Background Status epilepticus is a neurological emergency and is refractory to standard treatment at times. New antiepileptic drugs have been introduced but the place of application of these drugs in status is yet to be established.

Objective To compare efficacy and adverse effects of intravenous Valproate and intravenous Levetiracetam as second line anti-epileptic drugs in status epilepticus to intravenous Phenytoin.

Methodology 42 patients between 6 months to 12 years presenting with status epilepticus were included in the study and randomly distributed in three groups depending on the day of admission and each group was assigned one of three drugs under study as second line anti-epileptic drug. The ability of the drug to stop convulsions as well as time taken to stop convulsions and adverse effects were noted. Analysis of the data was done using chi square test.

Results 57% patients studied for phenytoin (12/21), 65% for valproate (7/11) and 80% for levetiracetam (8/10) became non convulsive after the use of respective drugs. But on applying chi-square test, p value showed that the comparison was not significant. The average time taken to stop convulsions by phenytoin is 10 min, valproate is 10 min and by levetiracetam is 11 min, which again was not statistically significant. Only 2 out of 42(4.7%) developed minor adverse effects from phenytoin in the form of excessive drowsiness and irritability.

Conclusion Clinically the efficacy of i.v. levetiracetam and i.v. valproate was found to be better than i.v. phenytoin but no statistically significant difference was observed. So phenytoin remains the preferred second-line anti-convulsant in status epilepticus with minimal side-effects.

G54 SHOULD HYPERNATREMIA BE TAKEN SERIOUSLY IN THE PAEDIATRIC CRITICAL CARE SETTING?

Aims Hypernatremia in the critical care setting is frequently observed and is shown to be associated with higher mortality in adults. We studied the prevalence and factors surrounding the presence of hypernatremia in a paediatric critical care unit.

Method From April 2007 to March 2009, the presence of hypernatremia defined as sodium (Na+) greater or equal to 150mmol/l was studied. Demographic details of patients, including the primary intensive care unit (ICU) diagnosis were noted. The duration and peak of hypernatremia along with fluid and diuretic management was reviewed.

Results 130 episodes of hypernatremia (10%) were detected in a total of 1301 ICU admissions over this period. Excluding 14 patients who had a head injury as cause for admission requiring active maintenance of higher sodium levels, there were 116 ICU patient episodes of hypernatremia in 104 patients (52 male, 52 female). Hypernatremia ranged from 150 – 182 mmol/l (median 155 mmol/l, IQR 152–158 mmol/l) with a duration range of 1–16 days (median 2 days, IQR 1–3 days) in the entire group. Management was variable from no active intervention to increasing fluids to administrating diuretics. ICU mortality was 4.6% (55 deaths) in the non-hypernatremic group compared to 19.0% (22 deaths) in the hypernatremic group of patients (p < 0.0001).

Conclusion Hypernatremia in the critical care setting is common and appears to be associated with increased mortality. Fluid management in the sick child can be challenging and the clinician needs to be alerted to initiate optimal fluid management in the hypernatremic child.
of the body was carefully measured, and the location of the tip of the PICC lines was identified using agreed bony reference points, and its distance from the heart was measured. Paired X-rays (of the same baby) were compared with careful documentation of the perceived changes PICC line tip positions with respect to different angles of arm position.

Results A total of 32 pairs of X-rays that met our criteria were reviewed. Arm movements were associated with catheter displacement. For catheters placed in the basilic vein, there was a mean displacement of 0.17mm/degree (−0.53 to +1.4) towards the heart on adduction and 0.1mm/degree (−0.46 to +0.4) away from the heart on abduction of the arm. Similarly, for the cephalic vein, there was a mean displacement of 0.34mm/degree (−0.53 to +1.6) towards the heart on adduction and 0.32mm/degree (−0.8 to +0.45) away from the heart on abduction of the arm.

Conclusion Although this study did not establish any correlation in magnitude or direction, a clinically significant degree of catheter tip migration was observed with changes in arm position for each paired radiograph reviewed. A further prospective study under direct ultrasound visualisation is envisaged to study this relationship further.

HOW TO CONSTRUCT HI-FIDELITY ONLINE MEDICAL DEVICE SIMULATORS  
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Objectives I set out to investigate how the workings of a complex medical device could be visually represented and documented on paper, and then be translated into computer code to produce an online model.

The device chosen was a SiPAP® Infant Flow Driver (Carefusion, Ca) for providing nasal continuous positive airway pressure (NCPAP) ventilation to premature newborn infants. This device is used worldwide, and implements a touch screen control panel to set alarms and change settings.

Methods Statechart theory was designed in the late 1980s to diagram flight systems. This system was easy to learn and facilitates the conceptualization and illustration of both simple and, with practise, complex processes.

The Model-View-Controller (MVC) design pattern is a software engineering framework that requires the separation of the user interface from the functionality of the system. Using this pattern, the device was mapped by producing not one, but two statecharts – one for the user interface of the device, and the other for my perception of the inner workings.

Adobe Flash (Adobe, Ca) is a computer programme that is commonly used to create interactive multimedia web sites. Using the MVC design pattern I used FLASH to build up the physical ‘View’ of the device, and then coded the ‘View Controller’ and ‘Model’, by using the two statecharts as a map.

Results I discovered that by using statecharts and the MVC design pattern, both the inner workings and the user interface of a complex medical device could be represented and documented, then coded into a highly realistic working online simulator. The next stage is to create and implement a statechart for both training and practise, complex processes.

Conclusion The Model View Controller (MVC) design pattern has demonstrated the potential for producing highly realistic working online simulators. This system was easy to learn and facilitates the conceptualization and illustration of both simple and, with practise, complex processes. The online simulator can be viewed at www.sipap.net.

A NATIONAL AUDIT OF PARENTERAL NUTRITION PRACTISE IN UK NEONATAL INTENSIVE CARE UNITS: IS PRACTISE CONSISTENT WITH GUIDELINES?  
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Background Parenteral nutrition (PN) is a lifesaving modality providing vital nutrients for neonates unable to tolerate enteral feeding. It has serious complications, including metabolic derangements, infection and line displacements which can be fatal. Positive outcomes can be maximised and complications minimised by appropriate biochemical monitoring, multidisciplinary involvement, adherence to evidence based clinical guidelines and careful venous line management.

Objective To audit current PN practices in all UK neonatal units against ESPGHAN European guidelines 2005 on protein and lipid introduction, American clinical guidelines for hyperglycaemia and