Solent NHS
NHS Trust

Acquired Brain Injury

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Acquired Brain Injury

- Traumatic Brain Injury
  - Accidents
    - Cars, bicycle, assault
- Non –traumatic injury
  - Intracranial
    - stroke, subarachnoid, tumours, infection, encephalitis
  - Extracranial
    - Heart attack – hypoxia, substance misuse, infections

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Traumatic brain injury

- About one million people go to A&E with a head injury
- About 1 in 10 are admitted
- Around 500,000 people (aged 16 - 74) living with long term disabilities as a result of traumatic brain injury
- Approximately 85% of traumatic brain injuries are classified as minor, 10% as moderate and 5% as severe
- Men are two to three times more likely to have a traumatic brain injury than women. This increases to five times more likely in the 15-29 age range
- Life expectancy for brain injury survivors is normal, so over time, what may seem like a low volume problem becomes a high volume one

When is a TBI severe?

- Glasgow Coma Scale

Table 1: THE GLASGOW COMA SCALE AND SCORE

Feature	Scale Responses	Score Notation
	Spontaneous To speech To pain None	4 3 2 1
	Confused conv Words (inappropriate) Sounds (incomprehensible) None	5 4 3 2 1
Best motor response	Obey commands Localise pain Flexion – Normal – Abnormal None	6 5 4 3 2 1
TOTAL COMA 'SCORE'		**3/15 – 15/15**

15 is normal

8 or less is in coma

3 is worst possible score

Severe TBI

- GCS 8 or less at presentation

GCS SCORE	% Good recovery	Survive
8	40%	88%
3	7%	27%

- Falling GCS bad sign
- Failing to recover GCS also bad

Post traumatic amnesia

- Return of continuous memory
- Not easy to assess at the time – best retrospectively
- While in PTA, won’t retain information
- Induced coma makes it hard to assess

Length of Post Traumatic Amnesia

Severity of brain injury	Duration of PTA
Mild head injury	<1 hour
Moderate head injury	1 – 24 hours
Severe head injury	1 – 28 days
Very severe head injury	>28 days

Outcome for various PTA

Duration of PTA (weeks)	% Severely disabled	% Moderately disabled	% Mildly disabled
<1	0	9	91
1-2	0	18	82
2-4	2	40	58
>4	28	46	26

Length of Coma

Hard to measure now many people are electively ventilated

Severity of brain injury	Length of coma
Mild	< 15 minutes
Moderate	15 minutes to 6 hours
Severe	6 hours to 2 days
Very severe	More than 2 days

Case

P fell whilst out drinking

Found semi conscious next day

Large left frontal intracerebral haemorrhage

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case

P fell whilst out drinking

Found semi conscious next day

Large left frontal intracerebral haemorrhage

Intubated and ventilated to allow control of intracranial pressure

Woken after 2 days

Case

- Initially mild right hemiparesis
- Very confused, disorientated
- Quite aggressive, keen to leave ward
- Very tired and sleeping a lot
- Rehab at 7 days, stayed for about 2 weeks

Case

- Rehab stay
  - Often belligerent
  - Wants to work – can he use my computer? Can he go and buy a dongle? Why can't he leave the ward to go to Tesco?
  - Lots and lots of family
  - Hemiparesis resolves
  - Ready answers for many questions
  - Capacity and DOLS assessments

Case

- Went home with support, cognitive symptoms improved
- Now clear has 3 weeks PTA – remembers being discharged from rehab and some of admission, but not the transfer from SGH or any of his admission there.

P's Head injury severity

- Coma duration – not known
- GCS at presentation E2 V3 M5 total 10
  - Moderate head injury
- PTA three weeks
  - Severe head injury

Cognitive symptoms

- What are they?

Cognitive symptoms

- Personality
  - Concentration, planning, disinhibition, lack of control, irritability, turn taking, judgement,
- Memory
  - Anterograde, retrograde, visual, verbal
- Speed of processing
  - Slowed
- Visuospatial and perceptual problems
  - Neglect
- Language skills
- Learning

Cognitive symptoms - treating

- Assess and understand
- Explain and reassure
- Put treatment in place

Cognitive symptoms - treating

- Aggression
  - Assess and understand
    - Triggers? Frustration? Timeframe? Particular people? Severity? Violence? ABC Charts
  - Explain and reassure
    - Family and patient, Staff
  - Put treatment in place
    - Routine, rests, allowing change of scene, cigarettes, minimise stimuli
    - Drugs?

TBI - Physical sequelae

What are they?

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Muscle weakness and spasticity

Range of severity

Patterns

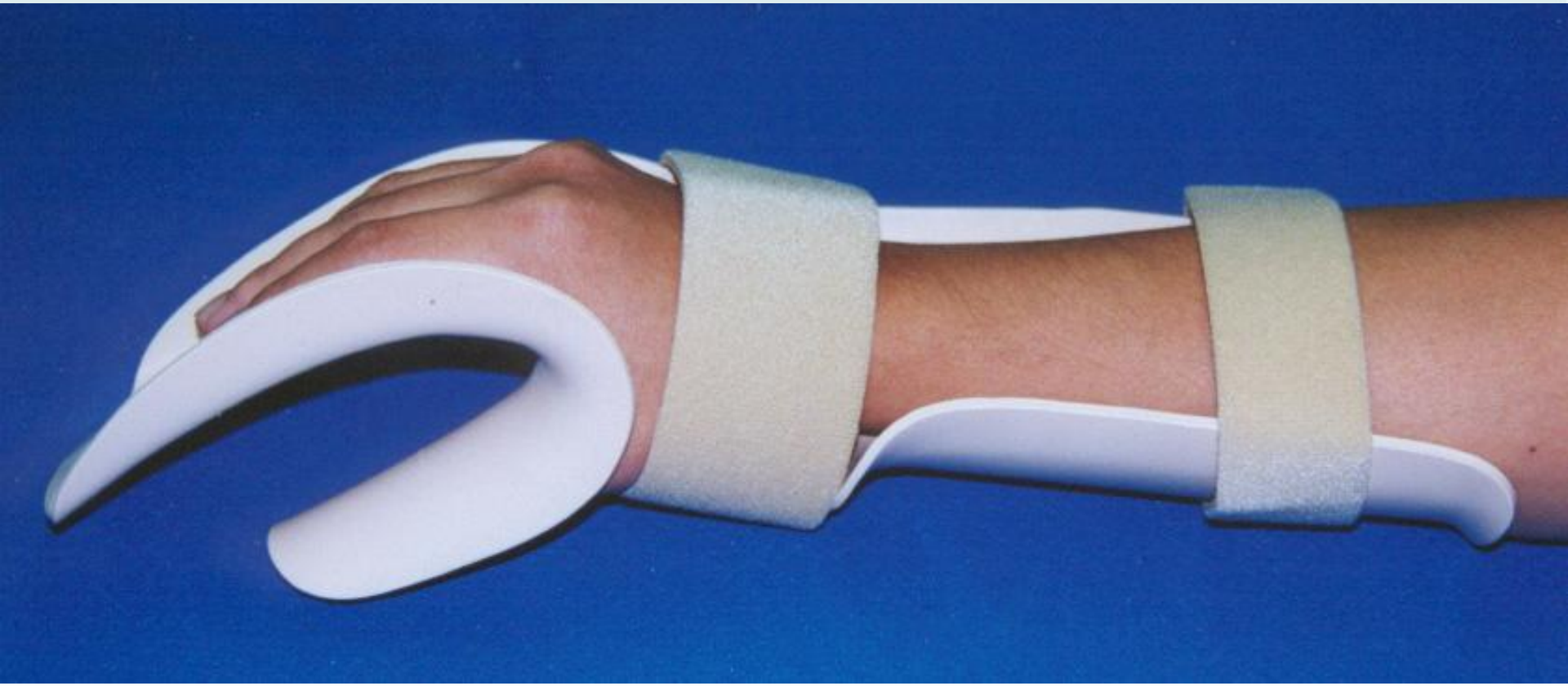
Posture management

Spasticity

- Spasticity is an abnormal increase in muscle tone. It may be associated with involuntary muscle spasms , sustained muscle contractions and exaggerated deep tendon reflexes that make movement difficult or uncontrollable

Spasticity

- A
  - Day to day management
    - Splints, posture, standing, stretching, sleep



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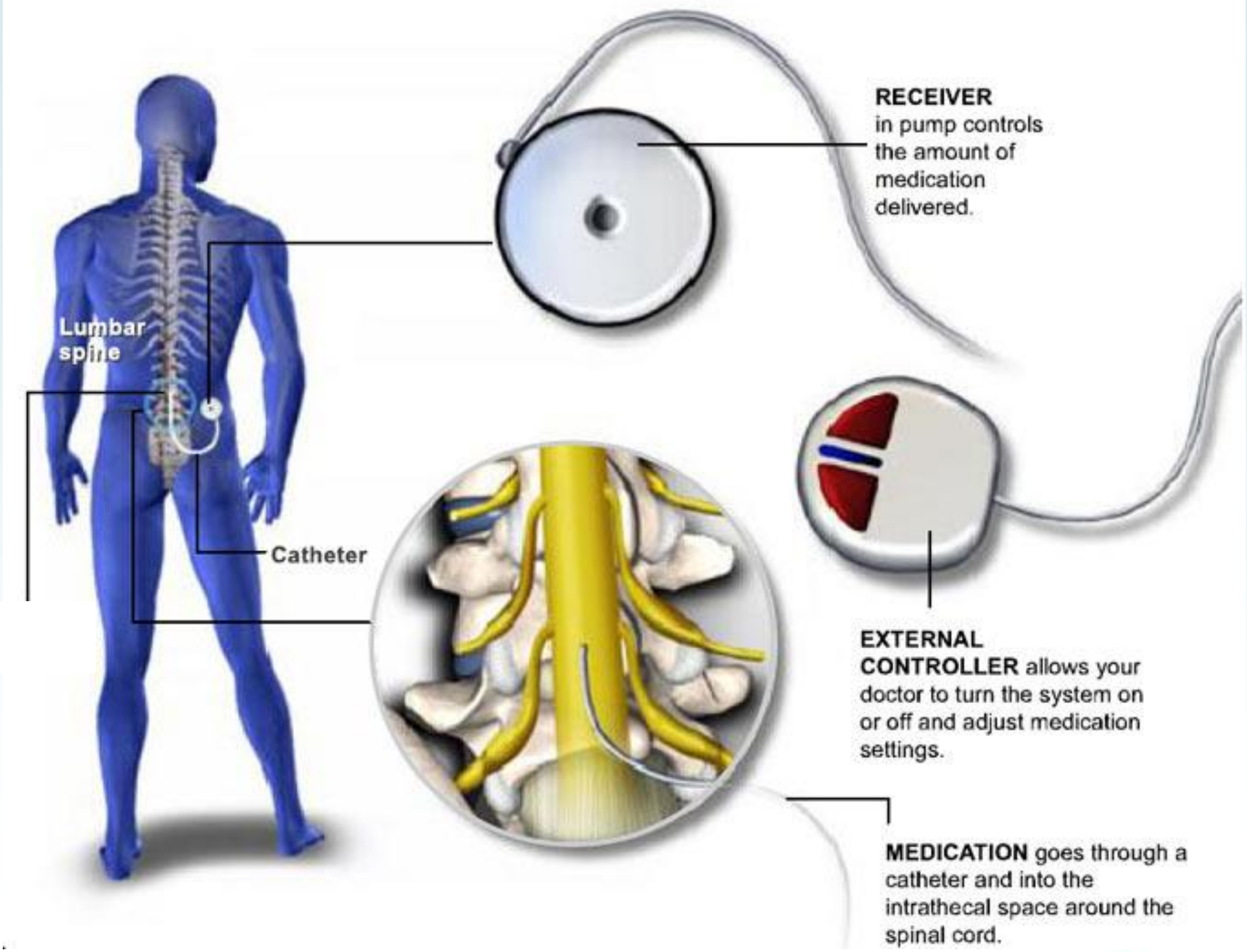
Spasticity

- A
  - Day to day management
    - Splints, posture, standing, stretching, sleep
- B
  - Drugs
    - Baclofen, Tizanidine, Benzodiazepines
- C
  - Interventional treatments
    - Botulinum, intrathecal baclofen, tendon surgery


RECEIVER
in pump controls
the amount of
medication
delivered.
Lumbar
spine
Catheter
EXTERNAL
CONTROLLER allows your
doctor to turn the system on
or off and adjust medication
settings.
MEDICATION goes through a
catheter and into the
intrathecal space around the
spinal cord.

Swallowing

- Malnutrition common due to swallow disorders and increased requirements
- Extra calories
- Gastrostomy feeding tube

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Communication

- Loss of communication devastating
- Low tech aids
- High tech aids
- Familiarity
- Carer support

Carers

- Support
- Educate
- Empower
- Listen

Headway

the brain injury association

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TBI – take home messages

- Severe brain injury devastating event
- Understanding the nature and severity of symptoms key to managing
- Support for carers crucial
- Establishing and maintaining routines
- Don’t underestimate the impact of the environment
- Capacity? Deprivation of Liberty?

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Substance misuse

- Alcohol
- Drugs

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Hypoxia

- Outcome proportional to degree and length of loss of oxygen
- Length of coma a reasonable indicator of severity of function
  - Only 12% those comatose for 6hrs after cardiac arrest make a good recovery
- Variable set of symptoms
  - Cortex, hippocampus, occipital areas, cerebellum
  - Watershed infarcts

Sub arachnoid

- 10 per 100,000
- Can survive with symptoms similar to ischaemic stroke
- But also can have complex disabilities with cognitive impairment
- Hypoxia secondary to vasospasm can affect outcome
- Hydrocephalus

Stroke

- 240 per 100,000 (100,000)
- 15% fatal
- 5 year survival 80%
- 15-30 % survivors disabled
  - 75% ability to work affected
- Depression common

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Tumours

- 20 per 100,000 (12,000)
- Symptoms depend on site and size
- Benign
- Malignant

Meningitis

- 3500 bacterial cases in UK per year
- Hearing loss common
- Behavioural, emotional and psychological affects common (about 1/3 of cases), many of which resolve

Encephalitis

- 7.4 per 100,000 incidence – about 2500 cases per year
  - Infections, reactions to infections, auto immune, disease related (eg HIV)

- Brain injury common

Summary

- ABI a big problem, affecting many areas of a patient's life
- Likely to be long term survivors on our case loads
- Cognitive symptoms may be more difficult to ameliorate than physical