the expected range of 0.11–2.27/100 ventilator days¹, we identified staffing levels and sedation as key areas which appeared to have some causal effect on these numbers. Following the audit, staff were made aware of the increase in UE's and the importance of prevention was highlighted.

Results Between May 2011 and March 2012, all incident forms were examined and those relating to 'accidental extubations' or 'tube displacement' were examined in more detail. During this time period it was noted that the UE rate was 0.65/100 ventilator days.

Conclusion Despite reviewing the sedation policy and staffing levels, the UE rate remains unchanged. It is possible that the heightened awareness of staff has increased the reporting rate but there is no evidence of this. Although our UE rate remains low we will continue to examine each case individually and review practice as necessary.

1. da Silva et al 2010. *Pediatr Crit Care Med*. Unplanned extubation in pediatric critically ill patients.

1003 RANDOMIZED CONTROLLED TRIAL ON EARLY L-CARNITINE SUPPLEMENTATION TO PRETERM NEWBORNS WITH RESPIRATORY DISTRESS SYNDROME. DOES IT INFLUENCE NEONATAL WELLBEING?

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Background and Aim Respiratory distress syndrome (RDS) is the most common cause of respiratory failure and requirement for mechanical ventilation (MV) of newborns. L-carnitine is essential for the processes underlying fetal maturation such as surfactant synthesis. This study aims to study the effect of early carnitine supplementation on respiratory, nutritional, hematological parameters in preterm neonates with respiratory distress syndrome.

Methods This study was conducted on 60 preterm infants 30–33 weeks of gestation presenting with RDS divided randomly into 2 groups: group A comprised 30 preterm infants who received I.V. L-carnitine at a dose of 30mg/Kg/day until oral intake was established; then it was given orally at the same dose, group B comprised 30 preterm infants who did not receive L-carnitine. Laboratory and radiological investigations were done to confirm RDS, to evaluate and to follow up growth pattern, hematological, and respiratory outcome in those neonates.

Results L-Carnitine supplementation resulted in significant increase in weight gain, decreased period of stay on mechanical ventilator and duration of hospital stay as well as improved discharge status in group A.

Conclusion L-carnitine could be routinely used for preterm neonates suffering from RDS to reduce the need of mechanical ventilation and oxygen requirements in addition to its role in growth. However its effects on hematological parameters should be traced in further research work.

1004 THREE DIFFERENT MASK HOLDS FOR POSITIVE PRESSURE VENTILATION IN A NEONATAL MANNEQUIN

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Background and Aim Mask ventilation is commonly used for neonatal resuscitation. Variable leak and inconsistent tidal volumes are reported in mannequin and delivery room studies. We compared the spider hold (SH) against the two-point top hold (TPTH),

and two-handed hold (THH) for delivering positive pressure ventilation (PPV).

Methods 53 participants from 5 professional groups provided PPV with each hold for 1 minute to a mannequin, using a T-piece resuscitator (PIP/PEEP 30/5 cmH₂O, 40–60 inflations/min). Mask leak and expired tidal volume (T_{VE}) were measured with a flow sensor. ANOVA was used to compare the average median leak from each participant for each hold and by professional group.

Results 7324 inflations were analysed.

Abstract 1004 Table 1 Leak (%) mean(SD)

Professional Group	TPTH n=2554 inflations	SH n=2384 inflations	THH n=2406 inflations
Consultant n=10	34(28)	39(40)	45 (35)
Fellow n=10	33(27)	32(32)	33(35)
Registrar n=10	31(22)	38(23)	13(14)
Midwife n=12	40(30)	43(36)	48(36)
Neonatal nurse n=11	35(28)	38(34)	40(33)

The mean (SD) leak was 35(27)%, 38(34)% and 39(33)% for the TPTH, SH and THH respectively (p=0.003). The mean (SD) T_{VE} was not significantly different between the three holds (p=0.09). The lowest mean (SD) leak was measured with the THH by registrars 13(14)% and highest by midwives with the THH 48(36)% (p=0.001).

Conclusion Each hold can be used to give PPV. The SH does not appear to reduce leak when compared to the other holds.

1005 CALCULATED INHALED ALBUTEROL DOSE AND DELIVERED ALBUTEROL DOSE DURING SIMULATED INFANT VENTILATION USING A NOVEL VENTILATOR CIRCUIT CONNECTOR

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Background Dose determination of aerosolized medications administered to ventilated infants is based on nominal dose and not on the calculated target inhaled dose. A novel ventilator circuit connector (VCC) (AFECTAIR®, Discovery Laboratories, Inc. Warrington, PA), has been developed to facilitate inhaled therapies to ventilated patients.

Objective The aim of the study was to evaluate the difference between the calculated inhaled dose (ID) and the actual delivered dose (DD) in an *in vitro* simulated infant ventilation system using the VCC vs standard of care (SoC).

Design/methods Albuterol sulfate (AS) was aerosolized with a jet nebulizer and delivered using SoC and VCC. Aerosolized AS was collected on HME filters placed before a test lung under different ventilation conditions. DD was determined by rinsing the filters and using an HPLC assay for AS. The calculated ID was determined using the formula: ID=Ca*Vm, (Ca=aerosol concentration, Vm=minute ventilation).

Results There was a 10–14 fold increase in the *in vitro* DD of AS at various ventilation conditions when using the VCC compared with SoC. The difference between the calculated ID and the measured DD *in vitro* ranged from –42% to 15% for the VCC and from –388% to –158% for SoC.

Conclusions The VCC delivered a higher AS dose *in vitro* that was more representative of the calculated ID compared with SoC. The

VCC may allow for a more accurate approximation of actual DD of inhaled therapies when targeting a calculated ID for critical care patients. Supported by PUMS and Discovery Laboratories, Inc.

1006 FACULTY AND STUDENT PERCEPTIONS OF EVALUATION IN A GULF MEDICAL SCHOOL

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Background Student evaluation of faculty members' ability to provide quality learning experiences is required for both formative and summative purposes. The aim was to explore the perceptions of medical students and faculty towards and teaching evaluations.

Methods A 21-item questionnaire, adapted from the Schmelkin *et al.* (1997) inventory, evaluated learner and faculty perceptions of purpose, etiquette, confidentiality, outcome and attitude towards evaluation. A 5-point Likert-scale was used (1 = strongly disagree to 5 = strongly agree). Mean $\pm$ SD of the scale were compared using the Mann-Whitney test.

Results Fifty-two (54%) of faculty members and 80 (23%) of students completed the questionnaire. While both faculty and students strongly agreeing that there was sufficient security in terms of confidentiality in the online evaluation (faculty = 3.67 ± 1.0 vs. students = 3.59 ± 1.2), students, however, believed instructors could recognize individual student comments (3.23 ± 1.0 vs. 2.35 ± 1.1), ($p < 0.0001$). Students strongly agreed (3.56 ± 0.7) that culture allowed objective evaluation of teachers, while faculty were less convinced (2.83 ± 1.1), ($p < 0.0001$). Faculty believed more strongly that they made changes to their teaching in response to student evaluation (3.91 ± 1.0 vs. 3.40 ± 0.9 , $p < 0.0001$).

Conclusions While there was general agreement on the value of teacher evaluation, there were differences between faculty and students in terms of the confidentiality, what teachers did with their evaluation and whether evaluation led to improved practice. Educating teachers and learners of the purpose of evaluation as a transparent process for quality improvement is an imperative.

1007 USING STATECHARTS AND THE MODEL-VIEW-CONTROLLER ARCHITECTURE TO DEVELOP A NOVEL ON-LINE FULLY INTERACTIVE SIPAP DEVICE FOR TRAINING AND COMPETENCY ASSESSMENT

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Performance-based training and competency assessment of junior medical and nursing staff in the use of medical devices such as ventilators places significant demands on instructor time. The development of hi-fidelity on-line simulations of medical devices and clinical situations presents a new way for doctors and nurses to learn and be assessed.

State chart theory was developed to categorise and diagram highly complex flight systems in aviation. This design paradigm combined with the software engineering architecture of the model-view-controller allows for the creation of infinitesimally complex systems.

Such methodology was used to recreate the exact workings of the SiPAP infant flow driver (Carefusion, CA), which has been used to train and assess both medical and nursing staff in our unit, in a fully educationally 'safe' environment without an instructor.

The entire state chart for the device will be demonstrated as well as the working on-line simulator in an ePoster format.

Abstract 1007 Figure 1 Simulator

1008 OPPORTUNITY COSTS IN PAEDIATRICS: THE SPECIALIST REGISTRAR EXPERIENCE

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Background and Aims Recently, the pursuit of a career in Paediatrics has gradually suffered a decline. This observation prompted an evaluation of Specialist Paediatric Registrars' (SPR) perceptions of their training programme and its impact on them.

Methods Utilising an online questionnaire, all trainees in 2011 were surveyed through the RCPI database. Data sought included demographics, perceptions of career progression, work effectiveness, social impact of hospital-based training and potential career costs in paediatrics. Likert scoring (cuing at 1 not at all, cuing at 6 extremely), binary questions (scored as yes, no or unsure) and narrative options were used.

Results Fifty-three (71%) responses were obtained, with representation from each year of training. The mean Likert score was 3.8 for career progression, 4.6 for functional efficiency at work and 3.3 for attainment of a work-life balance. The value of log-books and end-of-year assessments showed positive skewing (Likert 5/6) in 8(15%) and 7(13%) respectively. Narrative responses indicated the most challenging aspect of training was time for academic pursuits 28(53%). Other concerns included relocation for 8(15%) and career uncertainty for 7(13%). SPRs cited exercise for 29(43.4%) and discussion for 19 (35.8%) as coping strategies. Thirty nine (73.6%) SPRs incurred personal costs in training with compromised family cited by half. Mean Likert score for cost acceptability was 2.8 and perceived preparedness for consultancy, post-training, scored 3.7.

Conclusion SPRs feel there is a need for change within their scheme and that paediatric training incurs significant opportunity costs, with ultimate career uncertainty.

1009 CLINICAL UNCERTAINTY AND THE PAEDIATRIC TRAINEE

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Background and Aims Uncertainty is at the heart of clinical practice and is encountered by trainees at all levels. This study explored paediatrics trainees' perceptions of uncertainty.

Methods Basic specialist trainees in Paediatrics were surveyed while attending a training day. The survey explored 4 aspects related to uncertainty which included factors in decision making, personal