

2018 AmSECT pediatric
October 4-6, 2018 Miami, FL

AmSECT experience

Staffing Algorithms & Manpower in Pediatric Perfusion

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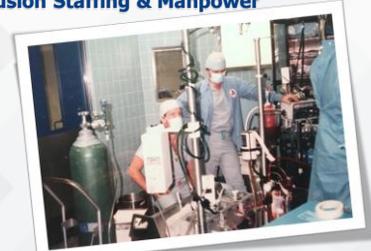
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Perfusion Staffing & Manpower



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Safe Staffing



Safe Staffing

- Health care organizations are becoming increasingly aware of the issues surrounding safe staffing because it affects all of us:
 - Patients and the public are assured safe care
 - Employers are exposed to less risk and incur lower costs
 - Regulators have fewer cases to investigate
 - Professional associations can concentrate on providing services to support competence
 - Health care employees have greater career satisfaction, self-image and professional growth

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Cost Containment ...

- "Because of limited to no current literature based on perfusion staffing much of the speculations and assumptions are based on extensive nursing research..."
 - Shaw JB, JEC7 2007; 35:540-553 A Report of Perfusion Staffing Survey, Decision Factors That Influence Staffing of Perfusion Teams*
- A common avenue for cost containment is to reduce labor hours and/or the workforce:
 - Short-sighted: appropriate staffing and skill mix levels are essential to optimize quality of care
 - 'Appropriate staffing' challenges us to create innovative staffing solutions for our particular environment
 - "While the conduct of CPB is fairly well standardized with protocols, the staffing of perfusionists is not"
- Concerns about **SAFE** staffing may arise when a purely financial approach is taken without considering factors such as:
 - Patient acuity
 - Patient outcomes
 - Maximum length of time worked

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The Problem...

- Appropriate staffing remains the toughest problem for hospitals to manage
- Adequate staffing is essential to:
 - Reduction in patient mortality
 - Enhanced outcomes
 - Improved patient safety
 - Improved clinician satisfaction
- Although hospital management and other leaders are accountable to the bottom line, when patient care is compromised, we are accountable to:
 - Our patients
 - Our professions
 - Civil and criminal court system

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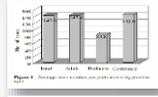
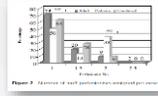
Type of Perfusion Practice

An update on perfusion safety: does the type of perfusion practice affect the rate of incidents related to cardiopulmonary bypass?

Abstract 106 - 10/18

Abstract 107 - 10/18

- The lowest # of cases performed annually = pediatric (83.8)
- Pediatric had greatest # of procedures performed with 2 CCP's / case (38% vs. 9%) in adult & combined groups
- Incidents:
 - Overall incidents = once every 138 procedures overall
 - Incident rate highest in pediatrics, once every 83.9 procedures
 - Adult group = once every 120.9 procedures
 - Combined group = once every 220.2 procedures
- Serious injury:
 - Adult group = 6%
 - Pediatric group = 15%
 - Combined group = 7%
- Incident rates occur almost 1.4 and 2.7 times higher in pediatric than in adult and combined centers respectively

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Appropriate Staffing Definitions

- ANA: "A match of expertise with the needs of the patient in the context of the practice setting and situation... to reach safe, quality outcomes... that must take into account a wide range of variables."
- AORN: "flexible and responsive to short-term and long-term patient and organizational demands."
- AmSECT S4.G:
 - **Standard 2: Qualification, Competency and Support Staff**
 - **Standard 2.4:** Support staff shall be available on site to assist the primary Perfusionist during CPB procedures.
 - **Guideline 2.2:** A standardized process should be developed and followed to identify, orient and educate support staff to ensure they have general knowledge of the duties performed by the Perfusionist, flow of the operation and location of primary and ancillary items required during CPB. Support staff may include a Perfusionist, nursing, technical, or non-technical staff.
 - **Standard 15: Staffing and On-Call:**
 - **Guideline 15.1:** The "n+1" staffing model should be utilized at all times, where "n" equals the number of operating/procedure rooms in use at any given time at a single site.

UK Code of Practice http://www.acps.org.uk/index.php?option=com_content&task=view&id=34&Itemid=43

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Code of Practice



- **Code of Practice:** Defined as the common practice of any profession in the health care service which is generally agreed by the profession's practitioners as being the minimum standards to enhance the good standing and reputation of the profession's practitioners, and moreover, to serve the interests of the Society and above all to safeguard the interests of the patient.
 - The minimum safe number of accredited clinical perfusion scientists to cover operating theatres is deemed as N+1 where N equals the number of operating theatres in use at any given time on a single site, e.g. if three operating theatres are concurrently in use then the minimum safe number of Accredited clinical perfusion scientists to cover this level of activity is deemed to be four. Trainees must not be included in the minimum safe number.
 - With respect to staffing levels, risk assessments must be undertaken to identify the potential problems associated with all activity delivered by the clinical perfusion department.

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Staffing Considerations

- Institutional caseload (*adult vs. pedi vs. mixed*)
- Acuity of institutional annual caseload
- Number of location(s) where coverage is required
- Medical-legal ramifications of training, education and experience for pediatric perfusionists
- # of CCP's employed per institution vs. coverage vs. PTO
- Amount of time it takes to train new employees
- Maintaining staffing standards of care for our subspecialty... (n+1)
- Is n+1 enough???
- Use of assistant CCP or perfusion assistants to cover ancillary non-essential duties
- Minimum # of cases/year/CCP to maintain competence without excessive call
- Minimum # of cases/year/CCP to ensure patient safety
- Are we responsible for too much during the course of bypass that may distract us from primary patient care?
- Do your attending physicians / executive leadership understand the complexity of pedi perfusion to support adequate perfusion staffing?

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Sleep Deprivation

- Nonstandard work hours and sleep deprivation contribute to: ¹
 - Higher risk of gastrointestinal disorders
 - Cardiovascular disease
 - Breast cancer
 - Miscarriage
 - Preterm birth
 - Low birth weight
- Chronic sleep deprivation and resulting fatigue and stress can affect job productivity and the incidence of workplace accidents ²

1. Van Dongen HP et al. (2007). "The cumulative cost of additional wakefulness: dose-response effects on neurobehavioral functions and sleep physiology from chronic sleep restriction and total sleep deprivation." Sleep 30 (2): 117-26. PMID: 17054494
2. Klappanen, Timo (2007). The 24-Hour Society and Industrial Relations Strategies. Oslo, Norway: European Industrial Relations Assn.

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Sleep Deprivation

Fatigue and extended work hours among cardiovascular perfusionists: 2010 Survey

A. Trone, B. Swartz, T. Smith, DM Darling

PURPOSE:

- Collect data on prevalence of fatigue in perfusion
- Identify concerns regarding fatigue, performance and perfusion safety
- Sleep deprivation affects task performance when tasks are: ¹⁰⁻¹⁷
 - Simple
 - Monotonous
 - Well rehearsed
- More complex tasks requiring critical thinking, logical reasoning and IQ-type testing are less sensitive to effects of sleep deprivation
- Most vulnerable period for fatigue-related impairment occurs at night during the 'cruise' or stable portion of bypass

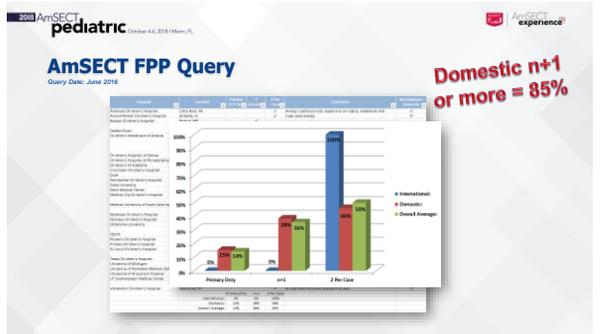
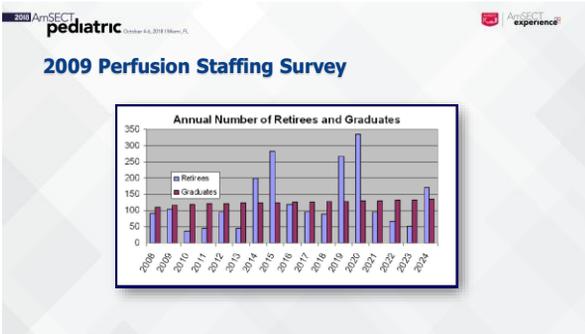
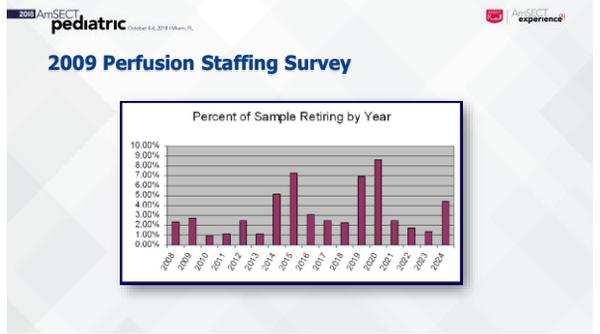
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Study Results

Fatigue and extended work hours among cardiovascular perfusionists: 2010 Survey

A. Trone, B. Swartz, T. Smith, DM Darling

- Continuous hours worked:
 - 68.9% worked > 23 hours straight
 - 17.5% worked continuously for 36 hours
- Performance of CPB after continuous hours of wakefulness:
 - 82.0% after 17 hours
 - 63% after 23 hours
 - 14.8% > 36 hours
- Other:
 - 49.5% microsleep during CPB
 - 6.9% automobile accidents due to fatigue
 - 44.4% reported near miss auto accident
 - 66% reported fatigue related minor error
 - 6.7% admit having a serious perfusion accident due to fatigue
 - 32.2% believe guidelines should be developed by our professional organizations
 - 13.4% believe limits should be established, legislated and enforced by state or federal authorities



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Clinical Staffing Template

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Weekly Total Hours	Productive FTE's	Non-Productive FTE's
Perfusion Coverage (13)										
Cardiac CRJ	2.00	2.00	2.00	2.00	2.00	1.00		71	3.80	12.00
2nd CRJ	1.00	1.00	1.00	1.00	1.00	1.00		56	1.00	0.12
3rd CRJ (2)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	74	1.40	0.17
Cardiac ECMO CRJ (2)	1.00	1.00	1.00	1.00	1.00	1.00		64	0.40	0.17
VRJ	1.00	1.00	1.00	1.00	1.00	1.00		64	0.40	0.03
Art. Therapist (2)	1.00	1.00	1.00	1.00	1.00	1.00		64	0.00	0.12
	2.0	2.0	2.0	2.0	2.0	2.0	2.0	272	6.80	0.62
										7.82

Total Productive + Non-productive: 14.64

Administration: 8.12

Management: 0.80

Total: 23.56

Notes:

1. Represents total FTE hours for all perfusionists and CRJ/VRJ staff.
2. Includes 2.0 FTE hours for 2nd CRJ, 2.0 FTE for 3rd CRJ, 2.0 FTE for 2nd CRJ, 2.0 FTE for 3rd CRJ, 2.0 FTE for 2nd CRJ, 2.0 FTE for 3rd CRJ.
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10. Includes 2.0 FTE hours for 2nd CRJ, 2.0 FTE for 3rd CRJ, 2.0 FTE for 2nd CRJ, 2.0 FTE for 3rd CRJ, 2.0 FTE for 2nd CRJ, 2.0 FTE for 3rd CRJ.

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Switch (not arterial)

Pediatric Perfusion Survey

- Groom et al study 2017-18
- In the USA there were 127 centers identified, 9 of which were inactive, thus 118 centers.
 - 90 centers in the USA responded for a 76% response rate.
- STS Congenital database currently 119 participating centers

Pediatric Perfusion Survey

- North American Survey
 - USA = 90 centers
 - Canada = 3 centers
 - 3 centers w/o response
 - n = 90 responses

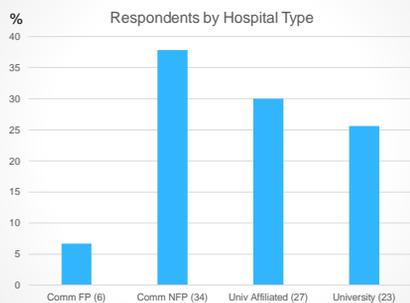
Question:

- Which of the following best describes your institution:
 - Community hospital (for profit)
 - Community based (not for profit)
 - University affiliated (non-VA)
 - University hospital
 - Veterans Administration hospital

- Note: There was no definition for responders of center type, so self-defined.

Pediatric Perfusion Survey

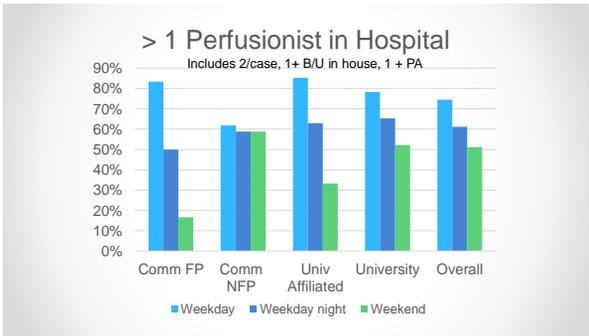
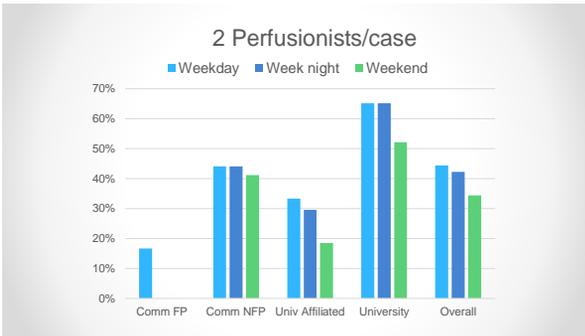
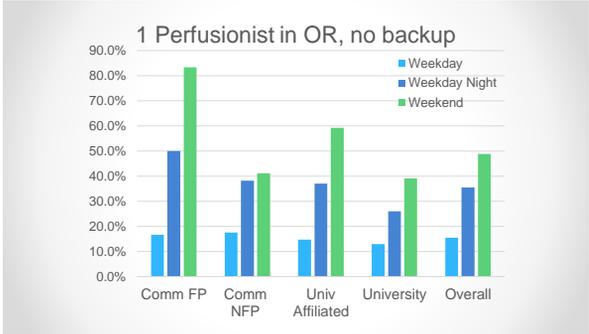
- Hospital type
 - Community for-profit, n = 6 centers (6.7%)
 - Community not-for-profit, n = 34 centers (37.8%)
 - University affiliated, n = 27 centers (30%)
 - University, n = 23 centers (25.6%)

**Staffing question:**

- How many perfusionists are present for each pediatric/neonatal case during conventional work days (example 0700-1700)
 - Weekday
- How many perfusionists are present for each pediatric/neonatal case during conventional work days (example 1700-0700)
 - Weekday night
- How many perfusionists are present for each pediatric/neonatal case during non-conventional work days (example weekend)

Staffing question:

- One perfusionist in the operating room
- Two perfusionists in the operating room
- One perfusionist per operating room case plus a backup perfusionist in the hospital
- Other (please specify) _____



Standard of Care

- In legal terms:

The level at which the **average**, prudent provider in a given community would practice.

It is how similarly qualified practitioners would have managed the patient's care under the same or similar circumstances.

The Golden Rule:
*Treat others the way
 You want to be treated.*

The Platinum Rule

- Pretend the patient is your **Mother** & your **Father** is paying the bill.
- Applied to Peds:
 Pretend the Patient is **Your Child** & **You** are paying the bill.

Case Load

- What is the minimum number of pediatric pump cases you believe a perfusionist should do annually to qualify as competent pediatric perfusionist
 - 0 – 20
 - 21 – 30
 - 31 – 40
 - 41 – 50
 - 51 – 60
 - 61 – 70
 - >70



Note: this is one person's opinion from responding center

