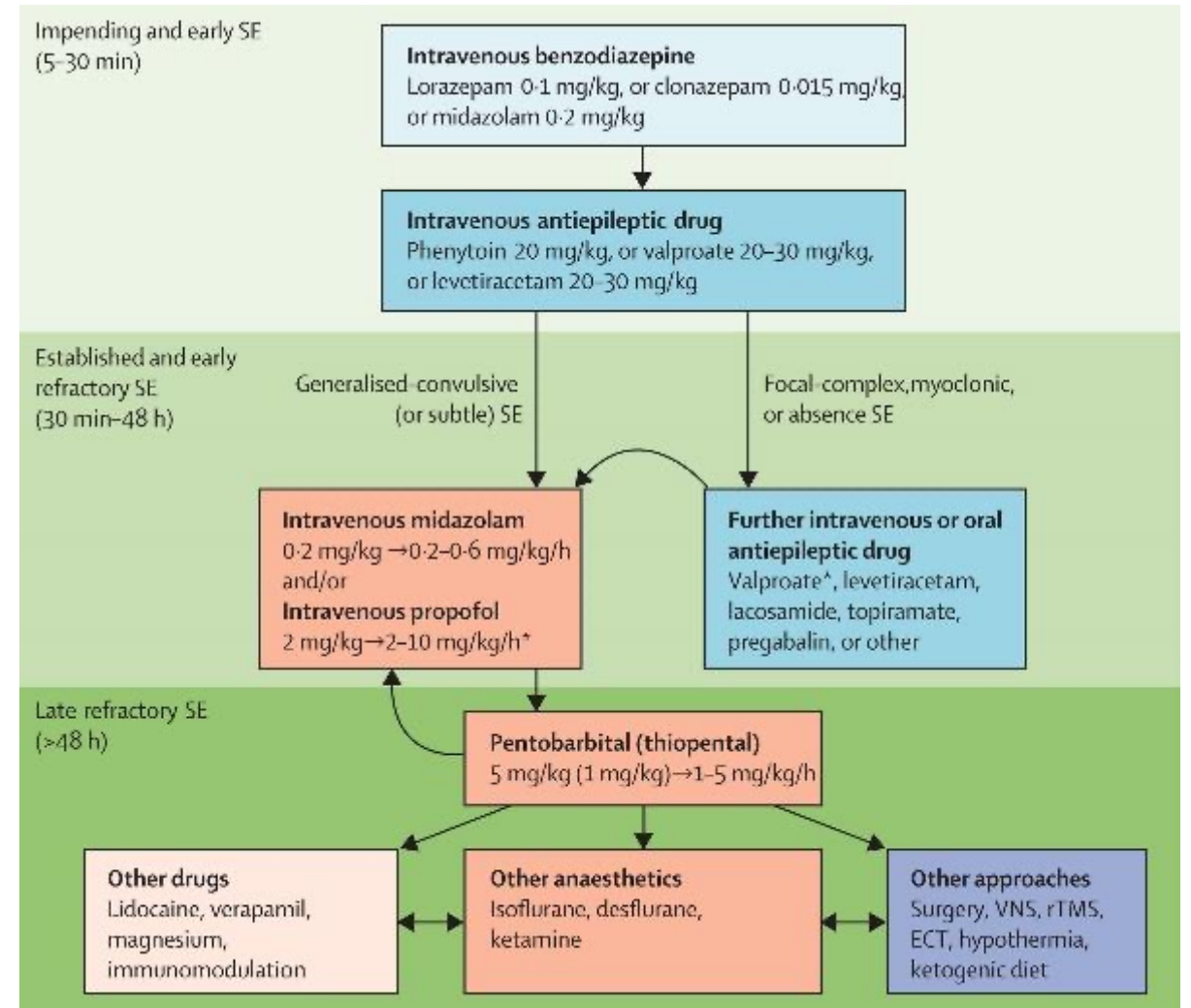
10. Afhankelijk van het klinisch beeld (tabel 1 en 2) kunnen de volgende antistoffen worden aangevraagd:

- Antistoffen tegen intracellulaire nucleaire/cytoplasmatische antigenen
 - Hu, Yo, Ri, Tr/DNER, CV2, Ma1 en Ma2 (als PNS pakket)
 - Techniek: immunoblot (2x en indirecte immunofluorescentie van het cerebellum)
 - Materiaal: serum
 - KLHL-11 en GFAP
 - Techniek: cell-based assay (CBA)
 - Materiaal: liquor
- Antistoffen tegen intracellulaire synaptische antigenen
 - GAD65, amfifysine
 - Techniek: resp. ELISA en immunoblot (amfifysine zit in het PNS pakket)
 - Materiaal: serum (evt. aanvullend liquor)
- Antistoffen tegen extracellulaire antistoffen:
 - VGCC
 - Techniek: radio-immunoassay (RIA).
 - Materiaal: serum
 - NMDAR, LGI1, CASPR2, GABA_BR en AMPAR, DPPX (los of als AIE pakket)
 - Techniek: CBA
 - Materiaal: serum en liquor (gepaard)
 - IgLON5 (serum), GlycineR, (serum) GABA_AR (liquor en serum), mGluR1 (serum) en mGluR5 (serum). Los aan te vragen. De laatste 3 in overleg.



(Super)refractaire SE

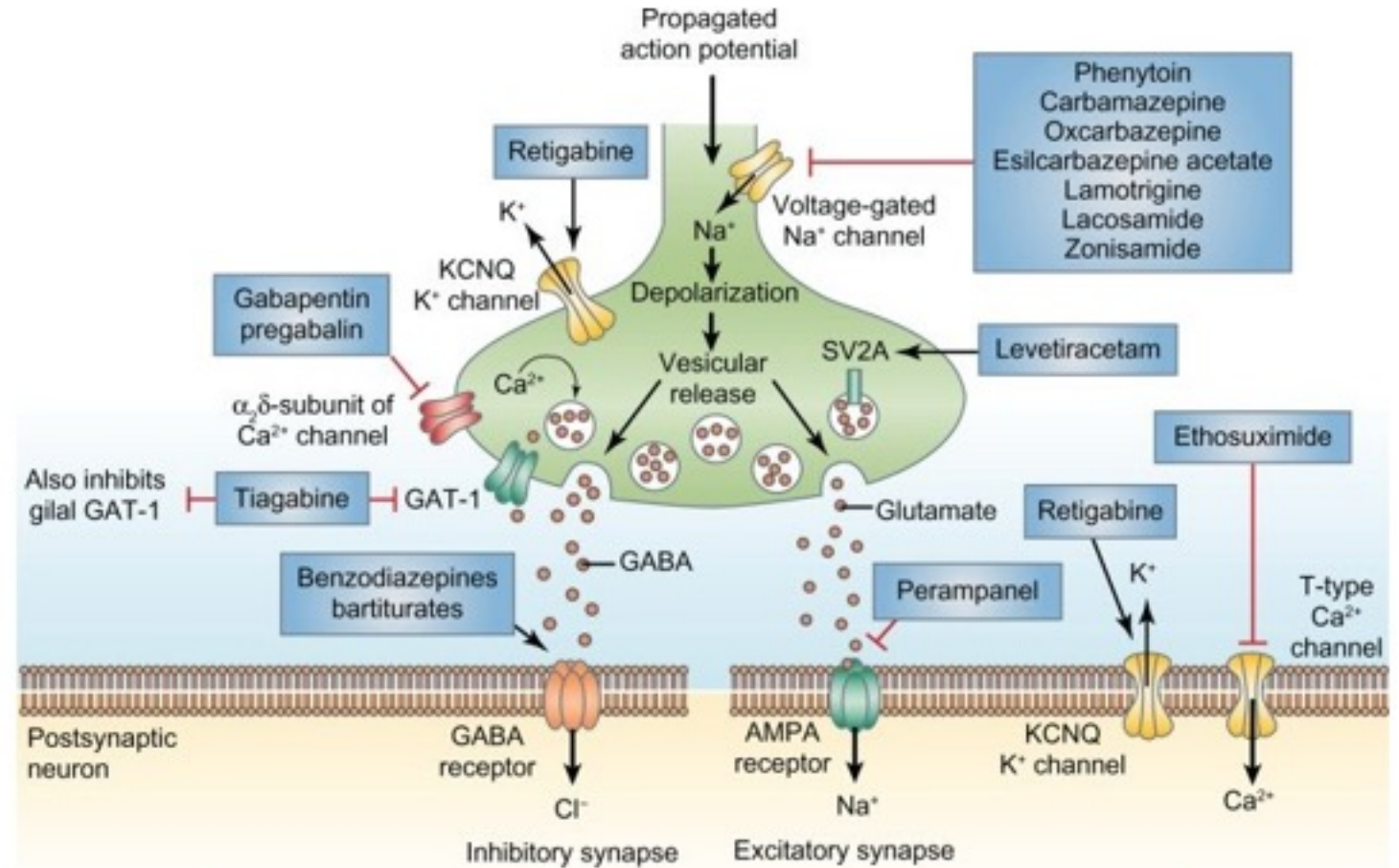
- Sedativa ↑
- AEDs combineren
 - Receptoren
 - Interacties
 - Met elkaar
 - Met andere middelen
 - Door andere middelen





Receptoren

- Verschillende middelen
 - Altijd IV
 - Bepaal spiegels
- Verschillende receptoren
- Pre- en post synaptisch



Not illustrated:

- Vigabatrin → ↓GABA degradation and drugs with multiple mechanisms:
- Valproate → ↑GABA turnover, ↓ Na⁺ channels, ↓NMDA receptors
- Topiramate → ↓Na⁺ channels, ↓AMPA/kainate receptors, ↑GABA_A receptors
- Felbamate → ↓ Na⁺ channels, ↑GABA_A receptors, ↓NMDA receptors

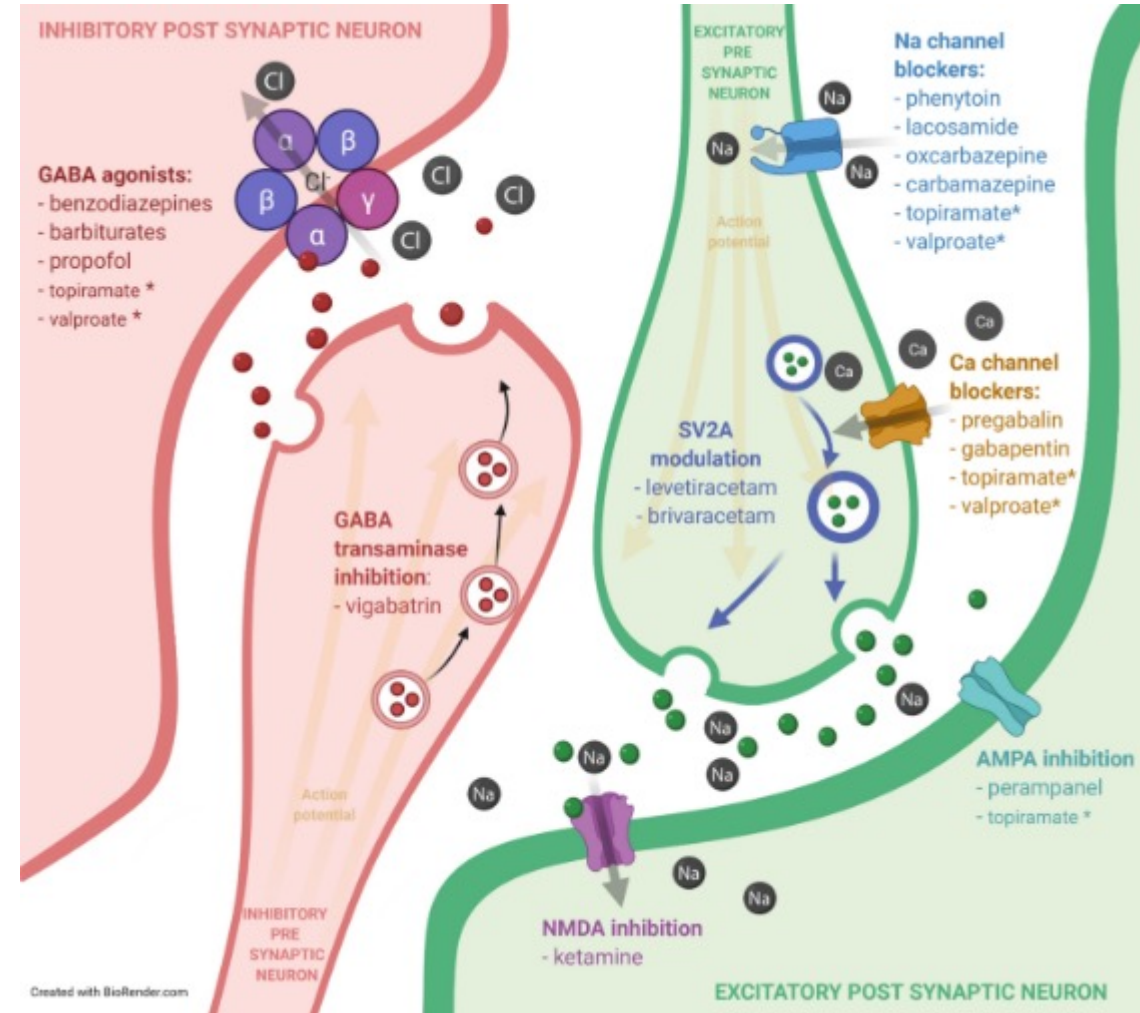
Figuur 2: Aangrijpingspunten anti-epileptica



Receptoren veranderen

Bij langdurige status epilepticus:

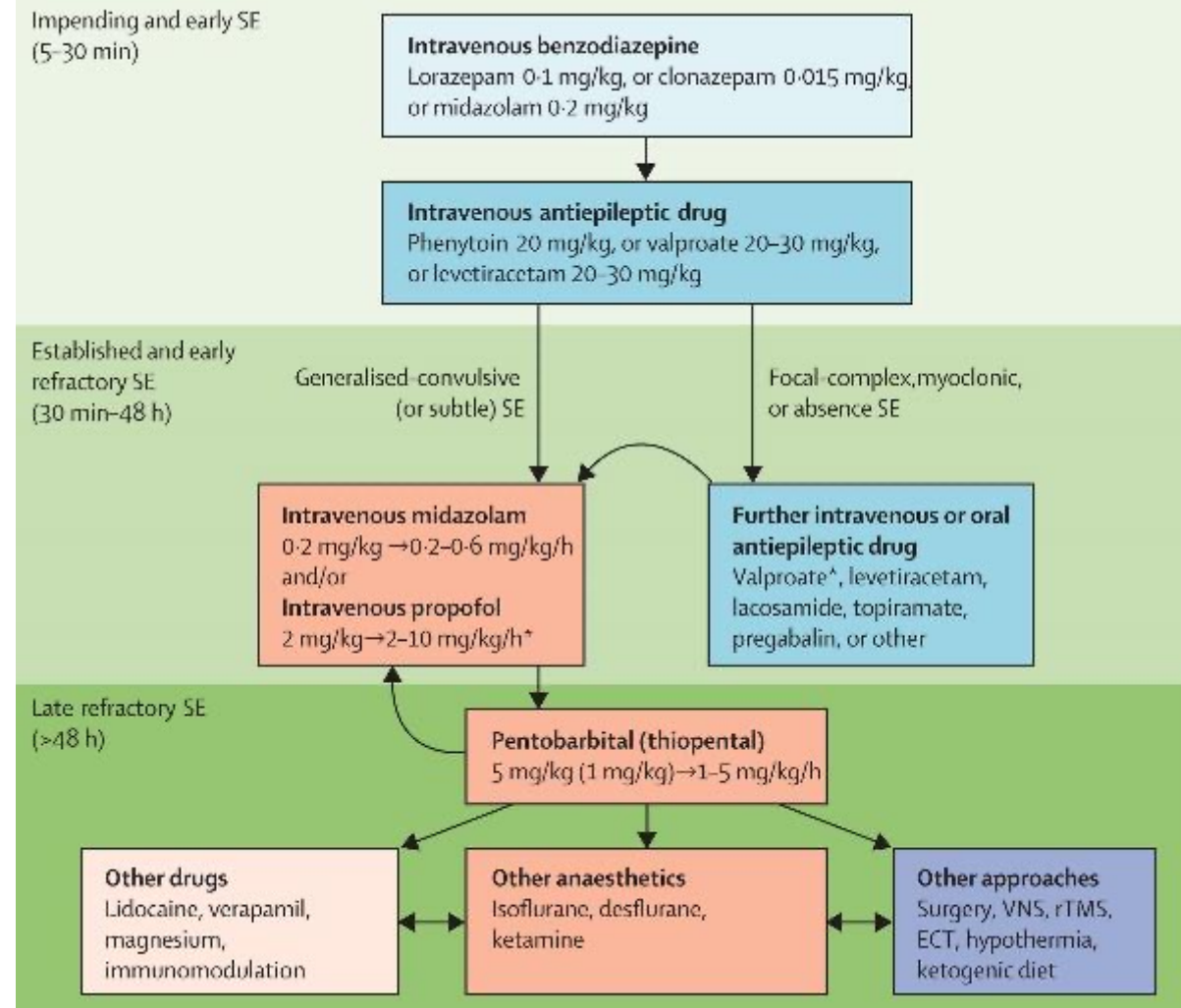
- afname aantal GABA-receptoren
- toename expressie NMDA-receptoren





Laatste stap??

- Ketamine = NMDA-receptor antagonist
- Dosering 1-5 mg/kg/uur
- 24 uur daarna afbouwen
- Propofol loopt door





Kortom

- SE is spoed !!
- Lokaal protocol
- Zoek & behandel onderliggende oorzaak
- SRSE is leuk!
 - Geef niet te snel op

Flowdiagram CONVULSIEVE STATUS EPILEPTICUS
(volwassenen)

