

The Demographics and Job Satisfaction of Physicians
working in Canadian Pediatric Emergency Departments

by

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**The Demographics and Job Satisfaction of Physicians working in
Canadian Pediatric Emergency Departments**

BY

William R. Craig

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University
of Manitoba in partial fulfillment of the requirements of the degree
of**

MASTER OF SCIENCE

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Abstract

Background: To maintain a high-quality emergency health services, experienced physicians with proven clinical skills must be retained. Research regarding full time adult emergency physicians suggests high turnover. A survey done in 1987 of physicians working in pediatric emergency medicine (PEM) showed that 75% of them worked part time. There is no literature on physicians working in Canadian pediatric emergency departments in terms of sociodemographic characteristics or job satisfaction.

Objectives: To describe the sociodemographic characteristics, training, job description, job history, shift work parameters and job satisfaction of physicians working in Canadian pediatric emergency departments (PEDs). The second objective is to explore the relationship between job satisfaction and any of the aforementioned parameters.

Methods: In 2000, all physicians who worked two or more shifts per month in all 10 Canadian PEDs were mailed a survey. Job satisfaction was measured by Lloyd's Emergency Physician Job Satisfaction Scale (EPJS) and Global Job Satisfaction Scale (GJS). In-depth interviews were attempted with one physician from each department. Multiple regression was used to assess the relationship between job satisfaction and measured characteristics described in the primary objective.

Results: The response rate was 76% (146/193). Seven in-depth interviews were completed. Fifty-two percent of the physicians were male, the median income was between \$120,000 and \$139,000, and the median age range was between 40 and 44 years. Sixty-five percent describe themselves as part time, and 69% do clinical work outside the emergency department. Twenty-one percent have done a fellowship in PEM. Forty percent predict that they will leave the field of PEM in 10 years. Whereas there was a higher proportion of women working part time (53%) than full time it was not statistically significant ($p = 0.12$). Factors that affected job satisfaction in this cohort were marital status, partner working shifts,

number of children at home, working full time, income level and the number of monthly shifts.

Conclusions: Many physicians practice part time. Shift work has positive and negative aspects. The parameters surrounding the field of PEM are being established.

A man can do nothing better than to eat and drink and find satisfaction in his work.

Ecclesiastes 2:24a

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The Demographics and Job Satisfaction of Physicians working in Canadian Pediatric Emergency Departments

Chapter 1 – Introduction

1.1 A Career with a Future

“To maintain a high-quality emergency health services system, we need to keep experienced physicians with proven clinical skills on the job.”⁽¹⁾ In Winnipeg Children’s Emergency Department, in the spring of 1999, there were only two physicians who were doing full time clinical work out of a department of fifteen physicians. Both of these had been at this job for less than a year. Most of the other physicians worked the equivalent of full time hours or more, but providing pediatric emergency care was only one of their clinical responsibilities. A few of these physicians considered pediatric emergency medicine as a career but chose to limit their professional activities to fractional full time equivalents ranging from 0.6 – 0.8. This raised the question of whether the relatively high proportion of part time staff was unique to Winnipeg or common in pediatric emergency medicine across Canada. Other pediatric subspecialists at the Winnipeg Children’s Hospital had full time careers in their chosen fields. What were the factors (if any) that made pediatric emergency medicine a career that few practiced on a full time basis? Was it the nature of the work environment or the challenges of shift work? Or was it the characteristics of the physicians who made pediatric emergency medicine their career choice?

The purpose of this project was to explore the relationship between job satisfaction, demographics, and attitudes to shift work among physicians who work in

pediatric emergency departments across Canada. This first chapter presents a brief summary of the history of emergency medicine followed by a review of the research literature.

1.2 History of Emergency Medicine

Pediatric emergency medicine has its origins in both the fields of pediatrics and emergency medicine. Emergency medicine clinics were once known as “Casualty Departments”, and in many places emergency physicians are still called “casualty officers” or “CO’s”. The term used to refer to any physician on duty in the casualty department.

In England, in the mid-1800’s, the out-patient department of St. Bartholomew’s, a London hospital, had two types of patients: “casualty” which described those who were supposed to require temporary treatment for diseases or injuries and “out-patients”. (These out-patients had received a letter of admission which entitled them to the advice of assistant surgeons or physicians for a period of 2 months). A report on the casualty division at St Bartholomew’s noted that the annual number of visits grew from 65,880 visits in 1859 to 109,861 visits in 1868.(2) The casualty area consisted of a waiting room capable of holding 600 patients. The report commented on the small size of the 6 examining rooms and the necessity of examining the patients in the waiting room. The surgical cases were attended to by the house-surgeons while the medical patients, formerly attended to by the hospital apothecaries, were looked after by the house-physicians. (These house-surgeons and house-physicians would be the equivalent of our 1st and 2nd year residents.) The primary responsibility of the house-staff was patient care on the wards and so they were often pushed for time. The report notes that “On the

morning in question, 120 patients were seen and dismissed in an hour and ten minutes, or at the rate of 35 seconds each. Who shall say what mistakes were made? None can tell.”(2) The article points out that there were problems in the casualty department of St. Bartholomew’s and suggests that a full time general superintendent is required to “hear the complaints of excessive or ill-arranged work, and make suggestions for improvement.”

There is no record of major changes before the National Health Service (NHS) in England came into effect. In July 1948 the NHS inherited a large number of casualty departments. “The staffing was poor, with absent support from seniors who were in nominal charge only – ‘absentee landlords’.”(3) Letters published in the Lancet show that the issues were difficulty in finding medical staff, and inconsistent quality of care.(4) These problems were large enough to gain the attention of question period in the House of Commons. Proposed solutions included increasing pay, and using physicians at the preregistration appointment level (the equivalent of interns).(5) Despite the concern, there was not much change, and so in 1956 Lowden was to write, “A casualty patient may therefore receive attention at the hands of any grade in the hospital service, from senior nurse to consultant surgeon.”(6) Sir Henry Platt wrote a report on these problems (The Platt Report) which was published in 1962.(3) Its many recommendations included the suggestion that the term “casualty service” should be replaced by the words “accident and emergency service”. Platt also recommended that there should be 3 consultant orthopaedic surgeons in charge of each unit and that the unit be adequately staffed and designed. These recommendations could not solve the problem of medical staffing. Being a senior hospital medical officer in the accident and emergency service was seen as a dead end career as unlike other British medical specialties, there were no consultancy

positions available for physicians working emergency until 1972, when 32 experimental consultants were appointed in this field. The delay in creating consultancy positions reflected broad sentiment that the casualty department had not warranted such an appointment.

The development of emergency medicine in the United States accelerated in the 1960s and 1970s. In 1961, in Virginia, 4 physicians gave up their private office practices to work in the emergency department on a full time basis.(7) Physicians interested in this type of practice communicated with each other and in August 1968 the American College of Emergency Physicians (ACEP) had its first meeting. The first residency program in emergency medicine was started in Cincinnati in 1970, and the formalization of emergency medicine as the 23rd specialty in the United States occurred in 1979.(8)

The development of emergency medicine in Canada followed a similar path. In 1958, a committee of the Royal College of Physicians and Surgeons of Canada (the agency that creates training standards and grants sub-specialty certifications) concluded that the care of the ill and injured in the emergency department did not meet the high standards expected in other areas.(9) This committee became the committee on emergency medicine in 1971. In 1977 the Canadian Association of Emergency Physicians (CAEP) was formed and by 1980 the College of Family Physicians of Canada decided to develop a certificate of special competence in emergency medicine. In 1983 the Royal College of Physicians and Surgeons of Canada offered an examination to those candidates who wished to be viewed as specialists in the field of emergency medicine.

Prior to 1985, most emergency departments (ED) in North America had limited attending staff coverage. Usually a full time physician would be in the department during the day, but part time physicians provided the clinical coverage in the evening. After 11

or 12 P.M., coverage was provided by an intern, supervised by a senior resident or by the nurses, but this situation was increasingly criticised.

For example, the teaching hospitals in Montreal agreed that an intern could not provide the best patient care. After July 1, 1985, all EDs had to have licensed attending physicians in house at all times. Prior to July 1986, the Winnipeg Children's Hospital had a medical director who worked clinically in the ED during the day, but a community pediatrician was in charge from 1800 hrs to midnight. An intern, closely supervised by the nurses, was available from midnight to 8 A.M. and if help was needed the senior pediatric resident would be called. After July 1986 the hospital decided a dedicated emergency pediatrician had to be present in the ED 24 hours a day, 365 days a year.

Similar decisions were being made across North America. These changes were influenced by the recognition of emergency medicine as a specialty and the demand that the standard of care in the ED's should be raised. This could only happen if 24 hour attending physicians were put in place. The other catalyst was fear of litigation triggered by the death of Libby Zion in March, 1984.(10;11) She was a young woman who died within 24 hours of being admitted to a major medical center in New York City. Her father was an attorney and a writer for the *New York Times*. He claimed that his daughter had received inadequate care by overworked and under supervised medical house officers (another term for resident). The result of this case was that in New York State regulations concerning the supervision of house staff were "severely tightened" and a cap was applied to the working hours.(12) The first recommendation of the grand jury was: "The State Department of Health should promulgate regulations that mandate all level one hospitals to staff their emergency rooms with physicians who have completed at least

three years of postgraduate training and who are specifically trained to evaluate and care for patients on an emergency basis.”

1.3 Introduction of Pediatric Emergency Medicine

Pediatric emergency medicine (PEM) developed as a subspecialty out of both pediatrics and emergency medicine. Just as St. Bartholomew's, a general hospital, had a casualty department, likewise children's hospitals had the same. Great Ormond Street Hospital for Children in London, England opened its doors in 1852. The Children's Hospital of Philadelphia was founded in 1855 and Montreal Children's Hospital opened in 1904. Pediatric Emergency Medicine (PEM) developed much later and is a relatively new discipline.⁽¹³⁾ The American Academy of Pediatrics (AAP) started in 1930. The section of PEM within the AAP was established in 1981. The Canadian Pediatric Society (CPS) was founded in 1922, and the PEM section of the CPS started in 1986. The journal, "Pediatric Emergency Care" published its first issue in 1985. The Royal College of Physicians and Surgeons of Canada approved PEM as an official subspecialty of Pediatrics in 2000, and universities could apply to have their training programs in PEM accredited as of the fall of 2001. Fellowships in the field of PEM have been offered in Canada since 1987.

As in general EM, the major change that occurred in PEM in the mid 1980s was the hiring of full time physicians to work in the emergency department around the clock. In the past, shift work had been present in many occupations, but relatively rare in the professions. Now physicians were entering into this mode of work. Not only did the field of PEM have to deal with the reality of shift work, but with these new positions basic ground rules needed to be defined. What would the clinical hours be, how many night

shifts would be expected, and what remuneration would be fair? Would these physicians be part of a university structure, or would they be hospital employees? What would be the necessary balance between full and part time staff? Would shift work be an attractive option as opposed to "being on call" or would it increase levels of depression and stress among emergency department physicians.

1.4 Challenges for Emergency Medicine

A shortage of emergency physicians, reminiscent of the British problems of staffing casualty departments in the 1950s, was common across North America in the late 1980s. Based on their survey of general emergency physicians from 24 emergency departments in the greater Los Angeles area, Keller and Koenig warned that, "Concern has been expressed that the daily stresses and demands of this specialty (emergency medicine) will prevent many young practitioners from functioning as practicing emergency physicians when they are in their 40s and 50s."⁽¹⁴⁾ If this conclusion is valid, then the high levels of attrition in the field of emergency medicine are the product of work stress exacerbated by aging.

In 1992, Gallery published "A Study of Occupational Stress and Depression Among Emergency Physicians".⁽¹⁵⁾ Gallery et al were interested in measuring the length of time emergency physicians planned to work in the field. They wanted to see if there were any variables that could be related to the decision to leave the specialty of emergency medicine and they were particularly interested in whether physicians were influenced by whether they felt in control of their lives. The study was based on a stratified random sample of 1350 emergency physicians who were members of the American College of Emergency Physicians in the fall of 1989. (It had a 56% response

rate.) The Work-Related Strain Inventory (WRSI) was used to assess work-related stress. Depression was measured by the Center of Epidemiological Studies – Depression Scale (CES-D). Locus of control refers to the extent to which individuals believe that their destiny is controlled by themselves, an outside force, or chance. This was measured by Levenson's revision of Rotter's I-E scale. Work satisfaction questions were adapted from an inventory used by Gray-Toft and Anderson in which respondents use a 4 point Likert scale to indicate their satisfaction or dissatisfaction with their work environment. These are all well established measures with accepted levels of validity and reliability.

The average score on the CES-D was 9.2; however 19% of the sample scored over 16 which is an indicator of symptoms of depression. The mean score on the WRSI was 32; however 23% had scores equal to or greater than 38. The value of 38 indicates a high level of stress. Emergency physicians as a group reported a high level of work satisfaction and yet a "disproportionate number scored two standard deviations below the mean". Twelve percent said that they were very likely to leave clinical emergency medicine in the next year, and only 43% of the group planned on seeing patients after 10 years. Those who had higher job satisfaction scores were less likely to indicate their intention to leave the specialty. If based on intention to leave, this survey suggests an annual attrition rate of 12% whereas the expected annual attrition rate for all physicians in the United States was 3%. Gallery recommended further research to determine the actual number of physicians leaving and their actual reasons for doing so.

Doan-Wiggens et al conducted another survey in 1995.⁽¹⁶⁾ The study population comprised 1,317 diplomates of the American Board of Emergency Medicine and had a 60% response rate. Twenty-five percent stated they felt burned out or impaired and 23% planned to leave the practice of EM within 5 years. In contrast to this study, Hall and

Wakeman in 1999 followed all of the physicians who graduated from accredited U.S. EM training programs between the years of 1978 and 1988 and reported that the actual annual attrition rate was just under 1% per year.(17) The top 4 reasons for leaving the field of EM were shift work, emotional stress, family considerations and physical stress. This next section explores the topic of job satisfaction in more depth.

1.5 Job Satisfaction

Concerns about the attrition rate suggests that either physicians are becoming “burnt out”, or the expectations of the job are different from the reality of the job. This difference between what one wants or expects on the job and what one experiences on the job is job satisfaction.(18) Maslach defines burnout as “a psychological syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who work with other people in some capacity.”(19) While burnout and job satisfaction are clearly linked, they seem to be different constructs.(19) Correlation between the Maslach Burnout Inventory (MBI) and job satisfaction scales show that job satisfaction is negatively correlated with emotional exhaustion and depersonalization but only weakly correlated with personal accomplishment

Job satisfaction has been linked with job turnover.(20;21) Work occupies a significant proportion of the day, and if it is not satisfying, then people are more likely to change jobs. It was in the late 1950s that Frederick Herzberg developed his theory that suggests that there are two dimensions to job satisfaction: “motivation” and “hygiene”.(22) Hygiene refers to those factors that cannot motivate employees, but if they are absent, cause dissatisfaction. Examples of hygiene would be interpersonal relations, working conditions and salary. Motivators are those factors which generate satisfaction

by meeting the individual needs for personal growth and meaning. Examples of motivators are constructs such as achievement, recognition, and responsibility.

Herzberg's theory states that if the hygiene areas are in place, then attention to the motivators will lead to job satisfaction.

Williams and Skinner recently performed an in depth systematic, narrative review of the literature on physician job satisfaction and on the relationship between levels of physician satisfaction with various physician and patient outcomes.(23) There were three principle findings. The first was that physician job satisfaction is inversely related to turnover. The second finding was that job satisfaction has an effect on the perception of the physical health of the physician. The third was that physician job satisfaction seems to affect the quality of care and this includes the quality of the physician / patient relationship. Williams and Skinner were also very critical of the literature dealing with physician job satisfaction noting a number of methodological problems including small samples and inadequate measurement tools; for example, a number of studies had used satisfaction measures that had not been formally validated.

The concept of job satisfaction can only be useful as a predictive, or policy changing concept if it can be measured. Lichtenstein(18) reviewed the job satisfaction literature and developed a job satisfaction tool for measuring physician job satisfaction for those physicians working in organized settings. The organized setting that he was interested in was prison health programs. He used two tools: the first was a global measure, and the second was a measure that was comprised of different facets (domains) that theoretically can affect job satisfaction. These facets were resources, self-directed autonomy, other-directed autonomy, patient relations, professional relations and status. (Using Herzberg's theory we could divide these domains between the dimensions of

motivation and hygiene). Murphy(24) used Lichtenstein's work in evaluating the satisfaction with practice of EM physicians and internists. She confirmed that the 6 domains of satisfaction were the same as Lichtenstein's, although she re-named self-directed autonomy as professional autonomy, and called other-directed-autonomy, administrative autonomy.

1.6 Canadian Emergency Physicians' Attrition and Job Satisfaction

The field of Canadian EM seems to have the same issue of high attrition that has been described by Gallery. Lloyd and Streiner describe an informal telephone survey which was carried out in the early 1990s.(25) This survey predicted that the mean 5-year turnover rate for emergency physicians based on intention would be 48% (SD-14.6%) as compared to internists at 13% (SD-10.9%). All these physicians practiced full time in urban Canadian teaching hospitals.

In 1998 Lloyd measured a 10.4% attrition rate over 3.5 years, which yields an annual attrition rate of 3%.(1) The top 4 reasons for leaving by this Canadian cohort were shift work, emotional stress, family considerations and workload pressure. These are almost identical reasons provided to Hall by his U.S. cohort.

In 1994 Lloyd published "Development of the Emergency Physician Job Satisfaction Measurement Instrument."(26) in which he outlined the reasons and methods used in arriving at his scale. He did not use Lichtenstein's instrument, because when used with emergency physicians and internists the internal consistency ranged from poor to moderate.(24) Lloyd's scale uses a 7 point Likert scale and has 2 parts: the Emergency Physician Job Satisfaction (EPJS) instrument and the Global Job Satisfaction (GJS) instrument. The EPJS has 79 items which can be divided into 6 domains. These domains

are administrative autonomy, clinical autonomy, resources, challenge, relationships with others and lifestyle. These closely mirror the domains used by Lichtenstein and Murphy. The score can range from -18 to +18. The GJS has one domain and can range from -3 to +3. Lloyd tested his instruments for internal consistency, stability, and validity on a cohort of full time Canadian EM physicians. Predictive validity did not occur for the EPJS, while the GJS had moderate predictive validity.(1) The full details outlining the reasons, methods and testing of the scales are in found in appendix 1

1.7 Demographics and Satisfaction of Pediatric Emergency Physicians

There are 3 papers that attempt to describe the job descriptions and characteristics of physicians working in the field of PEM.(13;27;28) Table 1 compares certain characteristics of these studies. These 3 studies have the same common purpose, and that was to describe characteristics and job parameters of physicians working in the field of PEM. The studies however are also very different. Li was interested in the broad North American picture, Losek was interested in attending physicians from only PEM fellowship programs, and Nozicka was interested in the demographics and characteristics of full time pediatric emergency physicians (PEPs). Combining the results of these three studies in a single table is somewhat misleading as the sampling frames were very different. For example, the striking difference between the proportion of those physicians working full time in Li's study and Nozicka's is probably an artefact of differences in the study populations: Li surveyed every one who worked in PEM, whereas Nozicka selected full time physicians working more than 20 clinical hours a week.

Table 1. Purpose and sampling frames of PEM physician surveys

| | | |
|-------|----------------|--|
| Study | Li 1989 | |
| | Date of survey | 1987 |
| | Purpose | Analyze staffing and academic characteristics of institutions providing pediatric emergency services |
| | Sampling frame | All pediatric residency program directors in Canada and U.S. |
| | Response rate | 68% (168/242) |
| Study | Losek 1994 | |
| | Date of survey | 1993 |
| | Purpose | Describe characteristics and satisfaction of academic PEM faculty |
| | Sampling frame | Medical directors or program directors of departments with PEM fellowships |
| | Response rate | 84% (37/44) |
| Study | Nozicka 1995 | |
| | Date of survey | 1993 |
| | Purpose | Describe characteristics and satisfaction of academic PEM faculty |
| | Sampling frame | Members of PEM section within the AAP Only the full time physicians working more than 20 clinical hrs per week, and who worked exclusively in PEM were analyzed |
| | Response rate | 65% (365/562) but only 280 were analyzed |

Table 2. Some comparisons between the PEM physician surveys

| Study | Work full time | Older than 40 years | Average weekly clinical hours | 24 hour in house attending | Median annual income |
|--------------|----------------|---------------------|-------------------------------|----------------------------|----------------------|
| Li 1989 | 24% | 11% | 30.7 | 27% | \$60,000 - \$80,000 |
| Losek 1994 | 81% | 24% | 30 | 85-100% | Not asked |
| Nozicka 1995 | 100% | 4% | 28.1 | 70% | \$111,000* |

* denotes Mean annual income

Li noted that a small proportion of the work in PEM is done by full time physicians. She also noted that there was a difference in salary between those hospitals

that had PEM within a general hospital, as opposed to free standing children's hospitals. The pediatric hospital emergency departments did not offer any salaries larger than \$100,000, and 47% of the salaries were below \$60,000. She noted that the income of PEM physicians is lower than their general emergency medicine counterparts by at least \$20,000. Li concluded that PEM is an evolving specialty that will be an attractive career choice for newly graduating pediatricians. She goes on to make 3 recommendations. The first was for directors of PEM departments to develop stringent hiring standards. The second was to urge directors of PEM departments to allocate research time for their staff, and third stated that all departments should have 24 hour in-house attending staff.

Losek published, "Characteristics, workload, and job satisfaction of attending physicians from Pediatric Emergency Medicine Fellowship programs" in 1994.(27) In the introduction to his paper he notes that in an effort to improve patient care many departments have gone to 24 hour attending coverage, but that this may well be causing an increase in "burnout", as well as severely hampering academic pursuits. The purpose of their study was to determine the characteristics of academic PEM faculty, including workload and job satisfaction. Questionnaires were sent to either the medical director, or program director of 44 PEM departments that had PEM fellowship training programs. It is not clear if any of these programs were Canadian. In the questionnaire, burnout was not specifically defined, and job satisfaction was determined by questions related to reasons for believing the clinical workload was excessive, burnout, reasons for not practicing PEM after 50 years of age, and recruitment strategy. It is important to note that the directors were not specifically asked to poll their physicians before completing the questionnaire. Thirty-seven (84%) of the surveys were returned.

In addition to the data provided in table 2, 54% percent had less than 5 years experience, and only 30% had been working night shifts for 5 years or more. Only 8 (22%) directors thought that their physicians could continue to practice PEM after their 50th birthday. The most common reason provided for this idea was the shift work and overnight shifts, and the second reason was the stress of emergency work.

Losek's paper, while further elucidating physician demographics, uncovered potential problems with physician longevity in the field of PEM. These can only be called potential problems, because Losek's data were obtained from 37 directors who were acting as proxy for 284 PEM physicians. However this mirrors the concerns raised about attrition rates in general emergency medicine (EM) by Gallery, Lloyd, and Doan-Wiggens. In Losek's cohort the ratio of full time to part time physicians was almost the inverse of the ratio described by Li. This could just be a difference in sampling frame; Li surveying all pediatric residency directors (562), while Losek surveyed only PEM departments that had PEM fellowship training programs (44). Another possibility is that the demographics and issues have changed with time. Li did her survey in 1987, and Losek's paper was published in 1994.

The third paper; "Training, attitudes, and income profiles of pediatric emergency physicians" was published by Nozicka in 1995 based on the results of a 1993 survey of the American Academy of Pediatrics Section on Pediatric Emergency Medicine".(28) Nozicka's sampling frame was all physicians (562) belonging to the section of PEM of the American Academy of Pediatrics. Three hundred sixty-five (65%) were sufficiently completed to be of value. Nozicka only wanted to analyze those that worked full time in the field and provided more than 20 clinical hours of service per week. Two hundred eighty of the 365 (77%) surveys met those criteria.

Nozicka's survey asked the physicians to rank 6 items as to the most desirable aspects of PEM practice, and another 6 items as to the least desirable aspects of PEM (table 3).

Table 3. Nozicka's most and least desirable aspects of PEM practice

| Most desirable | Least desirable |
|----------------------|----------------------|
| Practice diversity | Schedule |
| Practice acuity | Lack of "follow up" |
| Schedule flexibility | Colleague acceptance |
| Salary | Income potential |
| Research opportunity | Available positions |
| Available positions | Medical acuity |

The most desirable aspects were the practice diversity and acuity. The third ranking feature was schedule flexibility. The two least desirable aspects were the schedule and the lack of patient "follow up". The third least desirable aspect was the lack of "colleague acceptance". In the discussion Nozicka writes, "Numerous comments regarding 'lack of acceptance by colleagues or inadequate support from administration' were noted".

Nozicka comments that these are likely the growing pains of this young subspecialty. He is aware that his study results likely can not be applied to PEM physicians as a whole; for it was a select group that he had studied. He does note that further, broader study is needed, and has been planned. Both Losek and Nozicka studied factors of a career in PEM that are less than desirable. These areas are not unique to PEM, and have and are being wrestled with by the general emergency medicine physicians.

1.8 Unanswered Questions and Thesis Objectives

In summary the papers of Li, Losek and Nozicka paint the picture of the birth and growing pains of pediatric emergency medicine. Job descriptions were being developed and the demographics of the physicians were being described. Li in 1989 was very optimistic about the future of PEM, but 6 years later Losek was trying to get a sense of the job satisfaction of physicians in the area. He was doing that because there were concerns that maybe the field of PEM is a young physician's specialty. These concerns were being raised by the physicians themselves, and in many ways these concerns mirror the sentiment expressed by the British Platt Working Party in the 60s that full time emergency work would not be satisfying for a physician at the consultant level.(29)

These 3 papers do not provide us with a picture of the working conditions or physician demographics in Canadian pediatric emergency departments. My experience suggests that many of my colleagues work part time in the field, and yet only Li's paper provides some evidence that this might be true. We do not know the training or anticipated (let alone actual) attrition rate of these physicians. We have some idea that this attrition rate could be high (if we believe Gallery), but it could be very stable and not a problem (if we believe Hall). We know the top 4 reasons why EM physicians leave the field; shift work, emotional stress, family considerations, and workload. In my experience, many of my colleagues have moved from a full time position to a part time one. In so doing they are decreasing the quantity of shift work, and may thereby be lightening potential emotional stress and providing more time for family considerations. Could this be a way of increasing job satisfaction and thereby longevity in the field? We do not know what modifiable factors alter the attrition rate of physicians in PEM. We do not know their age or salary. PEM is still a young specialty and the parameters that define

it are still being laid down, therefore most of this research is exploratory in nature. Even though this study is mostly exploratory, I do have some hypotheses. The first hypothesis is that there will be a larger proportion of part time physicians as compared to full time physicians. The second is that there will be a significantly higher proportion of women as compared to men in the part time cohort as compared to the full time one. The third is that those physicians who work part time will have higher job satisfaction scores compared to those who work full time. The fourth is that certain aspects of shift work such as an increasing number of nights per month and a longer recovery time following nights will be associated with a decrease in the job satisfaction score. My final hypothesis is that part time physicians will have worked longer in the field of PEM than those who work full time and that those full time physicians who have larger administrative portfolios, will have worked longer than those who do not.

To test these hypotheses and to answer some of the unanswered questions facing the new field of PEM, the first objective of this study is to describe the:

- sociodemographic characteristics
- training
- job description and history
- shift work parameters
- job satisfaction

of physicians providing emergency care in Canadian pediatric emergency departments.

The second objective is to explore the relationship (if any) between job satisfaction and any of the aforementioned parameters.

Chapter 2 – Methods

The project combined a mailed survey with a smaller set of in depth interviews. The survey questionnaire included measures of job satisfaction, training, job description, shift work parameters and sociodemographic characteristics of physicians providing emergency care in Canadian pediatric emergency departments. The in depth interviews explored some of the same issues but in a more open ended format. The purpose was to enrich the quantitative data and to explore the objectives in greater depth.

2.1 Quantitative methods

2.1.1 Sample

The sample population comprised all those physicians who were working in a Canadian Pediatric Emergency Department as of the spring of 2000. At that time 10 departments that provided 24 hour pediatric emergency care were identified: BC Children's Hospital (Vancouver), Alberta Children's Hospital (Calgary), Winnipeg Children's Hospital (Winnipeg), Children's hospital of Western Ontario (London), Hospital for Sick Children (Toronto), Children's Hospital of Eastern Ontario (Ottawa), Montreal Children's Hospital (Montreal), St Justine's Children's Hospital (Montreal), IWK Health Centre (Halifax), and Janeway Children's Hospital (St. John's).

Inclusion criteria:

1. All those physicians scheduled to work two or more shifts per month in one of the aforementioned departments.

Exclusion criteria

1. Those who only work one shift a month or less
2. Those who only work in a fast track area

A fast track area in an emergency department is an area where mildly ill or injured children can be seen quickly and efficiently. They are only open for a portion of a 24-hour day, and tend to be staffed by general pediatricians.

Since the eligible population was estimated to be between 150 and 200, the decision was made to include all of them, which eliminated sampling bias.

2.1.2 Survey tool

The survey questionnaire combined questions developed specifically for this study with the EPJS and GJS, the instruments developed by Lloyd as measures of job satisfaction.⁽²⁶⁾ Information on the validity and reliability of these instruments is provided in appendix 1. The complete survey questionnaire is provided in Appendix 2.

The 15 items following the EPJS and GJS asked mostly about the physicians' training. These included the year in which medical school was finished, and further postgraduate training. Since many routes can lead to a job in emergency medicine, the physicians were asked if they had their fellowship from the Royal College of Physicians and Surgeons of Canada in pediatrics (FRCPC peds), fellowship from the Royal College of Physicians and Surgeons of Canada in emergency medicine (FRCPC EM), held a certificate from the College of Family Practice (CCFP), or held a certificate from the College of Family Practice as well as an additional certificate in emergency medicine (CCFP-EM). A physician can obtain more than one of these qualifications. Data on having done a fellowship in PEM was recorded, and the location of that training was

asked. The question, “When did you decide upon pediatric emergency medicine as a career?” was asked. Four suggested answers were provided; during medical school, during residency, while out in practice, and other. The definition of “pediatric emergency medicine as a career” was not provided. Data on whether the physicians had taken four courses was recorded. These courses were Pediatric Advanced Life Support (PALS), Advanced Trauma Life Support (ATLS), Advanced Cardiac Life Support (ACLS), and Advanced Pediatric Life Support (APLS). All of these are structured courses; the first 3 designed and organized by the American Heart Association and the last one designed and implemented by the American Academy of Pediatrics. Four questions were also included in this section that asked if the physicians teach PALS, ATLS, ACLS, and APLS. They were included in this section because of survey flow. The information obtained from these is best categorized under Job description.

The next 24 items fall under the heading of “job description and what you do” (appendix 2). The length of time at the current job, and any other clinical work done outside pediatric emergency was asked. If the answer to the latter question was “yes”, the description of the extra emergency work was requested. The following question asked if the physician worked full time in the pediatric emergency. The definition of full time work was left completely up to the answering individual. No definition of such was supplied, or suggested on the survey because there were no published criteria for the definition of full time work in PEM. Those physicians who considered themselves as working full time were asked how many years they had done so, and had they always worked in pediatric emergency. Those who worked part time were asked, “How long have you been part time?” and “How part time are you? i.e. 0.2, 0.3, etc.” They were also asked if they had ever worked full time in emergency. If the answer was in the

affirmative, the duration of full time work was recorded. Whether the physicians chose to work part time because of family commitments or the effects of shift work was ascertained. The remainder of the job description section asked questions pertaining to entitled and taken vacation time, entitled and taken conference leave, aspects of involvement in teaching and research, and finally the presence of a fast track system and clinical "on call duties for the ER". Some physicians, volitionally, take very little conference or vacation time. There could therefore be a difference between entitled and taken conference leave, and vacation time. Any of these could impact on job satisfaction.

The next section entitled, "The following questions try to understand your shift work schedule" comprised 24 items that requested detailed information about their shift parameters (appendix 2). Data about the number of clinical shifts per month, clinical hours per month, nights per month, weekends per month, length of day, evening and night shifts were recorded. In this section information concerning sleep and fatigue post nights was requested. The physician was asked how many shifts they missed because of illness per year, and if there was ever a period when 2 attending physicians were on duty at the same time. The physicians were asked if they were one of four specific types of director: medical, assistant, research, or fellowship.

The last section had 13 items that dealt mostly with sociodemographic characteristics such as gender, marriage status, children living at home, age range, and gross annual earnings. "Do you currently have a partner" was asked. This question was intended to include all those physicians who currently have a partner, or significant other but would not consider themselves as married, as well as those who are married and with their partner. Within these 13 items, 4 dealt with past and present expectations. "At the completion of medical school, did you expect to do shift work in your future career?"

could be answered by a yes or no. The following three questions could be answered by yes, no or not sure. They were: "If you could relive your medical career would you still choose pediatric emergency medicine as a career?", "Do you have plans to leave pediatric emergency medicine in the next one, five, and ten years" and "Do you have plans to change jobs in the next one, five and ten years." (appendix 2)

In summary the Canadian Pediatric Emergency Survey had 79 items in the EPJS, 12 items in the GJS, 15 items on training, 24 items concerning current and past job descriptions, 20 items ascertaining shift work parameters, and 13 items asked personal questions about gender, family issues, income and included 2 items which asked about future plans. The survey was 7 pages in length.

After the additional items had been scrutinized for ease of comprehension, 4 adult emergency physicians piloted the tool. Their comments were incorporated, and the length of time required to complete the questionnaire was noted. The range was 19 to 24 minutes. The final Canadian Pediatric Emergency Survey 2000 is found in appendix 2.

In order to track non-responders, as well as to give the respondents the opportunity not to be bothered by another survey, there was a cover sheet attached to the front of the survey (appendix 3). This was removed from the survey as soon as it was returned, ensuring survey anonymity. This sheet also allowed physicians to indicate their unwillingness to participate in a follow up survey.

2.1.3 Survey Implementation

On February 18, 2000, a letter was sent out to the 10 pediatric emergency department directors giving a brief overview of the intended study, and asking for permission to obtain a list of names of all those who worked at least 2 shifts per month in

their emergency department (excluding those shifts done in a fast track area). The survey was designed to be self administered, and was sent by mail. A modified method described by Dillman(30) was used to improve response rates. On June 1st, 2000 the introductory letter was mailed (appendix 4). On June 2nd the questionnaire, cover letter (appendix 5), and self addressed, stamped envelope were mailed. Those who had not responded by September 22 were mailed a reminder letter. On October 12, those that had not responded were mailed the entire package again, and on December 4, 2000, another reminder letter was sent to the remaining non-responders.

2.1.4 Analysis

The list linking names and code number was only used for checking and verifying return, and for compiling a list of physicians who would be willing to participate in another survey of this type. The results of the EPJS and GJS were entered in an Excel database to allow for easy calculation of the final scores. The answer keys to the EPJS and GJS were obtained from Dr. Stephen Lloyd, for some of the items required a sign reversal. All other data was tabulated in Microsoft Access then cleaned and analyzed in intercooled Stata version 8.2. Means and standard deviations were produced for parametric continuous variables. Nonparametric continuous variables were described by medians and ranges. T-tests were used to ascertain significant differences between parametric continuous variables while ranksum testing was used for nonparametric variables. If normality was in doubt, the data were tested using the Shapiro-Wilk and Shapiro-Francia tests for normality. Chi-squared tests were used to test for significant differences between categorical data. The data was described as a whole, and then stratified into full time and part time physicians. Differences between these two groups

were tested for significance. Additional variables were derived from the data set and these included: work only nights, work only evenings, total clinical hours per month, not career, director, and research. The first three variables are self explanatory. The variable “not career” describes those physicians who answered the question “When did you decide upon pediatric emergency medicine as a career?” with a very clear response that it was not their career. This variable was coded a “1” if the physicians indicated that PEM was not their career, and “0” otherwise. A new variable called director was defined. If the physicians had answered “yes” to being the medical, assistant, research, or fellowship director of the pediatric emergency department, they were considered a director. Research was defined as a yes if the physicians had answered in the affirmative to any of the four stages of research: protocol involvement, receiving a grant, data analysis, or writing a peer reviewed paper. Collapsing items in this manner simplified comparisons.

Multiple regression was performed using both Stata (intercooled version 8.2) and NCSS (Number Cruncher Statistical Systems) 2000. Models were developed for both the EPJS and the GJS scores. The method employed was a manual forward stepwise regression model, which could best be described as hierarchical. Once it was clear that one or two variables were significant, every other variable was then added individually to the initial two, and the probability of significance was noted. Those values with a $p > 0.2$ were discarded, while the remaining variables were added to the model so that the maximum amount of variation could be explained, while still maintaining statistical significance to the independent variables, and the overall model. Finally all the variables were added to the model, and a stepwise backward approach was performed. Plots of the model residuals were plotted against the predicted values and studied for a pattern. The distribution of the residuals was analyzed to ensure they had a normal distribution. Both

Stata and NCSS were used to capitalize on the strengths of both programs; ease of data manipulation of the former and graphic output of the latter. Multicategorical variables were entered into the model using dummy variables. Gross annual earnings data were collapsed into 3 categories; a low, middle and high.

2.2 Qualitative methods

2.2.1 Sample selection

One in-depth interview with one member of each Canadian pediatric emergency department was attempted and seven were completed between June 15 and Dec 13, 2000. The physicians to be interviewed were chosen randomly. To accomplish this, the mailing list was broken down into 10 lists; one for each emergency department. These were then given to Dr. Bob Tate (Community Health Sciences, University of Manitoba) who randomly generated three names from each list. Therefore each emergency department had an ordered list of three names of physicians to be approached for permission to conduct a taped, in-depth interview. Should the first physician not want to participate, then the second physician would be approached, and the pattern repeated. Interviews were conducted with the first randomized physicians from Alberta Children's Hospital (Calgary), Winnipeg Children's hospital, London's Children's Hospital, Hospital for Sick Children (Toronto), Children's Hospital of Eastern Ontario (Ottawa), Montreal Children's Hospital, and IWK Children's Hospital (Halifax).

2.2.2 Interview format

Following an explanation of the project and completion of the consent form (appendix 6), a semi-structured interview format was used, notes were taken, and the interview was taped. Over the course of the interview the following very broad, open ended questions were asked:

1. Tell me a bit about yourself, your training, and how you got involved in pediatric emergency medicine.
2. Tell me a bit about your job as it currently is.
3. What aspects of your job make it attractive to you?
4. Which aspects make it less attractive?
5. Are there any specific issues that you think face pediatric emergency medicine at this point in time?
6. What implications arise from the Royal College accrediting pediatric emergency medicine as a subspecialty?
7. Historically how has pediatric emergency medicine been viewed by the rest of the pediatric community? (This question was not asked of every physician.)

2.2.3 Analysis

The interviews were transcribed and analyzed in two ways. The answers to questions 3 through 7 were compared and contrasted. At the same time common themes, wherever they arose in the interview, were noted and explored.

2.3 Ethics of study and interview process

Ethical approval for the study was received from the University of Manitoba's Health Research Ethics Board on May 30, 2000. (Protocol reference number H2000:012)

As part of the ethical approval granted, those physicians who agreed to be interviewed signed a consent form (appendix 6). On the survey, physicians could check off a box stating that they did not want to be part of a follow up study.

Chapter 3 – Quantitative Results

3.1 Response rate

Out of the 193 surveys mailed out 152 surveys were returned. Six of these were blank, giving a survey completion rate of 75.6% (146/193). One hundred ten of these surveys had been returned by August 9, 2000. The last reminder letter was mailed to 48 physicians on December 4, 2000. It needs to be understood that not all physicians answered all survey questions.

3.2 Results for entire physician cohort

The following section will provide the data for the physician cohort as a whole. The data has been subdivided into 5 subsections: sociodemographic characteristics, training, job description, shift work and finally satisfaction and expectations.

3.2.1 Sociodemographic characteristics

Table 4. Sociodemographic characteristics of 146 physicians who work in Canadian pediatric emergency departments

| Survey question | No. of Respondents | No Answer |
|----------------------------|--------------------|-----------|
| What is your gender? | | 2 |
| Female | 69 (48%) | |
| Male | 75 (52%) | |
| Are you currently married? | | 2 |
| Yes | 117 (81%) | |
| No | 27 | |
| Have you been divorced? | | 2 |
| Yes | 7 (5%) | |
| No | 137 | |

Table 4-continued

| Survey question | No. of Respondents | No Answer |
|--|--------------------|-----------|
| Do you currently have a partner? | | 8 |
| Yes | 119 (86%) | |
| No | 19 | |
| Does your partner / spouse work outside home? | | 14 |
| Yes | 108 (82%) | |
| No | 24 | |
| <i>If your answer to the last question is "yes",</i> | | |
| <i>Is your partner's work full time?</i> | | |
| Yes | 86 (82%) | 3 |
| No | 19 | |
| <i>Does your partner work shift work?</i> | | |
| Yes | 24 (23%) | 2 |
| No | 82 | |
| How many children do you have? | | 4 |
| 0 | 41 (29%) | |
| 1 | 20 (14%) | |
| 2 | 38 (27%) | |
| 3 | 24 (17%) | |
| 4 | 18 (13%) | |
| 6 | 1 | |
| How many children are living with you? | | 7 |
| 0 | 43 (31%) | |
| 1 | 23 (17%) | |
| 2 | 39 (28%) | |
| 3 | 19 (14%) | |
| 4 | 14 (10%) | |
| 6 | 1 | |
| My gross annual earnings are: | | 15 |
| \$41,000 to \$60,000 | 3 (2%) | |
| \$61,000 to \$89,000 | 9 (7%) | |
| \$90,000 to \$104,000 | 12 (9%) | |
| \$105,000 to \$119,000 | 19 (15%) | |
| \$120,000 to \$139,000 | 29 (22%) | |
| \$140,000 to \$159,000 | 28 (21%) | |
| \$160,000 and greater | 31 (24%) | |
| My age range is: | | 4 |
| 25 – 29yr | 2 (1%) | |
| 30 – 34yr | 32 (23%) | |
| 35 – 39yr | 33 (23%) | |
| 40 – 44yr | 30 (21%) | |
| 45 – 49yr | 23 (16%) | |
| 50 – 54yr | 14 (10%) | |
| 55yr and up | 8 (6%) | |

Percentages are calculated out of those who answered.

From table 4, it is clear that a large percentage of physicians did answer the questions. Any percentages provided in the tables or text, refer to those that answered the question. The gender of these physicians is almost evenly divided between males (52%) and females (48%). Most are married (81%), and only 7 (5%) have been divorced. Eighty-two percent of spouses/partners work outside the home, and of those, 82% work full time. Twenty-three percent of the spouses/partners who work outside the home work shift work. Sixty-nine percent have children still living with them at home and the number of children ranges from 1 to 6. Twenty-four percent have 3 or more children living with them at home. There is a large range of gross annual income. The phrase “gross annual income” was intended to refer to the physicians’ entire income from all sources. Eighteen percent (24/131) earn less than \$105,000, while 37% (48/131) between \$105,000 to \$139,000, and 45% (59/131) earn more than \$140,000. Forty-seven percent (67/142) of the physicians are younger than 40 years.

3.2.2 Training

The majority of these physicians are acknowledged by the Royal College of Physicians and Surgeons of Canada as pediatric specialists (88%, 128/146 table 5). Ninety-four percent (137/146) of the physicians have either their FRCPC in either pediatrics or emergency medicine, or their CCFP-EM. Some physicians have more than one of these qualifications, hence the multiple training categories. Nine physicians (6%) do not have certification in pediatric or emergency medicine; nor have the emergency medicine designation as an adjunct to their CCFP (Certificate College of Family

Practice). Twenty-one percent (30/146) have done a fellowship in pediatric emergency medicine.

Table 5. Training data for 146 physicians who work in Canadian pediatric emergency departments

| Item | No. of positive Respondents | | No Answer |
|-----------------------------------|-----------------------------|-------|-----------|
| FRCPC in pediatrics | 128 | (88%) | 0 |
| FRCPC in emergency medicine | 8 | (6%) | 1 |
| CCFP | 15 | (11%) | 7 |
| CCFP-EM | 5 | (4%) | 7 |
| FRCPC (peds or EM) or CCFP-EM | 137 | (94%) | |
| Fellowship in pediatric emergency | 30 | (21%) | 0 |
| Taken PALS | 137 | (94%) | 0 |
| Taken ATLS | 99 | (68%) | 0 |
| Taken ACLS | 100 | (68%) | 0 |
| Taken APLS | 77 | (54%) | 2 |
| Year completed medical school | | | 1 |
| 1969 and prior | 7 | (5%) | |
| 1970 – 1979 | 31 | (21%) | |
| 1980 – 1989 | 66 | (46%) | |
| 1990 and later | 41 | (28%) | |

PALS -Pediatric Advanced Life Support, ATLS-Advanced Trauma Life Support, ACLS-Advanced Cardiac Life Support, APLS-Advanced Pediatric Life Support
 FRCPC (peds or EM) or CCFP-EM means those physicians who have either of these credentials.

The distribution of the year when physicians completed medical school is provided. The last year in which this group of physicians finished medical school was 1995. From a logistical point of view this makes sense in that a pediatric residency is 4 years long. Training to complete a CCFP-EM takes 3 years, but few (3) used this route to procure employment in a Canadian pediatric emergency department.

3.2.3 Job Description

The job description has been divided into clinical (table 6) and non-clinical descriptors (tables 7, 8, and 9). The clinical descriptors are described first. Of the physicians who work in Canadian pediatric emergency departments, 35% (51/146) work full time, with the remainder working part time (table 6). Sixty-nine percent do other clinical work outside the emergency department. The median number of years that physicians have been at their work place is 7 years with a range of 0.5 to 40 years. The median number of clinical shifts per month is 8, with a range of 1.5 to 20 shifts. The median number of clinical hours is 56 per month with a range of 11 to 190 hours per month. The mean number of weekends worked per month is 1.6 with a standard deviation of 0.8. The median number of weekend hours per month is 20 with a range of 0 to 105. The total monthly clinical hours (9,390) can be calculated by summing up all the monthly clinical hours. Fifty-six percent of these hours (5,223) are attributed to full time physicians and the remaining 4,167 hours are performed by part time physicians.

Table 6. Clinical job description data for 146 physicians who work in Canadian pediatric emergency departments

| | No. of Respondents | No Answer |
|-------------------------------------|--------------------|-----------|
| Work full-time in PED | | 0 |
| Yes | 51 (35%) | |
| No | 95 (65%) | |
| Years at current place of work (yr) | | 0 |
| Median | 7 | |
| Range | 0.5 - 40 | |
| Do other clinical work outside PED | | 0 |
| Yes | 101 (69%) | |
| No | 45 (31%) | |
| Number of clinical shifts per month | | 1 |
| Median | 8 | |
| Range | 1.5 - 20 | |

Table 6-continued

| | No. of Respondents | No Answer |
|--|-----------------------|--------------|
| Number of clinical hours per month | | 0 |
| Median | 56 | |
| Range | 11 – 190 | |
| Usual number of nights per month | | 3 |
| 0 | 45 (31%) | |
| 0.1 – 1 | 18 (13%) | |
| 1.1 – 2 | 20 (14%) | |
| 2.1 – 3 | 27 (19%) | |
| 3.1 – 4 | 18 (13%) | |
| 4.1 – 5 | 4 (3%) | |
| > 5 | 11 (8%) | |
| Work two or more nights in a row | | 7 |
| Yes | 35 (25%) | |
| No | 104 (75%) | |
| Weekend hours per month | | 18 |
| Median | 20 | |
| Range | 0 – 105 | |
| Weekends worked per month | | 6 |
| Mean | 1.6 | |
| Standard deviation | 0.8 | |
| On call for PED | | 0 |
| Yes | 56 (38%) | |
| No | 90 (62%) | |
| Shifts missed per year due to illness | | 8 |
| 0 | 90 (65%) | |
| 0.1 – 1 | 25 (18%) | |
| 1.1 – 2 | 17 (12%) | |
| 2.1 – 3 | 4 (3%) | |
| > 3 | 2 (1%) | |
| Weeks of vacation allotted | | 35 |
| Mean | 4.0 | |
| Standard deviation | 1.5 | |
| Weeks of vacation taken in last year | | 9 |
| Mean | 4.0 | |
| Standard deviation | 1.8 | |
| Conference leave allotted (days) | | 50 |
| Median | 5.5 | |
| Range | 0 - 17 | |
| Conference leave taken during last year (days) | | 12 |
| Median | 5 | |
| Range | 0 – 27 | |

Table 7. Teaching data for 146 physicians who work in Canadian pediatric emergency departments

| Survey question | No. of positive Respondents | No Answer |
|--|-----------------------------|-----------|
| Do you participate in teaching? | 144 (99%) | 0 |
| Do you teach apart from when you are working shifts? | 121 (83%) | 0 |
| Do you teach the PALS course? | 73 (50%) | 0 |
| Do you teach the APLS course? | 47 (33%) | 2 |
| Do you teach the ATLS course? | 15 (10%) | 1 |
| Do you teach the ACLS course? | 12 (8%) | 0 |

PALS -Pediatric Advanced Life Support, ATLS-Advanced Trauma Life Support, ACLS-Advanced Cardiac Life Support, APLS-Advanced Pediatric Life Support

Table 8. Research involvement data for 146 physicians who work in Canadian pediatric emergency departments

| Survey question | No. of positive Respondents | No Answer |
|--|-----------------------------|-----------|
| Have you drawn up, or helped in drawing up, a research protocol? | 84 (57%) | 0 |
| Have you ever received a grant to do research? | 58 (40%) | 0 |
| Have you been involved in the data analysis portion of research? | 68 (47%) | 0 |
| Have you been involved in the writing of a peer reviewed scientific paper? | 76 (52%) | 0 |
| Research involvement* | 102 (70%) | 0 |

*Research involvement is considered yes if any of the preceding questions were answered affirmatively.

Table 9. Data describing administrative duties for 146 physicians who work in Canadian pediatric emergency departments

| Survey question | No. of positive Respondents | No Answer |
|---|-----------------------------|-----------|
| Are you a member of a hospital committee? | 96 (66%) | 0 |
| Do you participate in continuing education? | 137 (94%) | 0 |
| Are you a medical director of emergency? | 11 (8%) | 0 |
| Are you an assistant director of emergency? | 5 (3%) | 0 |
| Are you a research director? | 5 (3%) | 0 |
| Are you a fellowship director? | 10 (7%) | 0 |
| Director* | 24 (16%) | |

*Director is considered yes if any of the preceding 4 questions were answered affirmatively.

Thirty-eight percent (56/146) of the physicians can be on call for their emergency department, so that when it is busy they can be called in to perform clinical duties. Thirty-one percent of the physicians do not do any night shifts, and only 25% (35/139) work two or more nights in a row. Sixty physicians (42%) work two or more nights per month. Sixty-five percent (90/138) of physicians do not miss a single shift per year. The mean number of weeks allotted for vacation is 4 per year and that is also the mean number of weeks that were taken. The median number of days allotted for conference leave is 5.5 (with a range of 0 to 17), and a median of 5 conference days was reported as having been taken (with a range of 0 to 27).

Roughly half of the physicians have been involved with some aspect of research (table 8), whereas 99% (144/146) are involved in teaching (table 7). This reflects the fact that all the Canadian pediatric emergency departments are located at teaching hospitals. Do these physicians teach apart from their shifts? The answer is that a great majority do: 83% of them (121/146). Half of the physicians teach the PALS course, while a smaller percentage teach the other common acute care courses. Sixty-six percent (96/146) of the physicians serve on hospital committees, and most (94%) participate in continuing medical education (table 9).

3.2.4 Shift work parameters

Tables 10 and 11 describe aspects of the shift work. Few physicians (28%) have a regular shift rotation. The length of day, evening, and night shifts are usually 8 hours. Most of the physicians (92/115, 80%) do not get any sleep while working a night shift, despite the fact that 59% of the time house staff are on all night with the attending physician.

Table 10. Dichotomous shift work data for 146 physicians who work in Canadian pediatric emergency departments

| Survey question | No. of positive Respondents | No Answer |
|---|-----------------------------|-----------|
| Do you have a regular shift rotation? (eg. Four on, three off) | 39 (28%) | 6 |
| Is there ever a period when two attending physicians are on duty in your emergency? | 137 (94%) | 0 |
| Do you have house staff on all night? | 76 (59%) | 17 |
| Do you routinely get sleep while working your night shift? | 23 (20%) | 31 |
| <i>Number of hours of sleep for those who said "yes"</i> | | 2 |
| <i>< 2 hours</i> | 8 (38%) | |
| <i>2 – 2.9 hours</i> | 7 (33%) | |
| <i>3 – 5 hours</i> | 6 (29%) | |

Table 11. Continuous shift work data for 146 physicians who work in Canadian pediatric emergency departments

| Description | Median | Range | No Answer |
|---|--------|--------------|-----------|
| Length of day shift (hours) | 8 | 4 - 12 | 13 |
| Length of evening shift (hours) | 7 | 3 - 15 | 12 |
| Length of night shift (hours) | 8 | 8 – 14 | 31 |
| Hours sleep after completing last night (hours)* | 4.5 | 1.8 | 39 |
| Length of time for sleep to normalize after finishing a night shift (nights)* | 2 | 0.8 | 39 |
| Length of recovery from fatigue of night shift (days) | 2 days | 0.2 – 6 days | 41 |

* denotes mean and standard deviation

The mean length of time it takes for a physician's sleep to normalize after finishing a night shift is two nights, whereas the median time it takes to recover from the fatigue of night shifts is 2 days.

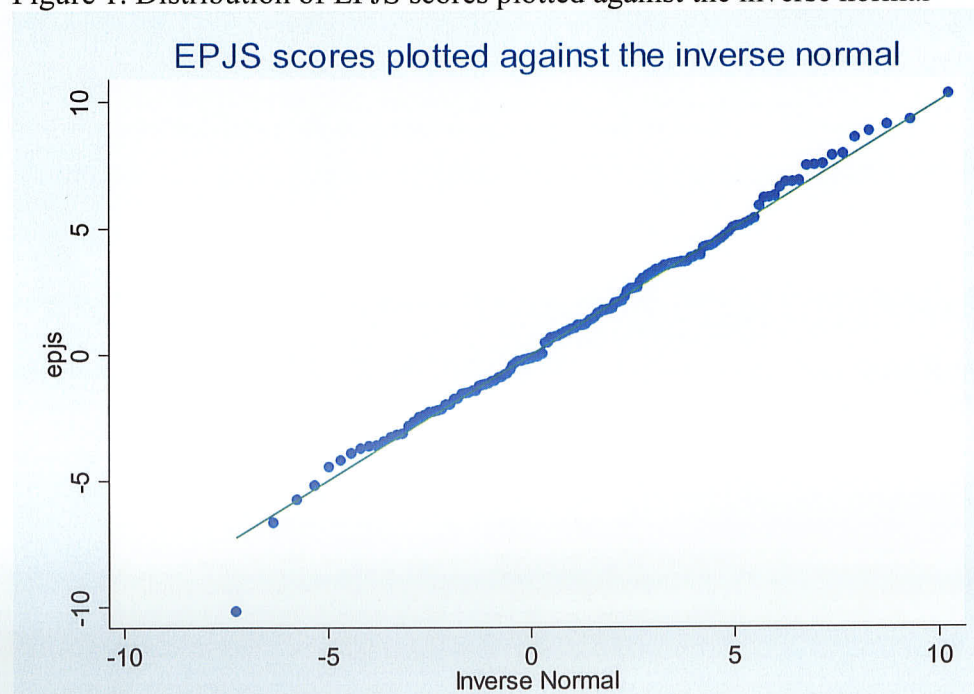
3.2.5 Satisfaction and Expectations

So far the demographics, training, job description and shift work data has been provided. Job satisfaction was measured by Lloyd's EPJS and GJS, the results of which are found in Table 12.

Table 12. Satisfaction scores for 146 physicians who work in Canadian pediatric emergency departments

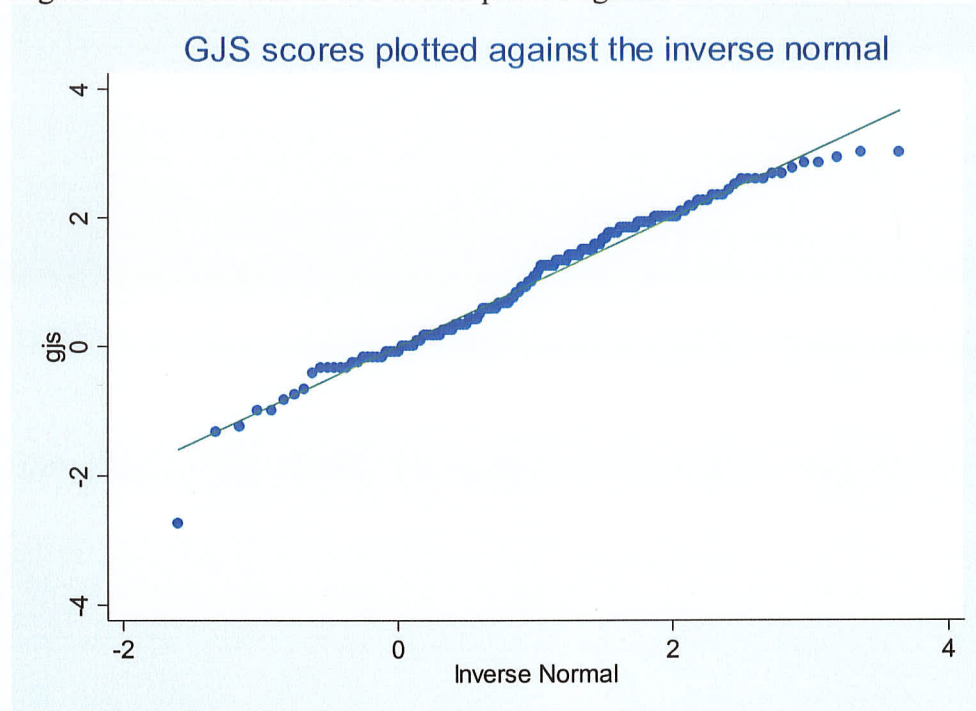
| Satisfaction score | Mean | SD | Maximum | Minimum |
|---------------------|------------|------|---------|---------|
| EPJS Scores | 1.5 | 3.5 | 10.3 | -10.2 |
| GJS Scores | 1.02 | 1.06 | 3.0 | -2.75 |
| Possible EPJS score | -18 to +18 | | | |
| Possible GJS score | -3 to +3 | | | |

Figure 1. Distribution of EPJS scores plotted against the inverse normal



The dots represent the EPJS plotted against the inverse normal. The straight line represents the ideal normal distribution.

Figure 2. Distribution of GJS scores plotted against the inverse normal



The dots represent the EPJS plotted against the inverse normal. The straight line represents the ideal normal distribution.

The distribution of the EPJS scores and GJS scores were distributed normally (figure 1 and 2). The mean score for the EPJS was 1.5 with a standard deviation of 3.5. The range of results went from -10.2 to 10.3. The scale inherently has a minimum of -18 and a maximum of 18. The mean score for the GJS was 1.02 with a standard deviation of 1.06. The range of results went from -2.75 to 3.0. A GJS and EPJS score was generated for each of the 146 respondents.

In addition to Lloyd's scales, the physicians were asked some questions that dealt with their decision making process around the choice of PEM, as well as future expectations. These results are provided in table 13.

Table 13. Expectations and predictive data for 146 physicians who work in Canadian pediatric emergency departments

| | No. of Respondents | No Answer |
|--|-----------------------|--------------|
| Decision made upon PEM as a career | | 6 |
| During medical school | 8 (6%) | |
| During residency | 59 (42%) | |
| While in practice | 43 (31%) | |
| Other | 30 (21%) | |
| Would still choose PEM as a career | | 8 |
| Yes | 74 (60%) | |
| No | 21 (17%) | |
| Not sure | 29 (23%) | |
| Expectation of shift work on completing medical school | | 3 |
| Yes | 55 (38%) | |
| No | 88 (62%) | |
| Plan to leave PEM in one year | | 21 |
| Yes | 9 | |
| No | 100 | |
| Not sure | 16 | |
| Denominator | 146 | |
| Plan to leave PEM in five years | | 11 |
| Yes | 24 | |
| No | 67 | |
| Not sure | 35 | |
| Denominator | 137 | |
| Plan to leave PEM in ten years | | 7 |
| Yes | 24 | |
| No | 22 | |
| Not sure | 60 | |
| Denominator | 113 | |
| Cumulative leaving PEM in: | | 4 |
| One year | 9 (6%) | |
| Five years | 33 (23%) | |
| Ten years | 57 (40%) | |
| Plan to change jobs in one year | | 19 |
| Yes | 12 | |
| No | 99 | |
| Not sure | 16 | |
| Denominator | 146 | |

Table 13-continued

| | No. of Respondents | No Answer |
|------------------------------------|-----------------------|--------------|
| Plan to change jobs in five years | | 9 |
| Yes | 22 | |
| No | 63 | |
| Not sure | 40 | |
| Denominator | 134 | |
| Plan to change jobs in ten years | | 9 |
| Yes | 19 | |
| No | 35 | |
| Not sure | 49 | |
| Denominator | 112 | |
| Cumulative plan to change jobs in: | | 3 |
| One year | 12 (8%) | |
| Five years | 34 (24%) | |
| Ten years | 53 (37%) | |

The decision to practice PEM as a career was made usually in either residency (59 physicians) or in practice (43 physicians). Only 8 physicians made this decision while in medical school. Thirty physicians indicated “other”. Some of those physicians wrote comments that were illuminating; “Not my career”, “It is not”, and “I have not, as a subspecialist at my hospital, I’m being asked to do ER coverage in general pediatrics”. Sixteen of the 30 physicians who checked “other” made it clear that this was not their career. Of these 16 physicians, two of them are working full time in the emergency department, while the remaining 14 work part time in the field. This group will be discussed with more depth towards the end of the chapter. Once these physicians had all been accounted for, it left 14 physicians who just checked off “other”. These physicians (14) either made the decision that pediatric emergency medicine was their career, but not

during medical school, residency, or out in practice; or were not completely sure that PEM was their career.

3.3 Results – Full Time and Part Time

Several hypotheses dealt with the putative difference between full time and part time physicians who work in pediatric emergency departments. This section provides the data once this factor is brought into play. Where appropriate, statistical comparisons have been made between the two groups. It is important to note that no instructions were provided as to the definition of full time or part time. The question was simply asked, “Do you work full time in pediatric emergency?” This section is divided into 4 subsections: sociodemographics, training, job description, and satisfactions and expectations.

3.3.1 Sociodemographic characteristics

Some observations emerge from the data in table 14. The first concerns gender. Whereas there is a higher proportion of women in the part time group, the difference is not statistically significant. Sixty percent of the full time physicians are male. Being a part time emergency physician does not seem to significantly lower the gross annual income. Sixty-four percent (55/86) of the part time physicians earn over \$120,000 annually, while 73% (33/45) of the full time physicians are in that range. Fifty-six percent (52/93) of the part time physicians are 40 years or older whereas 47% (23/49) of the full time physicians are in that age range. There are no physicians over the age of 55 years working full time in the emergency department.

Table 14. Sociodemographic characteristics of full and part time physicians

| | Full time (51) | Part time (95) | significance |
|------------------------------------|----------------|----------------|--------------|
| Gender | | | |
| Female | 19 (39%) | 50 (53%) | 0.12 |
| Male | 30 | 45 | |
| Currently married | | | |
| Yes | 41 (84%) | 76 (80%) | 0.59 |
| No | 8 | 19 | |
| Partner/Spouse work outside home | | | |
| Yes | 38 (83%) | 70 (81%) | 0.86 |
| No | 8 | 16 | |
| Number of children living with you | | | |
| 0 | 18 (37%) | 25 (28%) | 0.09 |
| 1 | 13 (27%) | 10 (11%) | |
| 2 | 9 (18%) | 30 (33%) | |
| 3 | 5 (10%) | 14 (15%) | |
| 4 | 4 (8%) | 10 (11%) | |
| 6 | 0 | 1 | |
| Gross annual earnings | | | |
| \$41,000 to \$60,000 | 1 (2%) | 2 (2%) | 0.06 |
| \$61,000 to \$89,000 | 0 | 9 (10%) | |
| \$90,000 to \$104,000 | 1 (2%) | 11 (13%) | |
| \$105,000 to \$119,000 | 10 (22%) | 9 (10%) | |
| \$120,000 to \$139,000 | 12 (27%) | 17 (20%) | |
| \$140,000 to \$159,000 | 11 (24%) | 17 (20%) | |
| \$160,000 and greater | 10 (22%) | 21 (24%) | |
| Age range | | | |
| 25 – 29yr | 1 (2%) | 1 (1%) | 0.07 |
| 30 – 34yr | 17 (35%) | 15 (16%) | |
| 35 – 39yr | 8 (16%) | 25 (27%) | |
| 40 – 44yr | 10 (20%) | 20 (22%) | |
| 45 – 49yr | 7 (14%) | 16 (17%) | |
| 50 – 54yr | 6 (12%) | 8 (9%) | |
| 55 yr and up | 0 | 8 (9%) | |

Significance tested for all these categorical groupings by chi squared.

3.3.2 Training

The next table will lay out the differences or similarities between full and part time physicians in the area of training (Table 15).

Table 15. Training of part and full time physicians

| | Full time (51) | Part time (95) | significance |
|-----------------------------------|----------------|----------------|--------------|
| FRCPC (peds or EM) or CCFP-EM | | | |
| Yes | 47(92%) | 90(95%) | 0.54 |
| No | 4 | 5 | |
| Fellowship in pediatric emergency | | | |
| Yes | 16(31%) | 14(15%) | 0.02 |
| No | 35 | 81 | |
| Year completed medical school | | | |
| 1969 and prior | 1 (2%) | 6 (6%) | 0.14 |
| 1970 – 1979 | 10 (20%) | 21 (22%) | |
| 1980 – 1989 | 20 (39%) | 46 (49%) | |
| 1990 and later | 20 (39%) | 21 (22%) | |

Significance of categorical data tested with chi squared.

There are a similar number of physicians who have either their FRCPC in pediatrics or emergency medicine, or their CCFP –EM (table 11). A significantly larger proportion of physicians who work full time have done a fellowship in pediatric emergency medicine.

There is no difference in the year when medical school was completed (chi squared - 5.47,3 df, p=0.14). Since the year of completing medical school was captured as a continuous variable, the medians can be provided. Median year for those working part time was 1985, and those full time was 1988. The probability that there is a difference between these two groups is 0.10 when tested as a continuous variable by rank sum.

3.3.3 Job Description

The section of the survey that dealt with job description had some questions that were to be answered only if one was full time, and some other questions that were to be completed only by part time physicians. Table 16 provides the summary to those questions only answered by those who deemed themselves as working full time in the pediatric emergency.

Table 16. Job description data for 51 physicians who work full time in Canadian pediatric emergency departments

| | No. of Respondents | No Answer |
|--|-----------------------|--------------|
| Years at current place of work (years) | | 0 |
| Median | 5 | |
| Range | 0 - 23 | |
| Do other clinical work outside PED | | 0 |
| Yes | 17 (33%) | |
| No | 34 | |
| Years worked fulltime in PED (years) | | 0 |
| Median | 6 | |
| Range | 0 - 23 | |
| Always worked in pediatric emergency | | 0 |
| Yes | 34 (67%) | |
| No | 17 | |

Two-thirds of those who are full time have always worked in the area of pediatric emergency. One-third of all the full time physicians do clinical work apart from the emergency department.

Table 17 provides the summary for those questions which were directed to those who work only part time in the pediatric emergency. Only 11 (12%) of the part time physicians do not do other clinical work. The median length of time that they have worked part time is 7 years. The median part time status is that of 0.3 Full Time Equivalent (FTE). Seventy-five percent of the part time physicians work a 0.5 FTE or less. Twenty-eight percent (27/95) of the part time physicians used to work full time in the pediatric emergency department. The distribution is provided showing the number of years worked full time before switching to part time work. The range varied from 0.5 years to 20 years.

Table 17. Job description data for 95 physicians who work part time in Canadian pediatric emergency departments

| | No. of Respondents | No Answer |
|---|-----------------------|--------------|
| Years at current place of work (years) | | 0 |
| Median | 8 | |
| Range | 0.5 – 40 | |
| Do other clinical work outside PED | | 0 |
| Yes | 84 (88%) | |
| No | 11 | |
| Number of years part time | | 1 |
| Median | 7 | |
| 25 th percentile | 3 | |
| 75 th percentile | 14 | |
| Part time status (fraction of FTE) | | 0 |
| Median | 0.3 | |
| 25 th percentile | 0.16 | |
| 75 th percentile | 0.5 | |
| Have worked full time in emergency | | 0 |
| Yes | 27 (28%) | |
| No | 68 | |
| <i>Length of time worked full time before reducing to part time</i> | | <i>1</i> |
| 25 percentile | 2 years | |
| 50 percentile | 4.3 years | |
| 75 percentile | 7 years | |
| <i>Chose part time because of family commitments</i> | | <i>0</i> |
| Yes | 15 (56%) | |
| No | 12 | |
| <i>Chose part time because of effects of shift work</i> | | <i>0</i> |
| Yes | 16 (59%) | |
| No | 11 | |
| Chose part time work because of family commitments | | 0 |
| Yes | 31 (33%) | |
| No | 64 | |
| Chose part time work because of effects of shift work | | 0 |
| Yes | 34 (36%) | |
| No | 61 | |

The answers in italics refer only to the part time physicians who used to work full time in the PED. The last 2 questions refer to all those physicians who are part time including the former group.

Twenty (74%) of those 27 physicians chose part time work because of the effects of shift work, or family commitments, or both. These 27 physicians will be examined in greater depth in an upcoming section. Of the entire group of 95 part time physicians, 44 (46%) chose part time work because of the effects of shift work, or family commitments, or both. The following table (table 18) compares common job descriptors between full time and part time physicians

Table 18. Job description data – a comparison of full and part time physicians

| Descriptor | Full time | Part time | Significance |
|----------------------------------|-----------|-----------|--------------|
| Years at current work place | | | |
| Median | 5 | 8 | 0.01 |
| Other clinical work outside PED | | | |
| Yes | 17 (33%) | 84 (88%) | 0.000 |
| No | 34 | 11 | |
| Number of clinical shifts/month | | | |
| Median | 12.5 | 5.5 | 0.0000 |
| Number of clinical hours/month | | | |
| Median | 110 | 40 | 0.0000 |
| Usual number of nights per month | | | |
| 0 | 5 (10%) | 40 (43%) | 0.0000 |
| 0.1 – 1 | 1 (2%) | 17 (18%) | |
| 1.1 – 2 | 2 (4%) | 18 (19%) | |
| 2.1 – 3 | 19 (38%) | 8 (9%) | |
| 3.1 – 4 | 15 (30%) | 3 (3%) | |
| 4.1 – 5 | 3 (6%) | 1 (1%) | |
| > 5 | 5 (10%) | 6 (6%) | |
| Work two or more nights in a row | | | |
| Yes | 20 (39%) | 15 (17%) | 0.004 |
| No | 31 | 73 | |
| Weekends worked/month | | | |
| Median | 2 | 1 | 0.0000 |
| Weekend clinical hours/month | | | |
| Median | 30.5 | 16 | 0.0000 |
| On call for PED | | | |
| Yes | 22 (43%) | 34 (36%) | 0.384 |
| No | 29 | 61 | |
| I have a regular shift rotation | | | |
| Yes | 14(28%) | 25(28%) | |
| No | 36 | 65 | |

Table 18-continued

| Descriptor | Full time | Part time | Significance |
|-------------------------------------|-----------|-----------|--------------|
| Shifts missed per year | | | |
| 0 | 28 (57%) | 62 (71%) | 0.241 |
| 0.1 – 1 | 10 (20%) | 15 (17%) | |
| 1.1 – 2 | 8 (16%) | 9 (10%) | |
| 2.1 – 3 | 3 (6%) | 1 (1%) | |
| Teach apart from shift | | | |
| Yes | 48 (94%) | 73 (77%) | 0.008 |
| No | 3 | 22 | |
| Participate in continuing education | | | |
| Yes | 49 (96%) | 88 (93%) | 0.409 |
| No | 2 | 7 | |
| Member of hospital committee | | | |
| Yes | 37 (73%) | 59 (62%) | 0.205 |
| No | 14 | 36 | |
| Participated in research | | | |
| Yes | 42 (82%) | 60 (63%) | 0.016 |
| No | 9 | 35 | |
| Director | | | |
| Yes | 18 (35%) | 6 (6%) | 0.000 |
| No | 33 | 89 | |

All continuous data in this table was nonparametric, and significance tested with ranksum. Categorical data tested with chi squared.

Part time physicians have been at their places of work (8 years) significantly longer than those who work full time (5years). A physician is more likely to have clinical work outside the PED if they work part time as compared to full time. A third of the full time physicians do clinical work outside the PED. A description of this clinical work will be provided in section 3.4.3.

Full time physicians are more likely to have participated in research as well as teach apart from their clinical shift. There is no difference between the two groups in terms of serving on a hospital committee, participating in continuing medical education or being on call clinically for the pediatric emergency department. There is no statistical difference between the two groups in the number of missed shifts per year. Thirty-five

percent of those physicians that are full time hold a director position. Some specific data and comparisons will be provided for directors in section 3.4.2

3.3.4 Satisfaction and expectations

Table 19 provides the EPJS and GJS scores of the full and part time physicians

Table 19. Satisfaction scores of full and part time physicians

| | Full time (51) | Part time (95) | significance |
|--------------------|----------------|----------------|--------------|
| EPJS Scores | | | |
| Mean | 1.77 | 1.35 | 0.5 |
| Standard deviation | 3.87 | 3.37 | |
| Maximum | 10.3 | 8.8 | |
| Minimum | -4.5 | -10.2 | |
| GJS Scores | | | |
| Mean | 1.27 | 0.89 | 0.04 |
| Standard deviation | 1.07 | 1.04 | |
| Maximum | 3.0 | 2.83 | |
| Minimum | -0.75 | -2.75 | |

Significance was tested with the t test.

Table 20 provides the responses which asked the physicians about their prior expectations as well as future plans. A larger proportion (71%) of the full time physicians would still choose PEM as a career in comparison to part time physicians (51%). A similar proportion of both the full time (31%) and part time (43%) physicians indicate that they plan on leaving the field of pediatric emergency medicine over the next 10 years (table 20). This number is not insignificant.

Table 20 Expectations and predictive responses of full and part time physicians

| | Full time (51) | Part time (95) | significance |
|--|----------------|----------------|--------------|
| Would still choose PEM as a career | | | |
| Yes | 34 (77%) | 41 (51%) | 0.06 |
| No | 5 (10%) | 20 (25%) | |
| Not sure | 9 (19%) | 20 (25%) | |
| Expectation of shift work on completing medical school | | | |
| Yes | 14 (28%) | 41 (44%) | 0.06 |
| No | 36 | 52 | |
| Cumulative leaving PEM in: | | | |
| One year | 3 (6%) | 6 (6%) | 0.85 |
| Five years | 8(16%) | 25(26%) | |
| Ten years | 16(31%) | 41(43%) | |
| Cumulative plan to change jobs in: | | | |
| One year | 5 (10%) | 7 (7%) | 0.84 |
| Five years | 11(22%) | 23(24%) | |
| Ten years | 18(35%) | 35(37%) | |

The significance is the probability that the difference could have arisen by chance. Categorical values were tested by Chi squared, parametric values by t test, and nonparametric by ranksum.

3.4 Results for Specific Physician Groups

This section will look at the following 5 physician groupings: Fellowship trained physicians, Directors, Physicians and additional clinical work, Physicians who did not choose PEM as a career, and Physicians who used to work full time.

3.4.1 Fellowship trained physicians

The physician group of interest is those who have done a fellowship in pediatric emergency medicine (table 21).

Table 21. Physicians (30) who have done a fellowship in pediatric emergency medicine

| Descriptor | | |
|---|-----|-------|
| Gender | | |
| Male | 17 | (59%) |
| Female | 12 | (41%) |
| Fulltime | | |
| Yes | 16 | (53%) |
| No | 14 | (47%) |
| Years at current work place (years) | | |
| Mean | 5.1 | |
| Standard deviation | 3.6 | |
| Director | | |
| Yes | 10 | (33%) |
| No | 20 | (67%) |
| Participated in research | | |
| Yes | 28 | (93%) |
| No | 2 | (7%) |
| Work night shifts | | |
| Yes | 27 | (90%) |
| No | 3 | (10%) |
| Number of nights per month | | |
| Mean | 2.7 | |
| Standard deviation | 1.8 | |
| Shift work was expected at completion of medical school | | |
| Yes | 10 | (34%) |
| No | 19 | (76%) |
| Plans to leave pediatric emergency medicine in | | |
| Five years | 3 | (10%) |
| Ten years | 7 | (23%) |

Table 22. Training data of physicians (30) who have done a fellowship in pediatric emergency medicine

| Descriptor | | No response |
|--|----------|-------------|
| Year of Graduation from Medical School | | |
| < 1980 | 1 (3%) | |
| 1980 - 1989 | 13 (43%) | |
| 1990 – 1994 | 16 (53%) | |
| Location of fellowship in PEM | | 5 |
| Boston | 2 | |
| Cincinnati | 1 | |
| McGill | 10 | |
| Miami | 1 | |
| Ottawa | 4 | |
| Winnipeg | 2 | |
| Toronto | 2 | |
| Western | 3 | |
| Vancouver | 3 | |

(3 did training in 2 locations ,4 did training in the USA)

Most of the fellows did not expect to be working shift work at the completion of medical school. Sixty per cent of the fellows are male, but only half of them work full time within the division of pediatric emergency medicine. A third of them are a type of director within the division, and most of them (93%) have participated in research. The mean number of years at their current job is 5.1 with a standard deviation of 3.6 years. Ninety percent of them work nights, with a mean number of 2.7 nights per month. In 10 years time, 7 (23%) expect to have left the field of pediatric emergency medicine. Half of them graduated after 1989 and most did their fellowship training in Canada (table 22).

3.4.2 Directors

Directors have a significant administrative role. It is difficult for a director to carry the same clinical load as a full time clinical physician. Thirty five percent of the full time physicians are directors. It therefore is instructive to compare certain job descriptors

between full time physicians that are, and are not directors (table 23). For the purpose of this table, director means any physician who indicated that they were either a medical director, assistant director, fellowship director or research director in the pediatric emergency department.

Table 23. Job description of full time physicians: directors and non-directors

| Director | Yes (18) | No (33) | Significance |
|---------------------------------|-----------|----------|--------------|
| Years at current work place | | | |
| Median | 6.5 | 4 | 0.03 |
| Range | 2 - 23 | 0.5 - 19 | |
| Other clinical work outside PED | | | |
| Yes | 7 (39%) | 10 (30%) | 0.53 |
| No | 11 | 23 | |
| Number of clinical shifts/month | | | |
| Mean | 9.6 | 13.6 | 0.0000 |
| Standard deviation | 3.2 | 1.9 | |
| Number of clinical hours/month | | | |
| Median | 65 | 115 | 0.001 |
| Weekends worked/month | | | |
| Median | 1.5 | 2 | 0.004 |
| Weekend clinical hours/month | | | |
| Median | 22 | 32 | 0.009 |
| Number of nights/month | | | |
| Mean | 2.9 | 3.7 | 0.18 |
| Standard deviation | 1.8 | 2.1 | |
| Participated in research | | | |
| Yes | 18 (100%) | 24 (73%) | 0.02 |
| No | 0 | 9 | |

Significance of parametric data tested with t test. Significance of nonparametric data tested with rank sum. Categorical data tested with chi squared.

Factoring in the effect of directors in the statistics generated for the full time physicians is important. Table 14 would suggest that the average full time clinical hours are 110 hours per month. Once this is subdivided into directors and non directors, it is clear the median number of clinical hours per month for non directors is 115, while the directors work 65

clinical hours per month (table 18). Directors have been at their current place of work longer (6.5 years) when compared with non-directors (4 years). All the directors have been or are involved in research. Seven of the directors (39%) do clinical work outside the emergency department.

3.4.3 Physicians and additional clinical work

Eighty-eight percent of the part time physicians and 33% of the full time physicians do clinical work out of the PED. A description of the work was requested, and table 24 categorizes this description. The term “northern work” may well not be familiar to the reader. The five physicians meant that they either did general pediatric locums, or consulting clinics in a remote northern Canadian community, or communities.

Table 24. Description of the additional clinical work done out of the emergency department

| Description | Number |
|-------------------------------|----------|
| Adult emergency | 9 (10%) |
| Child protection | 5 (5%) |
| Consultant general pediatrics | 9 (10%) |
| Critical care pediatrics | 7 (16%) |
| General pediatrics | 41 (44%) |
| Ward pediatrics | 4 |
| Locums | 5 (5%) |
| Subspecialist | 17 (18%) |
| Fellowship | 4 |
| Transport | 5 |
| Toxicology | 3 |
| Northern work | 5 |
| Other | 1 |

(Ninety-four physicians provided a description of the clinical work done outside the emergency department. These have been grouped into 115 responses, with 21 meeting the inclusion criteria for 2 groups. All those who do locums, northern work, or who are enrolled in a fellowship are also in other groups. One in critical care, 2 in child protection, 3 in transport, and 1 in toxicology are also in other groupings.)

3.4.4 Physicians who did not choose PEM as a career

The next group is those who made it clear that they have not chosen pediatric emergency as a career (table 25). This was not a given choice on the survey, but the 16 respondents made it clear that this was his or her intended answer. Most of these physicians (63%) work less than 0.2 FTE. Two of the physicians work full time, but have only worked for one year. Women are over represented in this sample. Seventy-three percent of this group are women compared to the proportion of women who work in the field of PEM which is only 48%. Four physicians have worked 2 years or less in PEM while the rest have worked for 4 years or more, with 7 (44%), having worked for at least 13 years in the field.

Table 25. Descriptors of those who have not chosen PEM as a career (N=16)

| Descriptor | | Number |
|--|--------|----------|
| Gender | Male | 4 (27%) |
| | Female | 11 |
| Number part time | | 14 (88%) |
| Amount of part time work (fraction of FTE) | | |
| 0.2 or less | | 10 |
| 0.25 | | 2 |
| 0.4 | | 1 |
| 0.5 | | 1 |
| 1.0 | | 2* |
| Years at current job (yrs) | | |
| 2 or less | | 4 |
| 4-7 | | 5 |
| 13 – 15 | | 2 |
| 20 or more | | 5 |

*The 2 physicians working full time had only 1 yr at current job

Figure 3. Monthly clinical hours vs Years at current job for all physicians

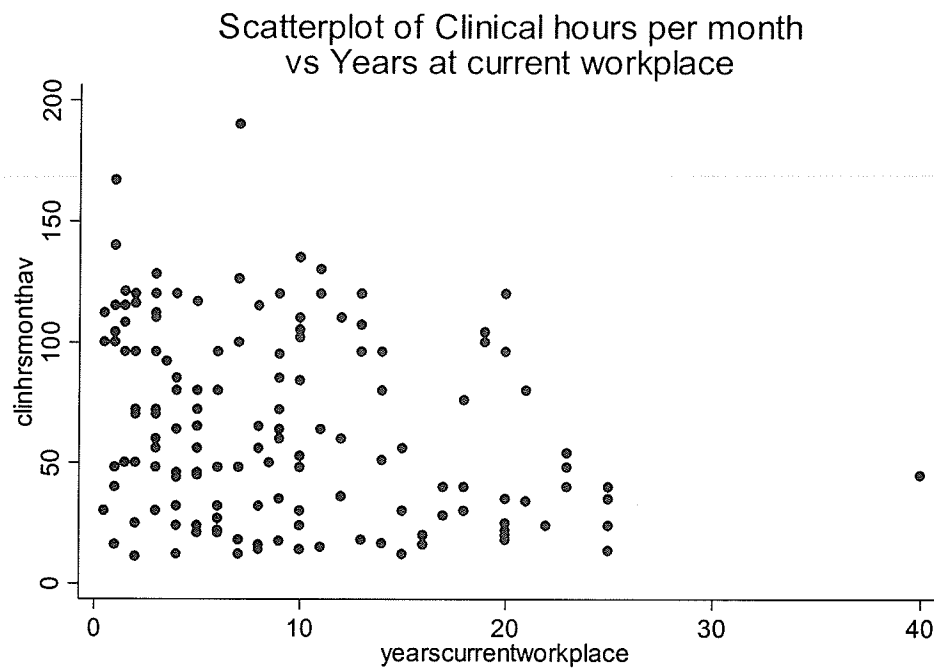
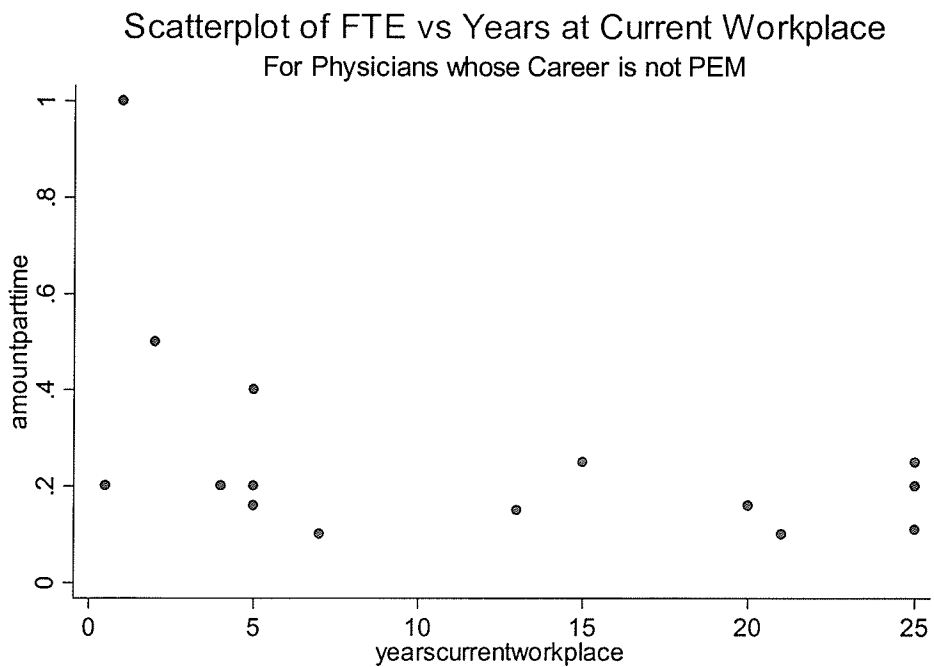


Figure 4. Full time equivalent status vs Years at current job for physicians who have not chosen PEM as a career



3.4.5 Clinical hours per month and job duration

This section provides two scatter plots comparing job duration with a measure of clinical intensity for two physician groupings. Figure 3 suggests that with increasing years at current work place the number of clinical hours worked per month slowly decreases. The same holds true for those who have not chosen PEM as a career (figure 4).

3.4.6 Physicians who used to work full time

The last specific group to examine are those twenty-seven physicians who have worked full time in the pediatric emergency department, but now work part time (table 26). One-third of this group has completed a fellowship in pediatric emergency medicine, and three-quarters do additional non-PEM clinical work. Sixty-three percent of the group work between a 0.5 and 0.8 FTE. Half the group switched to part time emergency work after working 4.3 years in a full time capacity. Three-quarters of the group chose part time emergency work over full time work because of shift work or family commitments.

Table 26. Twenty-seven part time physicians who used to work full time

| Descriptor | | |
|---|-----------|--|
| Length of time worked full time before reducing to part time | | |
| 25 percentile | 2 years | |
| 50 percentile | 4.3 years | |
| 75 percentile | 7 years | |
| Chose part time because of family commitments | | |
| Yes | 15 (55%) | |
| No | 12 | |
| Chose part time because of effects of shift work | | |
| Yes | 16 (59%) | |
| No | 11 | |
| Chose part time because of either shift work or family commitments | | |
| Yes | 20 (74%) | |
| No | 7 | |
| Gender | | |
| Male | 11 (41%) | |
| Female | 16 | |
| Work outside PED | | |
| Yes | 20 (74%) | |
| No | 7 | |
| Percentage of FTE equivalent currently worked in PED | | |
| 0.1 – 0.25 | 8 (30%) | |
| 0.4 | 2 (7%) | |
| 0.5 | 8 (30%) | |
| 0.55 – 0.8 | 9 (33%) | |
| Completed a fellowship in PEM | | |
| Yes | 9 (33%) | |
| No | 18 | |
| Had research involvement | | |
| Yes | 18 (67%) | |
| No | 9 | |
| Married | | |
| Yes | 23 (85%) | |
| No | 4 | |
| All of those who work less than 0.3 EFT do clinical work outside the emergency department as do seven out of the 8 who are 0.5 EFT. | | |

3.5 Multiple Regression: The development of two models

3.5.1 EPJS modelling

The two variables that were initially linked with the EPJS scores were that of partner works shift work and married (table 27).

Table 27. Analysis of variance table and regression coefficients: EPJS as dependent variable, partner works shift work, and married as independent variables

| Source | SS | df | MS |
|---------------|--------|-----|------|
| Model | 119.6 | 2 | 59.8 |
| Residual | 1398.2 | 123 | 11.4 |
| Total | 1517.8 | 125 | 12.1 |
| Number of obs | 126 | | |
| F(2, 123) | 5.26 | | |
| Prob > F | 0.006 | | |
| R-squared | 0.08 | | |

| Variable | Coefficient | Standard error | P Value |
|--------------------------|-------------|----------------|---------|
| Partner works shift work | 1.85 | 0.77 | 0.017 |
| Married | 1.94 | 0.90 | 0.034 |

Partner works shift work coded 1=yes, Married coded 1=yes.

To determine which variables should next be factored into the model, each of the variables was added in, one at a time, and the resulting probability associated with the independent variable was noted. Table 28 shows the result of adding in a single variable, and the resulting P value generated by that variable.

Table 28. The P value attached to the independent variable, when added to partner works shift work and married. EPJS is the dependent variable

| Variable | P value |
|--|---------|
| Average weekends per month | 0.02 |
| Average weekend hours per month | 0.02 |
| Clinical shifts per month | 0.02 |
| Amount of sleep after a night shift | 0.03 |
| Average number of shifts missed per year | 0.03 |
| Clinical hours per month | 0.05 |
| Fellowship in PEM | 0.13 |
| Received a grant | 0.13 |
| Length of night shift | 0.16 |
| Done ATLS | 0.18 |
| Assistant director | 0.18 |
| Number of nights per month | 0.19 |
| Involved in continuing medical education | 0.19 |
| Written peer reviewed paper | 0.20 |
| Length of evening shift | 0.20 |
| Research director | 0.20 |
| FTE (full time equivalent) | 0.20 |
| Able to sleep while working night shift | 0.21 |
| Teaching apart from shift | 0.22 |
| Done ACLS | 0.22 |
| Regular shift rotation | 0.22 |
| Partner works outside home | 0.23 |
| Does clinical work outside the emergency | 0.23 |
| Contracted weeks vacation | 0.24 |
| Part timers who used to work full time | 0.25 |
| Involved in teaching | 0.27 |
| Teach ATLS | 0.29 |
| Days of conference leave in contract | 0.31 |
| PEM Not career | 0.32 |
| Involved on a hospital committee | 0.35 |
| Teach PALS | 0.36 |
| Currently has a partner | 0.37 |
| Fast track system in place | 0.39 |
| Number of children at home | 0.41 |
| Gender | 0.45 |
| Weeks of vacation taken | 0.48 |
| Director | 0.53 |
| Year of finishing medical school | 0.62 |
| Expect shift work | 0.62 |
| Has FRCPC in pediatrics | 0.66 |
| On call for clinical emergency duties | 0.68 |
| Divorced | 0.72 |
| Works only nights | 0.73 |

Table 28-continued

| Variable | P value |
|---|---------|
| Time for sleep to normalize after night shift | 0.73 |
| Fellowship director | 0.74 |
| Been involved in research | 0.77 |
| Number of conference days taken | 0.78 |
| Has FRCPC in emergency medicine | 0.80 |
| Years at current work place | 0.81 |
| Works only evenings | 0.82 |
| Works 2 or more nights in a row | 0.85 |
| Done PALS | 0.86 |
| Fulltime | 0.86 |
| Number of children | 0.94 |
| Length of day shift | 0.95 |
| Medical director | 0.98 |

Once these analyses had been done, all those fields that had a $P \leq 0.2$, (as well as gender, and year medical school) were re-examined. Within these variables there were two multicategorical fields that required dummy variables: age range and gross annual income. Any records that were incomplete for either of these fields were dropped, resulting in 128 records. Age range was then run with full time and monthly clinical hours. Table 29 provides the analyses of variance.

Table 29. Analysis of variance table: Does age range add additional explanatory power to full time status and average clinical hours per month as independent variables?

| Source | SS | df | MS | F |
|----------------------------------|--------|-----|------|------|
| Explained by age range | 70.7 | 6 | 11.8 | 1.03 |
| Explained by full time and hours | 101.2 | 2 | | |
| Unexplained | 1368.8 | 119 | 11.5 | |
| Total | 1540.7 | 127 | 12.1 | |

The F for 6, 120 df is 2.17 at the 0.05 level. Therefore age range is not significant.

Age range is not a significant predictor of the EPJS. The same analysis was performed looking at the addition of gross annual income to full time status and average clinical hours (table 30).

Table 30. Analysis of variance table: Does gross annual income add additional explanatory power to full time status, and average clinical hours per month as independent variables?

| Source | SS | df | MS | F |
|----------------------------------|--------|-----|------|------|
| Explained by income range | 154.5 | 6 | 25.8 | 2.38 |
| Explained by full time and hours | 101.2 | 2 | | |
| Unexplained | 1285 | 119 | 10.8 | |
| Total | 1540.7 | 127 | 12.1 | |

The F for 6, 120 df is 2.17 at the 0.05 level. Therefore income range is significant.

The model that best seems to fit involves 5 independent variables: clinical shifts per month, partner works shift work, married, fulltime and gross annual income. Table 31 is the analysis of variance which provides the details of this model. Examining the data does not provide any sense of the significance of the gross annual income. Because it is a multicategory variable, dummy variables were placed in to the regression analysis. The analysis was run without the income field, and those variances were compared to the above model using an analysis of variance table (table 32). This table shows that income is a significant contributor to the model ($P = 0.045$).

Table 31. Analysis of variance table, and regression coefficients for final explanatory model with EPJS as dependent variable

| Source | SS | df | MS |
|----------|--------|-----|------|
| Model | 344.1 | 6 | 57.3 |
| Residual | 1070.5 | 105 | 10.2 |
| Total | 1414.6 | 111 | 12.7 |

| | |
|---------------|--------|
| Number of obs | 112 |
| F(6, 105) | 5.63 |
| Prob > F | 0.0000 |
| R-squared | 0.243 |

| Variable | Coefficient | P Value |
|---------------------------|-------------|---------|
| Clinical shifts per month | -0.32 | 0.001 |
| Partner works shift work | 2.34 | 0.004 |
| Married | 2.13 | 0.02 |
| Fulltime | 2.22 | 0.014 |
| Earning category 2 | -0.59 | 0.412 |
| Earning category 3 | 1.41 | 0.096 |

Clinical shifts per month – number of shifts worked per month. (continuous variable)
 Partner works shift work – categorical variable where 1 means that your partner does work shift work, and 0, they do not work shift work. Married – categorical variable. 1 indicates that you are married, 0 indicates absence of same. Fulltime – categorical variable. 1 indicates a “yes” to full time work, and 0 indicates a “no”. Earning category. Gross annual income. Category 1 - < \$120,000, category 2 - \$120,000 to \$159,000, 3 – \$160,000 and greater

Table 32. Analysis of variance table examining significance of income within the model. EPJS as dependent variable

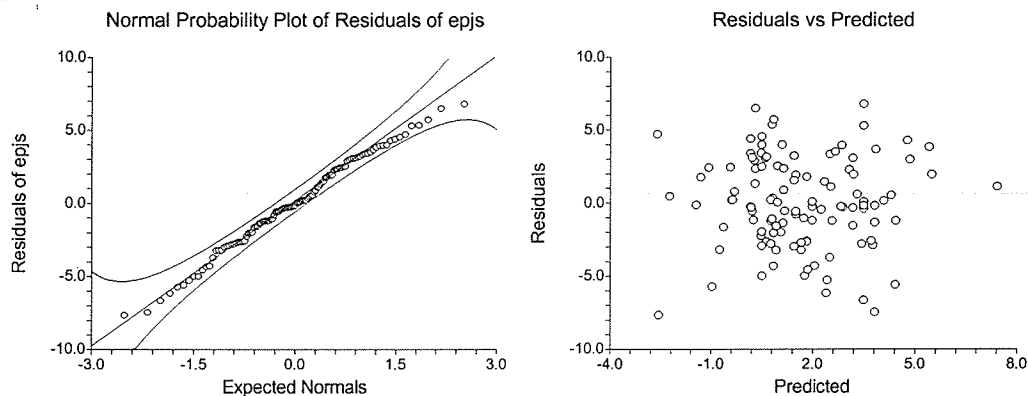
| Source | SS | df | MS | F |
|---------------------------------|--------|-----|-------|-----|
| Explained by income | 66.1 | 2 | 33.05 | 3.2 |
| Explained by model minus income | 278.0 | 4 | | |
| Residual | 1070.5 | 105 | 10.2 | |
| Total | 1414.6 | 111 | 12.1 | |

F (2, 105) of 3.2 (p = 0.045)

Model includes clinical shifts per month, partner works shift work, married, fulltime and income.

The graphs showing the residuals for the complete model are provided (Figure 5).

Figure 5. Residuals vs predicted for the final EPJS regression model and the normality plot of same



The residuals follow a normal plot, and there is no pattern clearly seen when the residuals are plotted against their predicted values. The regression analysis leads to the following equation:

$$\text{EPJS} = -0.32 \text{ Number of shifts per month} + 2.34 \text{ Partner works shift work} + 2.12 \text{ Married} + 2.22 \text{ Fulltime} - 0.59 \text{ Gross earning category 2} + 1.4 \text{ Gross earning category 3}.$$

This model explains only 24% of the variation, and so we can not expect it to generate an accurate EPJS, but it does indicate that these are significant predictors of the EPJS. As the number of monthly shifts increases, the EPJS will decrease; if a partner works shift work, the EPJS will increase; if a physician is married, the EPJS will increase; and if a physician is full time, the EPJS will increase. If a physician is in earning category number 1, then 0 would be put into the equation for both category 2 and 3, and therefore this equation is the default equation for the physician in category 1. If a physician is in income category number 2, their EPJS score will be 0.59 less than category number 1. If a physician is in income category number 3, then their EPJS score is 1.4 greater than category number 1.

3.5.2 GJS modelling

The same process was followed in fitting independent variables to explain the GJS score. From the work done with the EPJS modelling, 3 variables were initially tried: Fulltime, Married and Gross annual income. They explained some of the variation. Then each of the variables was tried in the model, and further work was done with those that suggested significance. Table 33 provides the probability assigned to each independent variable as it was tried in the model.

Table 33. The P value attached to the independent variable when added to the marital status, fulltime status, and gross annual income. GJS is the dependent variable

| Variable | P value |
|---|---------|
| Length of night shift | 0.02 |
| Teach ACLS | 0.03 |
| Teach ATLS | 0.03 |
| Average number of weekend hours per month | 0.06 |
| Assistant director | 0.06 |
| Amount of sleep after a night shift | 0.06 |
| Clinical shifts per month | 0.07 |
| Fellowship director | 0.07 |
| Number of children at home | 0.09 |
| Research director | 0.13 |
| Has FRCPC in emergency medicine | 0.14 |
| Involved in continuing medical education | 0.14 |
| Director | 0.16 |
| Number of children | 0.17 |
| Days of conference leave taken | 0.18 |
| Partner works shift work | 0.20 |
| Average weekends per month | 0.21 |
| Involved in teaching | 0.21 |
| Done PALS | 0.26 |
| Medical director | 0.27 |
| Expect shift work | 0.27 |
| Weeks of vacation taken | 0.28 |
| Fellowship in pediatric emergency | 0.30 |
| Fast track system in place | 0.33 |
| Length of evening shift | 0.35 |
| Number of conference days in contract | 0.36 |
| Part timers who used to work full time | 0.36 |

Table 33-continued

| Variable | P value |
|---|---------|
| Time for sleep to normalize after night shift | 0.37 |
| Partner works outside home | 0.39 |
| Has FRCPC in pediatrics | 0.40 |
| Year of finishing medical school | 0.42 |
| Works only nights | 0.44 |
| Currently has a partner | 0.46 |
| Works 2 or more nights in a row | 0.47 |
| Always worked in pediatric emergency | 0.48 |
| Divorced | 0.49 |
| Teaching apart from shift | 0.55 |
| Regular shift rotation | 0.58 |
| FTE equivalent of full time | 0.59 |
| Number of nights per month | 0.60 |
| Been involved in research | 0.64 |
| Involved on a hospital committee | 0.65 |
| Length of day shift | 0.70 |
| Does clinical work outside the emergency | 0.72 |
| Gender | 0.72 |
| On call for clinical emergency duties | 0.76 |
| Contracted weeks vacation | 0.79 |
| Able to sleep while working night shift | 0.89 |
| Works only evenings | 0.98 |
| Years at current work place | 0.99 |

The independent variables that were most likely to be significant were fitted into the model. The most concise model that significantly explains the GJS is provided in table 34. Gross annual income is a categorical variable, and thus from observing the above analysis of variance, it is not obvious that it is an important independent variable. Table 35 provides the evidence that it is indeed a statistically independent variable.

Table 34. Analysis of variance table and regression coefficients for final explanatory model with GJS as dependent variable

| Source | SS | df | MS |
|----------|-------|-----|-------|
| Model | 35.4 | 6 | 5.89 |
| Residual | 107.0 | 117 | 0.914 |
| Total | 142.3 | 123 | 1.16 |

| | |
|---------------|--------|
| Number of obs | 124 |
| F(6, 117) | 6.44 |
| Prob > F | 0.0000 |
| R-squared | 0.248 |

| Variable | Coefficient | P Value |
|----------------------------|-------------|---------|
| Married | 1.14 | 0.000 |
| Fulltime | 0.80 | 0.002 |
| Clinical shifts per month | -0.068 | 0.019 |
| Number of children at home | -0.16 | 0.037 |
| Earning category 2 | -0.43 | 0.042 |
| Earning category 3 | 0.33 | 0.16 |

Married – categorical variable. 1 indicates that you are married, 0 indicates absence of same. Fulltime – categorical variable. 1 indicates a “yes” to full time work, and 0 indicates a “no”. Clinical shifts per month – number of shifts worked per month (continuous variable). Number of children living at home. (continuous variable). Earning category. Gross annual income. Category 1 - < \$120,000, category 2 - \$120,000 to \$159,000, 3 – \$160,000 and greater

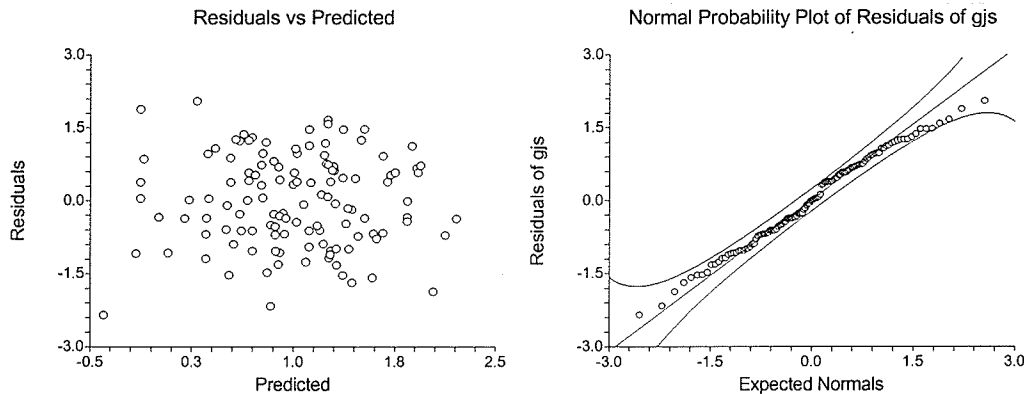
Table 35. Analysis of variance table demonstrating the significance of income within the model. GJS as dependent variable

| Source | SS | df | MS | F |
|---------------------------------|-------|-----|-------|-----|
| Explained by income | 11.7 | 2 | 5.85 | 6.4 |
| Explained by model minus income | 23.6 | 4 | | |
| Residual | 107.0 | 117 | 0.914 | |
| Total | 142.3 | 123 | 1.16 | |

F(2, 117) of 6.4 > p = 0.005. Married, full time status, average clinical shifts per month, number of children at home, and gross annual income are the independent variables in this model.

It is also helpful to examine a plot of the residuals, and see how normal their distribution is (figure 6)

Figure 6. Residuals vs predicted for GJS regression model and the normality plot of same.



The distribution of the residuals is normally distributed, and there is no pattern clearly seen when the residuals are plotted against their predicted values. This regression analysis is described by the following equation:

$GJS = 1.14 \text{ Married} + 0.80 \text{ Fulltime} - 0.068 \text{ Number of shifts per month} - 0.16 \text{ Number of children at home} - 0.43 \text{ Gross earning category 2} + 0.33 \text{ Gross earning category 3}$.

This model explains 25% of the variation, and so we can not expect it to generate an accurate GJS, but it does indicate that these are significant predictors of the GJS. If a physician is married, the EPJS will increase; and if the physician is fulltime, the GJS will increase. As the number of monthly shifts increases, the GJS will decrease; and as the number of children living at home increases, the GJS will decrease. If a physician is in earning category number 1, then 0 would be put into the equation for both category 2 and 3, and therefore this equation is the default equation for the physician in category 1. If a physician is in income category number 2, their GJS score will be 0.43 less than category

number 1. If a physician is in income category number 3, then their EPJS score is 0.33 greater than category number 1.

Chapter 4 - The In-depth Interviews

Traditionally qualitative research has been used at the beginning of a study as a valuable tool when developing items for a survey questionnaire. However, it is increasingly used after a survey has been completed when it becomes a valuable adjunct in interpreting the survey data. In this study, the interviews provided insights not only into the problems and benefits of shift work, but also into other aspects of the work of PEM including the sometimes problematic relationships with other specialists, the excitement of being the first to diagnose, or the frustration of not being able to follow a child through the next stages in their care.

4.1 Responses to specific questions

4.1.1 Physician training

All of the physicians went to medical school in Canada except for one, who was a foreign medical graduate. One physician started medical school in the United States, but transferred to a Canadian School, and did all 4 years at that school.

One physician completed a 3 year fellowship in pediatric emergency medicine. Another physician completed a one year fellowship and then started to work in the field. Three of the physicians started working in the field after completing a pediatric residency. One physician, after having completed his CCFP –EM and having worked as an emergency physician for 2 years, went back and completed a pediatric residency. He then started working in the field of pediatric emergency medicine. The final physician also

completed a CCFP-EM, and then started working in emergency medicine; half time adult emergency and half time pediatric emergency. Of the 7 interviewed 4 were male.

4.1.2 Journey into pediatric emergency medicine

The stories of how each person ended up working in the area of pediatric emergency medicine are unique, but despite the uniqueness there are underlying themes. Two of the physicians examined the possibility of careers in the field of pediatric intensive care before embarking in the field of pediatric emergency medicine. The lifestyle of the intensivists seemed to sway this decision.

“...decided that the time commitment was going to be a little too much considering that I wanted to settle down and have a family. I didn’t think that the rigours of working in an ICU were going to permit me to work part time and to do all those other things so that I could have a family”

“I wanted to do something acute care oriented and initially thought it would be like pediatric intensive care but I didn’t like the lifestyle....” “When they [pediatric intensivists] were on and often had nights all in a row where they really didn’t get any sleep at all, were in the hospital, and it just didn’t seem like an attractive lifestyle...”

One physician seriously considered a career in pediatric cardiology, but chose to go into pediatric emergency for the same life style reasons as the two previous physicians.

Two physicians entered pediatric emergency following the CCFP – EM training. Both had chosen to work in cities which had pediatric emergencies, and neither wanted to give up seeing children. One of these physicians wanted only to see children, and so later on completed a pediatric residency. Both of these physicians had consciously chosen to

work in the field of emergency medicine following medical school, whereas all the other physicians chose to go into pediatric emergency towards the end or after their pediatric training.

One physician ended up in pediatric emergency because that was what many physicians did at the time while waiting to build up their practices.

“When I first finished my residency back in 1980 I was doing probably 3 half days in the emergency room until I built up my practice. So as my practice got more busy then I cut out some of my times in the emergency room.”

The remaining physician ended up in pediatric emergency because there was no where else to go.

“I got into pediatric emergency medicine because it was the only job I could get in Canada”

These last two physicians are similar in that for one it was the only job that was possible, and for the other it was a way to generate an income while building up her practice. The interesting fact about both of these physicians are that they are both still in the field of pediatric emergency medicine despite the passage of at least twenty years.

Of the 7 interviewed, one was on maternity leave and was going to return in a part time capacity, 3 work in the pediatric emergency part time and have other duties that add up to full time jobs, and 3 work in pediatric emergency in a full time capacity. Two of those have been picking up extra shifts out of clinical need. One of them is about to change jobs, but will remain practicing full time pediatric emergency medicine. In summary, out of the 7 physicians, 4 are committed to the field on a part time basis, and 3

on a full time basis. Three of the 4 part timers have other medical duties so that they work full time as physicians.

One part timer works a particular afternoon a week from 1300 to 1700 hours as well as one evening shift (1900 to 2200hours) every other week. Another part timer works approximately two shifts a week in the emergency.

“I do approximately two shifts a week in emergency, one of them is a day and one of them is an evening. Now when I was I used to do half as many shifts as all the full time staff with a mix of days, evenings and nights...”

Since all of the pediatric emergency departments are attached to teaching hospitals, all of the physicians were involved with teaching medical students and residents while seeing patients. Five of the 7 physicians have or have had administrative duties directly relating to the field of emergency medicine.

4.1.3 Aspects that attract

Six of the 7 physicians were of one mind about one aspect that attracted them to, and kept them doing pediatric emergency medicine; and that was the variety.

“...it’s exciting, you see things early on.....it’s just the interesting bag full of things that come through the door every day.”

“I really enjoy the variety – everything from bike accidents to kids with weird syndromes ... it just seems much more interesting than some of the other subspecialties.”

“There is a tremendous variety still in emergency medicine, you’re not seeing the same thing every day”

“On the one hand, I like the variety ...”

“I just love dealing with patients and the families ... they are very similar and yet each family is unique and that I find very very interesting ...”

“I like the diversity we see ...”

As they talked about the diversity there was also the sense that dealing with acutely ill children, as well as having the chance to be one of the first physicians to see the patient was an aspect of the job that was attractive.

“I often say the sicker the patients are the more I like it, a challenge of sorting out what’s wrong ...”

“... you see things very early on ...”

Another attractive aspect that 3 physicians mentioned was that of collegial staff: not only physician colleagues, but also collegial ancillary staff.

“... we have wonderful staff here and a wonderful group, that’s why I am still here ...”

“I like the staff we work with. ... The nurses, the ward clerks, fellow colleagues in emergency medicine ...”

These physicians also made it very clear that they enjoyed working with children. This is to be expected since most of the physicians had chosen the field of pediatrics before choosing the specific area of pediatric emergency. One physician, who already had his CCFP-EM stated in answer to what makes the job attractive:

“It’s a tremendous thrill to be able to treat those kids well, have them come in, and they’re always honest. They haven’t done the disease to themselves in the vast majority of cases.”

Through his words one can hear that he is contrasting the children who are “always honest, and have not done the disease to themselves” with the adult emergency population that he used to treat. He chose to do pediatric medicine primarily because of his love for pediatrics, but the area of adult work that drove him

“out of adult medicine was the treatment of the elderly and particularly families not willing to take responsibility for the elderly patients...”

Two physicians brought up the defined clinical parameters of pediatric emergency medicine as qualities which attracted them to the field.

“The good thing about emergency medicine is that you can decide how many hours you want to work. You can choose to work half time, three-quarter time, (or) full time.”

“I like the fact that we don’t have to carry a beeper, that you can have a schedule far in advance and sort of make changes to that schedule to fit your lifestyle.”

In addition to defined clinical parameters 3 of the 7 physicians mentioned that the opportunity to teach learners was an attractive factor. Another factor was the ability to interact with the other subspecialists on a regular basis. A factor that was brought up as having both positive and negative factors was the role of shift work. So much was said about this that it has been given its own section at the end of this chapter.

In summary those aspects of pediatric emergency medicine that make the job attractive are:

- The rich variety of medical and surgical illness that presents to the emergency department
- The privilege of often being the first physician to deal with acute illness

- The opportunity to treat children and their families with all their varied characteristics
- A sense of good collegial relations with all members of the health care team.
- The opportunity to teach health care learners of all types.
- The defined parameters of the clinical duties that accompany the role of a pediatric emergency physician.
- The flexibility of being able to work full time or part time.
- Certain aspects of shift work.

4.1.4 Aspects that decrease attraction

There was much less uniformity among those factors that detract from pediatric emergency as compared to those factors that attracted physicians to work in the area. Three physicians did mention shift work as related to this heading, and more detail will be given in a later section. Factors surrounding resources was mentioned by 3 physicians, lack of patient follow up was mentioned by 2 physicians, and factors relating to research were mentioned by 2 physicians. One physician found certain political aspects discouraging as well as a sense of a lack of respect from other pediatricians towards those who practice in the field of pediatric emergency medicine.

Factors surrounding resources was mentioned by 3 physicians as an aspect of their job that makes it less attractive to them. For one physician this applied to the support that the various subspecialists such as neurosurgery, plastic surgery, or neurology give to the

emergency room. There seem to be two issues; one being failure of timely consults and the other the lack of subspecialists. The following two quotes illustrate the above:

“Having a shunt child come in, knowing what’s wrong with them, organizing their tests, having everything ready to go, calling up the neurosurgeon within $\frac{3}{4}$ of an hour and waiting 6 to 8 hours for that neurosurgeon to come and see them and worrying about the deterioration of the child ...”

“Neurology services very restricted in our service and we’ve become the neurology service – one in 3 or one in 2 nights there is no neurologist on and we’re the default neurologist. More and more with the pressing human resources in our department of pediatrics, the departmental chief has identified, ‘well you don’t have to cover call 100% of days, emerg will just be your default call ...’”

He goes on to point out that he did not go into pediatric emergency to act as the subspecialist in many other areas, as well as stating that in the emergency room there is not the time to deal properly with in depth issues in the manner of a true consulting physician.

The second physician raises the issue of inappropriate use of the emergency department by patients who could be seen by any other physician. This physician objects to the long waits generated by the volume of patients.

“Unfortunately we’re sort of used as a walk-in clinic a lot of the time which, you know ends up, in itself it wouldn’t be a problem, it’s just that then we end up sometimes with really long waiting times; 2,3,4,5 hours on rare occasions.

Unfortunately some of the kids that are sicker and probably belong there or even with the laceration, that you know doesn’t need to be dealt with immediately but

these poor kids are waiting for 3 hours because you have 5 sore throats and a stomach ache that has been intermittent for 3 months that you have to deal with.”

This physician goes on to say that there is likely no easy answer to this problem, but that maybe in high school there could be more teaching about serious versus non serious disease. The third physician who raises this issue does so around the area of nursing.

“I think the other thing that’s been fairly stressful in the department is the nursing situation. ... There’s a reasonably high turnover rate because of the stress factor, because of the way the hospital hires nurses and it’s too bad. ... You don’t find good pediatric emergency nurses very often and when they’re just left hanging with part time work or casual work, they tend to leave ... and then you’re stuck with some of the dregs of – you know – what’s left.”

She goes on to state that when other people are stressed, then one gets stressed, and it makes for bad night shifts!

Two physicians mentioned that they wished that research had more of a priority. For one physician,

“I would have wished for mentorship and guidance into research...”

The second physician states,

“I like research, I like doing the research but I find, and this isn’t probably the case in all institutions, but ... its part of the job description ... we’re supposed to do research ... and there’s no protected time for you, there’s no sort of rewards for having done it.”

Two physicians mentioned that they missed patient follow up.

“I do miss following up on some very interesting cases ... that still is a down side on occasion.”

“There’s a part of me that does miss some of the follow up, you know seeing the kids grow up and seeing the families over and over again.”

There is, then, an acknowledgement that when children come into the emergency, it is always because they are ill, and never at their best! In following their patients, non-emergency physicians do get to see their patients and families in good times as well as not so good times.

In summary, those aspects of a pediatric emergency physician’s job which make it less attractive are:

- Insufficient resources to deal in a timely fashion with the clinical demand
(includes nursing resources as well as a shortage of PEM physicians)
- Untimely subspecialty resources
- Lack of patient follow up
- Lack of respect from physicians in other pediatric disciplines
- Lack of research time and mentoring
- Shift work

4.1.5 Specific issues facing PEM at this time

Four of six physicians brought up the topic of respect from colleagues outside the field of PEM.

“we’re ... looked upon as just being a bunch of residents ...So there is a lot of disrespect from that point of view.”

“issues (facing PEM) are somewhat akin to the issues that faced emergency medicine early on ... the acceptance by their colleagues that pediatric emergency exists as a sub-specialty.”

“...with accreditation ... Hopefully that will help us along ... to get some respect for what we do. I think that still is a problem everywhere, even for the adult people.”

“...there were staff in the hospital who had little regard for emergency docs.”

Two of these physicians felt that respect and acceptance were coming and that in time this issue would pass.

Another idea that was mentioned by three physicians under this heading was that PEM should be much more closely aligned with general emergency medicine than pediatrics.

“If we are ... emergency physicians then we ... have to align ourselves with the emergency contingency, get resources, get respect ...”

“I think the pediatric emergency department should align themselves with the adult emergency department ...”

The main reasoning behind this idea came from the belief that the general pediatric community is not very interested in looking out for the interests of the PEM community. The idea was held that PEM may have more in common with general emergency medicine rather than pediatrics. One physician mentioned a very pragmatic reason for being more closely aligned with emergency medicine; that reason being that the fee schedule for emergency medicine has always paid better than pediatrics, although that physician admits that the gap between PEM and EM is shrinking.

“Pediatricians are paid quite a bit less, although in (pediatric) emerg it’s fairly similar.”

Two physicians brought up the philosophical question (as opposed to pragmatic issues) of the relationship between PEM and EM. Does PEM fall under the jurisdiction of pediatrics or emergency medicine?

“One of the issues is where does pediatric emergency fit in Canada. Is it an emergency program and a sub-specialty of emergency, or a pediatric program and a sub-specialty of pediatrics? ... My personal perception is that we need to ally ourselves with both...”

The physician goes on to state that this can be a hard balance, but that PEM needs both because it uses skills from both camps.

The other issue that two physicians brought up under this heading was a lack of resources. This issue was also mentioned in the previous section.

4.1.6 Implications of Royal College accreditation

In April 2000 the Royal College of Physicians and Surgeons of Canada recognized the discipline of pediatric emergency medicine as a subspecialty of pediatrics. Five of the 7 physicians were asked about the implications, if any, arising from this decision. The answers ran along 3 basic themes: one being the hope that this would be an aid in producing more full time pediatric emergency physicians, the second that there might possibly be a bit more respect given to the field by other physicians in the area of pediatrics, and the third related to “grandfathering”.

The first two themes, respect and not enough pediatric emergency physicians, really seem to run together. One physician said,

“I think perhaps some of the other pediatricians might start recognizing the ER folks (physicians) as subspecialists rather than just residents out there trying to figure out their careers”

Another physician said,

“Well, I think in general emergency physicians have never had a very good reputation about their clinical skills from the subspecialists that work with us or get their consults from us. Maybe now with accreditation hopefully that will help us ... to get some respect for what we do.”

In these physicians' opinions this lack of respect encouraged new graduates from pediatric residencies to take jobs in the pediatric emergency department while they sorted out what they wanted to do with their careers. The idea that pediatric emergency could be a satisfying career in and of itself did not seem to be a possibility. Two physicians made a comparison between the birth of adult emergency medicine and pediatric emergency medicine, in that many people used to work for 1 to 3 years in adult emergency medicine, while they sorted out their final career plans. As adult emergency medicine has matured, fewer physicians are doing that. Many positions are being filled by physicians who have been specifically trained for a career in adult emergency medicine. As that has happened, there seems to be more respect for adult emergency medicine. As more pediatricians complete the training in pediatric emergency medicine, the hope reflected by the physicians is that pediatric emergency medicine will also gain the acceptance and recognition of the rest of pediatric medicine. In so doing, the field will become more attractive to young trainees, who will then choose to train in the area, and thus start to relieve some of the manpower issues that the field seems to be experiencing.

Three physicians brought up the question of “grandfathering” or “what happens to those of us who have been working in the field for a long time, and yet do not have the ‘official training?’” It was noted that to write the exams in pediatric emergency medicine for the United States, a physician needs to do a 3 year fellowship, while in Canada the planned fellowship is to be only 2 years long. One physician who had just missed out on being able to write the FRCPC-EM exam wondered if that would happen to him again in this field. There was some discussion about the tension between having a piece of paper acknowledging competence in the field, versus the knowledge that this is your chosen field, and you have worked in it for a while.

Overall, the sense provided was that accreditation was a good step in gaining not only respect from the rest of pediatric medicine, but also in attracting committed pediatricians to the field who will help with the perceived manpower issues.

4.2 General themes arising

4.2.1 Shift work

Shift work deserves its own section because it was mentioned as a factor by every physician who works or has worked the spectrum of shifts necessary to maintain 24 hour coverage in the emergency department. Shift work was mentioned both as an attractive aspect of the job as well as one that had its downsides. The attractive aspects to shift work will be mentioned first and then the challenges. Finally a commentary will be made as to the relationship between age and shift work.

Six physicians have had experience with shift work. One physician, who experienced shift work and chose to go into emergency medicine as a medical student, did not comment on the positive aspects of shift work; the other 5 physicians referred to

shift work as a positive and attractive part of pediatric emergency medicine. The following quotes are illustrative:

“Well, I think shift work ... the good thing is that you can play with your schedule a little more readily. You can take ... two weeks off and still not lose a lot of income...”

“... the shift work I do like to some degree. I like having days off to go and climb when the rest of the world is at a desk somewhere 9 to 5 ...”

“To tell you the truth, shift work has its bonuses as well as its pitfalls. The biggest bonus is that you get to spend time in [city name] at various times of the day. ...I have my days off when every body else is at work and I can do things without a lot of the crowds... Not having to work every single day is also a very big bonus.”

“For us it was ideal (being able to work evenings and nights) because you could be with your child for so much of the time. We did not see it as a hardship. We saw it as the best compromise; to have a career, make a contribution, and yet be available to your children.”

“I like the fact that we don’t have to carry a beeper, that you can have a schedule far in advance and sort of make changes to that schedule to fit your lifestyle...”

The enjoyable themes that surround shift work have to do with child care when children are young, the ability to fit shifts around the non-emergency schedule, the fortune to have days off when every one else is working, and not be tied down to a beeper. The ability to have days off when the rest of the world is working allows one to go to otherwise popular areas in relative peace. Shift work provides a sense of freedom in that one is not working every day. All of the physicians enjoyed clinical medicine – it was

a strong positive job aspect, and yet a positive aspect of shift work was a sense of being able to set aside the clinical demands of medicine once the shift was over. Clinical work had a limit, and the beeper did not need to be carried while off duty. The mostly unspoken comparison was that every other medical specialty is not able to do that.

“To tell you the truth, shift work has its bonuses as well as its pitfalls...”

The only physician who did not mention the pitfalls of shift work was one who currently works one half day shift per week and one half evening shift every other week. All the rest mentioned the pitfalls. There were 2 physicians working a full time clinical emergency load who had children in their teen years. One of these answered the following in response to my question, “Are there any aspects of your job that make it less attractive?”

“Well yes, the shifts again. Its really hard for people with personal lives. I mean it would be almost better if you could do all day shifts and all night shifts and no evenings cause the evenings are really busy.”

As we talked it was quite plain that his teenage children had lots of evening sporting activities in which he wanted to play an active role. The evening shifts were really a trial, and he would do almost anything to try to switch out of them. The same was starting to hold true for the other physician.

“It wasn’t as difficult when they were under 5 and they were home most of the time. Now that they are often in soccer, in swimming and a lot of activities it is somewhat more difficult to juggle.”

Both of these physicians are expressing the tension between being a participatory parent in after school activities for their growing children and the evening shift work. The tension between working shift work, and yet living in a society which does for the most

part function around a Monday to Friday, 9 to 5 job, is also felt if one works shift work while one's spouse lives in the other work zone.

"... One tough thing about emergency is that on occasion, when I was working full time, if I bunched my shifts the wrong way I wouldn't see him for a week except crawl into bed with him, have him kiss me goodbye in the morning, and that was about it. It becomes very difficult when he has all the weekends off ... and I'm working half the weekends in a month."

Each couple has to wrestle with this tension, and sort out times which can be spent together while acknowledging the fact that their work hours are quite disparate.

Night shift was the other less attractive aspect to shift work that was mentioned by 4 of the 6. To run a department 24 hours a day means working nights. The general sense is that night shifts are not too bad if correctly scheduled, but as one gets older, they have more of a detrimental effect.

"I don't sleep before (a night shift) and I don't sleep well after so ... I don't feel right for two or three days after. Its far easier when you are young. ... a schedule is thrown off by the night shift. I think they are really hard on people."

"I think just your physical tolerance of doing shift work and bumping back and forth between days, nightsI didn't believe ... when I was 30 or 35 that it would affect me. People always said by the time you're 50 its going to be horrendous.

Well, I don't think I can ignore what they've said now."

These two physicians express the idea that working nights and changing from one shift to another was easier when they were younger. This is also reflected by one of the younger physicians.

“I guess the longer that I’m in it, the thing that I’m not going to enjoy is probably the shift work over the long run. I think it is going to take a toll. Evenings I don’t find to be so bad but as I get older I find that the nights are already getting harder and depending on the schedule you may do a night shift and then be off the next day and then right back to day shift or whatever, and I find the variation gets quite hard. It’s sort of [hard to] bounce back from things like that. That’s probably the biggest drawback I see in this field.”

As this theme of increasing difficulty with night shifts as one ages was raised, I asked various physicians how this could be best ameliorated. Three ideas were brought up. The first is that it is just part of emergency medicine so accept it. The second idea was that as physicians get older they could drop from being full time to part time, and thereby decrease the number of night shifts. The third idea was that the younger physicians could do more of the night shifts, and that at a certain age it would be expected that the older physicians stop doing night shifts. Pro’s and con’s were mentioned for each of these plans.

A very similar theme was the variation in shifts and the amount of “bouncing” between days, evenings and nights that is called for in the schedule. The more erratic the schedule is, the more difficult it is for the physician to feel well. On the other hand, the physicians pointed out that they were very happy with the flexibility in scheduling that shift work allowed.

“I’m able to schedule off volleyball evenings as one of the evenings that I never work. When I came here, they were doing a rotating schedule ... but it was quite difficult for me to always commit to doing something once a week. So there is a growing group of us now that do self scheduling.”

When this physician started with the group, there was a shift rotation that did not allow commitment to a weekly activity. Self scheduling has enabled this physician to commit to a recurring weekly activity. What is expressed is that the scheduling needs to have enough flexibility to allow for weekly commitments, but sufficient constancy, so that “bouncing around” is not a problem.

4.2.2 Respect

A lack of respect emerged as an important theme in three areas of the interviews: aspects that detract, specific issues, and the implications of the Royal College accreditation. Most of the physicians felt that pediatric emergency medicine was not recognized as a valid and satisfying career by the other divisions within pediatrics. The shortage of pediatric emergency physicians has been linked in the minds of this cohort to this issue. Two physicians did mention that it was their impression that respect was being gained, and that this issue was improving. There was hope within the group that the accreditation by the Royal College of Physicians and Surgeons would hasten this change. A closely tied sub theme was the idea that pediatric emergency medicine should be much more closely allied with general emergency medicine rather than pediatrics. The reasons provided ran along two lines of thought: general emergency medicine understands the issues facing pediatric emergency, and pediatrics in general does not have a lot of respect for pediatric emergency medicine.

4.3 Qualitative summary

The interviews demonstrated the diversity of the physicians engaged in the practice of PEM. The proportion of females, and part time physicians mirrored the proportion in the quantitative section of this research. The issues that were raised fell along the lines of the domains used in the EPJS: administrative and clinical autonomy, resources, challenges, relationships with others, and lifestyle. All those physicians working shift work had both strong positive and negative opinions about it, which is in keeping with the literature suggesting that it is the most important factor in causing physicians to leave EM. The discussion around the accreditation of PEM as an official subspecialty of pediatrics brought out the issue that PEM work is viewed as a poorer second cousin to all other branches of pediatrics, but this view seems to be changing

Chapter 5 - Discussion

The discussion of this exploratory study is organized in the following manner. First the response rate will be mentioned, followed by a comparison of the sociodemographic characteristics, training, and job description and history with other papers. A section entitled Full time, Part time compares the findings in this study with other studies and provides a more detailed rationale for maintaining the original inclusion and exclusion criteria. Commentary is then provided on the results of the job satisfaction regression analysis and predicted attrition rates. Comments will be made about each of the six discrete physician groupings or questions described in the quantitative section. Specific issues were raised in the in-depth interviews which deserve some discussion. Following this the answers to the hypotheses mentioned in chapter one will be provided. The strengths and weaknesses of the study will be mentioned. The final section of this chapter will address research questions that arise from this study.

5.1 Response rate

The usable response rate for this survey was 76%. This compares very favourably with similar work. Li(13) in 1989 had a 68% response rate, Chande(31) in 1994 had a 79% response rate. Both of these studies dealt with physicians working in pediatric emergency departments. A questionnaire evaluating the satisfaction and stress of neonatologists (32) had a 70% response rate whereas Werner(33) mailed surveys to child neurologists in the United States and had a 65% response rate. Keller(14) in examining stress and satisfaction in emergency medicine had a 59% response rate – however of these

117 surveys, 25 were only partially completed and 13 were returned blank for a usable response rate of 39%.

The high response rate obtained in this study suggests that the survey was of broad interest to its subjects. Information about non-responders was not collected.

5.2 Sociodemographic characteristics

Five sociodemographic characteristics are compared with the results of 4 other studies (table 36). Lloyds' data comes from his 1990 survey of Canadian EM physicians who had their CCFP-EM, FRCPCEM, or American Boards in emergency medicine.(25)

Table 36. Comparison of sociodemographic characteristics

| | Lloyd 1993 | Chande 1994 | Chande 1999 | Craig 2000 | Shugerman 1997 |
|---------------|---------------|----------------|----------------|---------------|-------------------|
| Male | 87% | 65% | 61% | 52% | 58% |
| Married | 83% | 77% | | 82% | 84% |
| Divorced | 5% | | | 4% | |
| Have children | | | | 71% | 85% |
| Age (years) | 38 | 39 | 44 | 40-44* | 47 |

Age is the mean, * denotes median

He only analyzed the full time respondents. Chande surveyed all physicians (232) sub-board certified in PEM by either the American Board of Pediatrics or the American Board of Emergency Medicine.(31) The subjects of her 1999 survey were the cohort of 183 physicians who responded to her initial survey. Shugerman surveyed 5704 general pediatricians, subspecialty pediatricians, general internists, internal medicine subspecialists and family physicians randomly selected from the American Medical Association Masterfile.(34) His purpose was to study the determinants of career

satisfaction among pediatric generalists and subspecialists in the USA. PEM physicians accounted for 4% of the pediatric subspecialists in his cohort. Family physicians were excluded in Shugerman's analysis.

Pediatrics has a higher proportion of females when compared to general internists.(34) This seems to hold true for full time Canadian PEM physicians (49%) (table 14) as compared to EM (13%) (table 36). One cannot make any firm conclusions about the changing effect of the passage of time on the age of those practising PEM. Chandes' 1999 physicians are 5 years older than those of her 1994 survey, but that just reflects the natural outcome of studying a cohort over time! Her average age findings of 39 years in 1994 and 44 years in 1999 are very similar to the median range in our study of 40-44 years. The average age of Shugermans' physicians was 47 years. This value applied to the entire group, and was not broken down any further. Werner found that the average age for his cohort of pediatric subspecialists was 50 years.(33) This does suggest that PEM physicians tend to be younger than Shugerman's and Werner's cohorts.

The median gross annual income in our series is between \$120 and \$139 thousand (table 37). This held true for both part time and full time physicians. This compares with Li's data in which the median income in 1987 was between \$60 and \$80 thousand U.S. per year. Werner's study, sent in 2002,(33)provides us with the most up to date U.S. income figures. The average income of a U.S. pediatrician was \$125,000, while that of a pediatric subspecialist was \$170,000. Pediatric neurologists made \$151,000 annually (table 37).

Table 37. Salary comparisons between different physician groups

| Study | physician type | | annual earnings (\$1,000's) | | |
|--------------|-----------------------------|---------|-----------------------------|------------|--|
| Li 1987 | emergency pediatrician | median | US | 60 to 80 | |
| Lloyd 1990 | emergency physician (adult) | mean | Can | 131 | |
| Nozicka 1993 | emergency pediatrician | median | US | 100 to 124 | |
| Craig 2000 | emergency pediatrician | median` | Can | 120 to 139 | |
| Werner 2002 | child neurologist | mean | US | 151 | |
| Werner 2002 | pediatric subspecialist | mean | US | 169 | |
| Werner 2002 | general pediatrician | mean | US | 125 | |

The year behind the authors name refers to the year in which the survey was done.

The salary data generated in our report brings up some interesting issues. It appears that the average annual earnings for a pediatric emergency physician are very similar to what a Canadian general emergency physician would have earned ten years previously. This discrepancy was noted by Li when she did her survey in 1987. At that time she noted that PEM physicians' mean income was lower by at least \$20,000 when compared to emergency physicians working in a general emergency department. Nozicka commented that some pediatric emergency physicians "are very frustrated about the salary differences between themselves and their emergency medicine peers." (28) Werner's study provides 2002 data for American pediatricians, and pediatric subspecialists. Werner's survey did not include those who worked less than 20 clinical hours per week. Although Werner's study does not state that pediatric emergency physicians were lumped in with the pediatric subspecialists, I think that this would be a reasonable assumption. It should be noted that our study was conducted in 2000, and that Canadian PEM salaries have likely risen since then.

5.3 Training

Table 38. Training of physicians working in PEM

| | Nozicka 1993 | Chande 1994 | Craig 2000 |
|---------------------|--------------|-------------|------------|
| Pediatric residency | | 94% | 88% |
| EM residency | | 2% | 6% |
| PEM fellowship | 24.3% | 52% | 21% (31%*) |
| PALS | 81%^ | | 94% |
| ACLS | 38%^ | | 68% |
| ATLS | 72%^ | | 68% |

PALS – Pediatric Advanced Life Support, ACLS – Advanced Cardiac Life Support, ATLS – Advanced Trauma Life Support, * refers to proportion of full time physicians, ^ denotes percentage of physicians who considered this training mandatory to obtain a PEM job.

Table 38 compares the training of physicians working in PEM between 3 studies.

Chande's study has a higher proportion of physicians who have done a fellowship in PEM. This can be explained by her sample, which was all those physicians who had written the first sub-board exam in PEM. Nozicka's sample was defined as those physicians working exclusively in PEM with at least 20 clinical hours per week. His proportions for suggested training courses and fellowship training compare closely to the training our study physicians have had (table 38). This is remarkable considering the diverse population captured in our study. Li, in 1987 asked program directors their opinion on the training deemed either essential or desirable in a PEM physician. Eighty-one percent of the directors considered ACLS to be essential, and 49% of them considered ATLS to be essential. In our cohort 94% have done PALS, and 68% have done ATLS. It should be noted that PALS was first taught in 1988, one year after Li had completed her survey.

5.4 Job description and history

Table 39. Job description of PEM physicians

| | Nozicka | Craig | Chande | Losek |
|------------------------------|---------|-------|--------|-------|
| | 1993 | 2000^ | 1999 | 1993 |
| Clinical hrs per week (mean) | 28 | 27* | 28 | 30 |
| Clin Hrs Wk – Dir | | 16 | | 18 |
| Work overnight shift | | 90% | 79% | |
| 24 hour hospital coverage | 89% | 100% | | |

* denotes median, Clin Hrs Wk – Dir - Mean clinical hours per week done by directors.

^Numbers in Craig's study apply to the full time physician group.

Li's study, back in 1987, found that the average number of clinical hours per week was 30.7. In our study the median hours per week for full time physicians was 27, and in Chande's it was 28 per week. It is acknowledged that those physicians who have a major administrative role have a reduced compliment of weekly shifts. Our study measured this number at 16 clinical hours per week, while in Losek's cohort it was 18 hours per week. These numbers are similar. In Li's study, only 27% of the responding programs had night coverage. Nozicka, in 1993, had 89% of the emergencies providing 24 hour coverage, while our study had 100% night coverage. This reflects the paradigm shift in staffing pediatric emergency departments that took place in the mid 1980s.

Duration at current job was measured in our survey. The median years for those working part time was 8 years, those working as directors was 6.5 years, and those working full time (but not directors) was 4 years. There was a significant difference between all these values. No other study looking at demographics of PEM recorded this variable. Chande, in her 1994 survey, recorded the number of years that the physician had practiced PEM; this was 7.5 years.

5.5 Full time, Part time

Many of the analyses in the study were performed after classifying the physicians as full time or part time. Dichotomous classifications are used for they facilitate analysis. In the study the definition of full time was left up to the physician. This has been a standard practice in the literature (table 40). The current study uses a physician (or self) defined classification for full time and part time.

As was suggested in the introduction, there have been many studies looking at full time staff in the emergency and pediatric emergency, but no studies have examined the characteristics of physicians who worked part time in the emergency department.

Table 40. Definition of full time in selected papers

| Author | Survey year | Definition |
|---------|-------------|---|
| Fritz | 1989 | Self defined |
| Li | 1987 | Program director defined |
| Lloyd | 1990 | Self defined |
| Losek | 1993 | Program director defined |
| Nozicka | 1993 | Exclusive PEM clinical practice, and > 20 clinical hrs/week |

Table 41 compares some percentages of full time and part time physicians in some of the studies previously mentioned.

Table 41. Percentage of full versus part time physicians in emergency

| Study | Craig 2000 | Li 1987 | Lloyd 1990 | Losek 1993 | Nozicka 1993 |
|-----------|---------------|------------|---------------|---------------|-----------------|
| N | 146 | 1103 | 268 | 264 | 365 |
| Full time | 35% | 24% | 83% | 81% | 77% |
| Part time | 65% | 76% | 14% | 19% | 23% |

N = physician sample size

Li and Losek specifically mentioned the percentage of full time physicians. Lloyd and Nozicka's studies provided enough information to calculate the proportions, since they were studying only full time physicians, and had to exclude the part timers. Lloyd's study deals with GEM, while all the other studies deal with pediatric emergency. Li's study is the only one that looked at all physicians providing care in a pediatric emergency department. The first objective of this study was to describe job description and history of physicians providing emergency care in Canadian pediatric emergency departments. Care provided solely in a fast track area was deemed to be a suitable exclusion criterion. The minimum number of shifts per month to be included in the study was 2. The purpose was to fully describe those physicians who are providing care in the emergency departments, rather than trying to define the minimum number of shifts that would meet the criteria for belonging to a division of pediatric emergency medicine. One can postulate that all children treated in a Canadian pediatric emergency department should be seen by physicians who have certain training, and work all shifts, with a given minimum number of clinical shifts per week, but I was more interested in seeing the characteristics of all physicians providing care in 2000. To set the minimum bar too high would have prevented the description of physicians who are seeing children on a regular basis in the main part of a Canadian pediatric emergency department. Table 42 explores the effect of changing the definition of full time and changing various minimum inclusion criteria on the sample size, and percentage of full time physicians in this study. By applying Nozicka's definition of fulltime to our cohort, the percentage of part time physicians increases. As various minimum inclusion criteria are applied, the sample size drops, and the proportion of full time physicians increases.

Table 42. Effect on study numbers and proportion of full time physicians as study inclusion criteria, or definition of full time is changed

| Definition | Unaltered | Nozicka | < 4 | < 6 | < 8 |
|------------|-----------|-----------|----------|----------|----------|
| N | 146 | 146 | 119 | 97 | 74 |
| Full time | 51 (35%) | 28 (19%) | 51 (43%) | 50 (52%) | 47 (64%) |
| Part time | 95 (65%) | 118 (81%) | 68 (57%) | 47 (48%) | 27 (36%) |

N = total sample size. Unaltered = current study numbers and definitions. Nozicka Full Time = full time physicians working exclusively working in PEM with > 20 clinical hours per week. < 4 = defining part time as at least 4 shifts per month. < 6 = defining part time as at least 6 shifts per month. < 8 = defining part time as at least 8 shifts per month.

Fritz and Lantos, in 1989, wished to estimate the number of part time pediatricians in the USA.(35) They included women who worked as little as 4 hours per week. Lichtenstein field tested his job satisfaction score on part time physicians who worked as little as 12 hours per month. These are two examples of published work that included part time physicians.

The final argument on inclusion has a twist. If, as in table 42, we exclude any physician who worked less than 4 shifts a month, how do we then classify the 27 physicians who work a small number of regular shifts in the emergency department? "Occasional" or "casual worker" does not quite fit because they do provide regular care. I would argue that "part time physician" is the appropriate descriptive term to use, and this is my rationale for the criterion of a minimum of 2 shifts per month as the inclusion criterion for this study.

5.6 Job satisfaction and predicted attrition

Job satisfaction "can be conceptualized as the difference between what a worker experiences on the job and what he or she wants or expects to find."(18). Thus

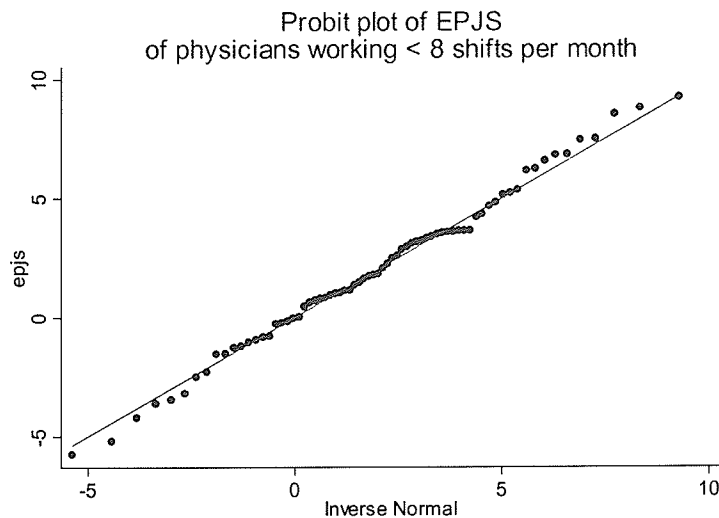
dissatisfaction can really be called, "disappointed expectations". Job satisfaction has been seen to be important in job turnover, field turnover and quality of care.(1;23) In our study Lloyds EPJS and GJS instruments were used as measures of job satisfaction. It is the only scale which was devised for measuring job satisfaction of emergency physicians. It has been tested for reliability and validity (appendix 1). All the testing was carried out on a cohort of full time general emergency physicians. Could it then be invalid for part time emergency physicians? Lloyd based his work on Lichtenstein's basic design. Lichtenstein tested and used his survey on both full time and part time physicians. Lloyd's domains are very similar to the original domains that Lichtenstein used. Whenever a scale is used outside its original cohort, there are always questions of reliability and validity. To be able to compare job satisfaction scores between full time and part time physicians it was necessary to use the same scale. It was felt that it was better to use a scale that has been fully tested on a very similar population to a portion of the current study population, than to use a scale that has never been tested.

It was Lloyd's hope that the tool would be able to discriminate between those who would stay and those who would leave emergency medicine. The EPJS was unable to accomplish this task; however the GJS could do some predicting.(1) There are many factors which affect the decision to leave a job or the practice of EM, and job satisfaction is only one of them. There will always be those who really love and have an excellent fit with their job, but because of family decisions they choose to work in another centre where the job is not as suitable.

In the introduction, it was argued that using Lloyds' scales for this physician group is appropriate. One of the benefits of this scale is that it has a 7 point Likert scale which does allow a zero position statement for any or all of the items. The responses

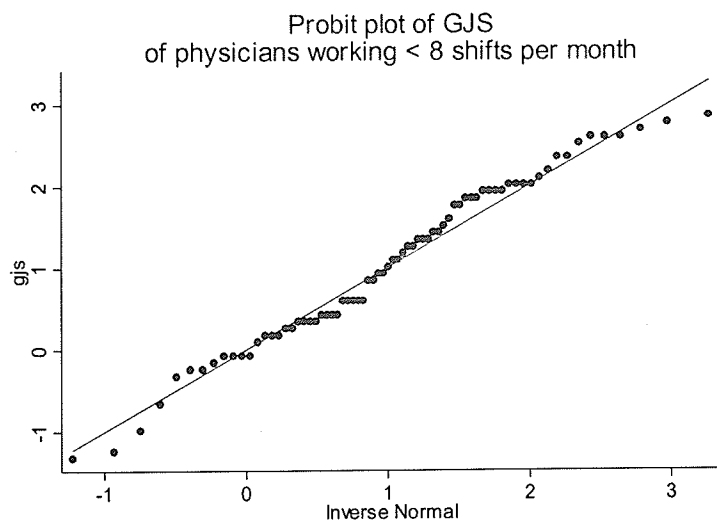
generated by our physicians on either of the scores were normal in distribution (figures 1 and 2). Those distributions included all physicians. Due to the unknown response of these measures to part time physicians, the sample was divided in two: all those physicians who were full time or who worked 8 or more shifts per month, and those who did not meet those criteria. Figures 7 through 10 demonstrate that both scores behave in a normal manner with either category, suggesting that part time criteria do not result in skewed satisfaction scores on Lloyds' scales.

Figure 7. Probit plot of EPJS for part time physicians who work less than 8 shifts per month



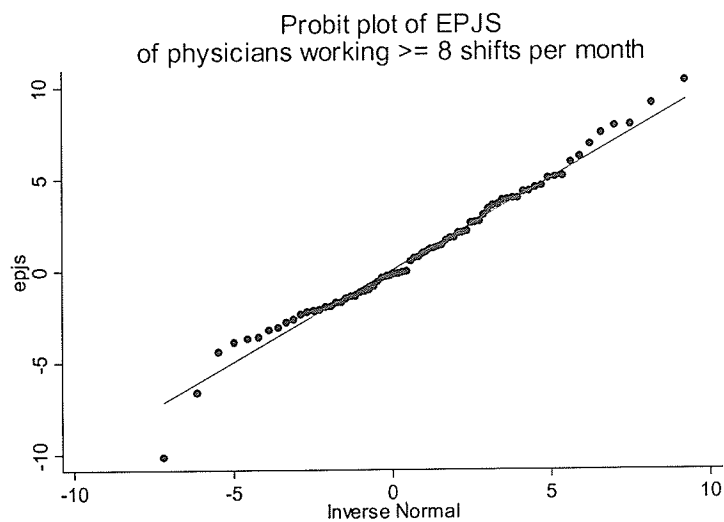
Straight line indicates distribution of normal

Figure 8. Probit plot of GJS for part time physicians who work less than 8 shifts per month



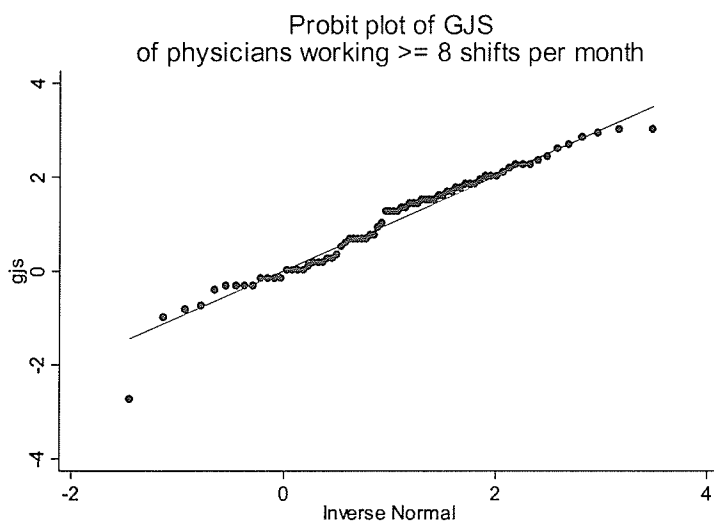
Straight line indicates distribution of normal

Figure 9. Probit plot of EPJS for full time physicians or those who work 8 shifts or more per month



Straight line indicates distribution of normal

Figure 10. Probit plot of GJS for full time physicians or those who work 8 shifts or more per month



Straight line indicates distribution of normal

Table 43 compares the scores obtained in our study compared with Lloyd's.(26)

Table 43. Comparison of EPJS and GJS scores in this study with Lloyd's EM physicians

| | Lloyd (n=223) | Craig (n=146) |
|--------------|--------------------|-------------------|
| EPJS (range) | 2.32 (12.0, -12.0) | 1.5 (10.3, -10.2) |
| EPJS SD | 3.8 | 3.5 |
| GJS (range) | 0.90 (3.0, -3.0) | 1.02 (3.0, -2.75) |
| GJS SD | 1.1 | 1.1 |

EPJS and GJS expressed as means. SD = standard deviation

Lloyd considered a difference in 2 EPJS units and 0.5 GJS units to be a clinically important difference. Lloyd's study revealed a higher EPJS score than our study, but the mean difference is only 0.8 units, which is less than Lloyd's a priori clinically important difference. The difference in the GJS scores is 0.12, which is very similar indeed, and

again less than the clinically important difference of 0.5 units for this score. It is interesting that our physicians' EPJS score is less than Lloyds (connoting lower emergency physician job satisfaction), however the GJS score is higher (connoting higher global job satisfaction). The standard deviations are quite similar between the studies for either score

Regression analysis has been performed that showed that the EPJS in our study is positively affected by the state of marriage, full time status, and if one's partner works shift work. It is negatively affected by the number of clinical shifts per month. Income was grouped into three levels for the analysis, and has a nonlinear relationship to the EPJS score. The high income bracket positively affects the score and the middle income bracket negatively affects the score as compared to the low income bracket. Of these independent variables, marriage and one's partner working shift work really reflect the internal characteristics of the physician rather than being externally modifiable within the job description. Hall(36) did note that physicians who remained in emergency medicine were significantly more likely to be married than those who left emergency medicine which supports our regression model in that marriage yields a higher satisfaction score. The external variables that can be changed are full time status, number of clinical shifts per month and income.

One's partner working shift work is a reflection that shift work has an impact on job satisfaction. There can be no other explanation for why this variable is important. I had initially thought that having one's partner work shift work would make life potentially harder, but if that was the case, this factor would be negatively correlated with the satisfaction score. Having a partner who works shift work positively affects the satisfaction score. An explanation for this finding is that this partner is better able to

understand the shift working physician compared to a partner who does not work shifts.

The number of clinical shifts per month is negatively correlated with the satisfaction score. One explanation is that this entire cohort is lazy, and hence the fewer hours worked, the more satisfied it is. I reject this explanation for 2 reasons: first, if this was true then full time status should also be negatively correlated with the score, and it is not; second Lloyd's regression demonstrated a similar finding and hence they would have to be lazy as well. At the initial stages of the regression analysis, several other factors varied statistically with clinical shifts per month (table 28). They were weekends per month, weekend hours per month and amount of sleep after a night shift. Once the number of shifts per month was added, these other factors became less statistically significant. That is likely because altering the number of shifts per month also changes the number of nights and weekends. This explanation ties in well with the knowledge from previous studies that shift work is the major reason for physicians to leave the field of emergency medicine, as well as some of the comments raised about shift work in the interviews. An interaction between full time status and the number of clinical shifts per month was not found.

How does our regression analysis result compare with Lloyd's work? Lloyd(26) found that weeks of holiday per year, involvement in medical education, being department head, clinical hours per year, region and age were significant predictors of the EPJS score. All of these were independent variables in our study, but the only one which had concordance in the model was the number of clinical hours per unit time. In both cases these were negatively associated with the EPJS score. Lloyds model using the aforementioned 6 variables provided him with an $R^2 = 0.233$, $p < 0.001$. Our model provided an $R^2 = 0.243$, $p < 0.0000$.

Our GJS model was significant with the variables married, full time, clinical shifts per month, number of children at home, and the three earning categories. This model gave an $R^2 = 0.248$, $p < 0.0000$. The state of being married and full time status were positively associated with the GJS. The number of clinical shifts per month and the number of children at home were negatively associated with the GJS. The middle earning category was negatively associated and upper earning category positively associated as compared to the lowest earning category. Lloyd's independent variables were not statistically significant in explaining the GJS, so no comparisons can be made. Of note in our model, marriage, full time status, clinical shifts per month, and income were predictors of both the GJS and EPJS. This should come as no surprise for the GJS and EPJS should and do correlate with each other.(37) Losek(27) found that increasing clinical hours was negatively associated with job satisfaction. The idea that an increasing number of children can decrease global job satisfaction when placed side by side with the in depth interviews becomes explainable. The more complex a family becomes, then the stronger will be the pull for the shift working parent to be involved in the usual parent-child activities. While a child is preschool, this can occur at any time. Once a child is in school, then these activities get bumped into the evening, and that directly conflicts with roughly 50% of the shifts usually assigned to a full time physician. Two physicians within the interviews shed light on this:

“It wasn't as difficult when they were under 5 and they were home most of the time. Now that they are often in soccer, in swimming and a lot of activities it is somewhat more difficult to juggle.”

Full time status was a predictor of increased satisfaction. Reflecting upon this, there are good explanations of why this should be so. As a full time physician one knows

where one belongs and one's duties are in one place. As a part time physician, one may have 2 or 3 areas of responsibility and feel squeezed for time. Possibly, it also reflects a sense of identity. Am I a general pediatrician who does some work in the emergency, or an emergency physician who dabbles a bit in general pediatrics? Another possible reason why part time physicians could have a lower satisfaction score is that they feel they are not able to maintain their clinical skills compared to their full time colleagues. This could result in less confidence when approaching an ill child who requires an urgent procedure, and hence a lower satisfaction score.

The analysis of income is interesting. The middle income group is the least satisfied. One possible explanation is that those in the lowest income earning group have chosen their jobs for reasons other than income, and as such are satisfied with their remuneration. The middle income group compare themselves to the higher group and as such are not satisfied. The highest income group is content with their pay. Hall(36) found that physicians leaving emergency medicine had lower gross annual incomes than those who stayed. The cut off seemed to be under \$100,000 per year.

To summarize, the regression analysis suggested that the clinical hours per month, partner works shift work, and number of children at home all have an effect on job satisfaction. I have postulated that these independent variables reflect the effect of shift work on job satisfaction. Income, marriage and full time status also impact job satisfaction. At most, only 3 of these 6 variables can be controlled by those given the responsibility of running a smooth PEM division.

5.6.1 Predicted attrition rate

In our survey we asked if physicians would be leaving the field of PEM in 1, 5 or 10 years. The proportion of part timers saying that they would leave was statistically no different from the full timers even though the part timers 5 year attrition rate was larger than the full time physicians (table 44).

Table 44. Five year predicted rate for leaving PEM, or EM or medical specialty

| Study | Study year | Subpopulation | Attrition rate |
|--------------|------------|--------------------------|----------------|
| Chande | 1994 | | 6% |
| Chande | 1999 | | 21% |
| Craig | 2000 | Full time physicians | 16% |
| Craig | 2000 | Part time physicians | 26% |
| Doan-Wiggens | 1989 | | 23% |
| Shugerman | 1997 | pediatric subspecialists | 4% |
| Wiley | 1997 | < 40 years old | 10% |
| Wiley | 1997 | > 50 years old | 30% |

Doan-Wiggens(16) studied general emergency medicine physicians, while Shugerman studied pediatricians and pediatric subspecialists. All the other authors mentioned in table 38 studied PEM physicians. Chande's cohort and Wiley's study are a reminder that this data can not be interpreted without having some idea of the cohort's age. Chande's 1994 and 1999 studies deal with the same cohort. In 5 years they have gone from a 6% 5 year attrition rate to a 21% attrition rate. Wiley examined the effect of age on attrition rate. (38) The older cohort had a much higher attrition rate than the younger group. This likely explains the difference between the attrition rates between the full time and part time physicians in our study. The part time physicians are likely an older group ($p = 0.07$). There is no one older than 55 years in the full time group while there are 8 in this age

group in the part time cohort. Our overall 5 year recorded attrition rate of 23% is identical to that of Doan-Wiggins (table 13).

Rittenhouse in 2004(39) tried to validate physicians' self reported intentions to leave clinical practice with actual departure from clinical practice. What she found was that, while physician dissatisfaction had a strong association with intention to leave practice, it was not associated with actual departure. She concluded that intention to leave is not correlated with actual leaving (except in older physicians) but rather that intention to leave is itself an indicator of physician satisfaction. This also implies that the only way of predicting the attrition rate of a specialty is by measuring it. This measurement requires the longitudinal following of a cohort.

5.7 Observations from different groups

5.7.1 Fellowship trained physicians

In our cohort this particular group has had a mean duration of 5 years in their current job with a range of 0.5 years to 14 years. This is a young group with 20 of the 30 being younger than 40 years. Half of these graduated from medical school between 1990 and 1994. Almost all of them (88%) did all or some portion of their fellowship training in Canada. Sixty percent are male and half of them (47%) work part time (table 17). Most of the part time work is a 0.5 to 0.8 FTE, but one physician works a 0.2 FTE. Five of the 14 part time physicians had never worked full time in the PED and so could have chosen PEM for its ability to accommodate part time physicians.

“...the good thing about emergency medicine is that you can decide how many hours you want to work. You can choose to work ½ time, ¾ time, full time.”

The physicians who had worked full time chose to work part time either because of the effects of shift work (67%) or because of family commitments (89%).

This demonstrates that in Canada half of the physicians who have chosen and trained specifically for PEM work in the field on a part time basis.

5.7.2 Full time physicians: Directors, Non-directors

Directors have had a median of 6.5 years at their current work place compared to a median of 4 years for those who are not directors ($p = 0.03$). Directors represent 35% of all the full time physicians. The definition used in this study lumps together medical directors, assistant directors, fellowship directors and research directors. They continue to be clinically active doing 65 clinical hours per month, and 90% continue to do regular nights shifts per month. Thirty-nine percent of them do additional clinical work.

One expects directors to have worked for several years at a job before being appointed. The median of 6 years reflects the newness of the specialty. Removing the longevity of the directors from the rest of the full time physicians shows that they have not been at their jobs for a long time (median of 4 years). Nozicka, who just looked at PEM physicians working at least 20 clinical hours a week and exclusively in the PED, provided a rough distribution for the percent that had practiced PEM for a given number of years. Forty-one percent had practiced from 0 to 4 years, 41% from 5 to 10 years and 18% for greater than 10 years. In our cohort, 57% of full time, non-directors have worked full time for 0 to 4 years, 21 % from 5 to 10 years and 22% for greater than 10 years. This cohort has not quite as much experience as Nozicka's group.

5.7.3 Additional clinical work

“Do you do any other clinical work outside pediatric emergency?” was asked in the survey. Only 45(31%) said no to this. One-third of the full time physicians do clinical work outside the pediatric emergency while 88% of those who work part time do other clinical work (tables 13 and 14). Forty percent of directors do additional clinical work. The description about the type of additional clinical work is found in table 19. This question was in the survey to see what type of work the part time physicians did. I did not expect many responses from those that are working full time in the field. There are no other references to full time PEM physicians clinically working outside the department. Nozicka’s inclusion criteria specifically state, “full time PEPs working exclusively in pediatric emergency care and providing more than 20 hours of clinical service per week.”(28) The fact that he stated “working exclusively in pediatric emergency care” implies that he knew of physicians in the field of PEM that do branch outside their primary clinical area. Physicians were not asked why they do the extra clinical work.

Several reasons can be hypothesized for this non-emergency clinical work; earn additional income, add variability to one’s career, “career bridge”, and desire for follow up. These are only four reasons and there can be many more. If physicians are less likely to do full time PEM as they age, doing non-PEM work provides a potential career activity as those physicians enter into their senior years. Two physicians mentioned with regret that PEM does not allow for patient follow up.

“There’s a part of me that does miss some of the follow up, you know seeing the kids grow up and seeing the families over and over again.”

Some physicians may be doing the extra clinical work in order to experience patient follow up. Not all of the job descriptions of the extra clinical work allow for that (table

19) but general and consultant pediatric work comprised 54% of the responses, and they do allow for follow up.

Eighty-eight percent of the part timers are doing outside clinical work. This implies that they did not choose to go part time purely because of time constraints. Had it been purely a matter of too much clinical time, then I would have anticipated a lower percentage of the part timers doing other clinical work outside the ED. In the background of this thesis the British Plat Report was mentioned and the phrase, "Accident surgery is unlikely to provide a satisfying career for a consultant" was highlighted (40). "Accident surgery" was the current term for emergency medicine, and "consultant" is our equivalent of a fully qualified specialist. Could it be that the exclusive practice of PEM is satisfying for a few, but not for most physicians?

5.7.4 Physicians who did not choose PEM as a career

"When did you decide upon pediatric emergency medicine as a career?" From the responses, 16 physicians made it clear that PEM was not their career. There was a tone in some responses that implied a certain obligation to perform this clinical work.

"It is not, as a sub-specialist at my hospital, I'm being asked to do ER coverage in general pediatrics"

These circumstances could reflect upon a lack of interested and available PEM physicians; this could be the institutions way of funding research or sub specialists; or there could be other explanations.

5.7.5 Clinical hours per month and job duration

Figures 3 and 4 are graphs plotting the number of clinical hours per month on the y axis against the number of years at the current job on the x-axis. Figure 3 includes all physicians, while figure 4 is restricted to those physicians who did not choose PEM as a career. The graphs demonstrate that as number of years at the current job increases, the number of clinical hours seems to fall. Figure 3 shows a falling off around the 15 year mark, but there are 4 physicians who are doing around 100 clinical hours per month who have been in their jobs for 20 years. Caution must be applied in putting too much weight to these graphs; in 2000, many PEDs had only had full time staff for 15 years, and so figure 3 may just be reflecting that reality.

5.7.6 Physicians who used to work full time

Twenty-seven part time physicians used to work full time. Forty-one percent of these were male. They worked a median of 4.3 full time years before reducing to part time status. Sixty percent of them work between a 0.5 to 0.8 FTE, but another 30% reduced to a 0.1 to 0.25 FTE. Sixty percent of them chose part time work because of the effects of shift work while they were working full time. As Lloyd and Hall have pointed out, shift work is the most important reason provided when general emergency physicians are asked why they left the field of EM.(1;36)

5.8 Issues raised by in depth interviews

Three areas from the interviews will be discussed: the attractive aspects of PEM, respect and PEM and finally shift work.

5.8.1 Attractive aspects of PEM

The attractive aspects of PEM that were mentioned were:

- The rich variety of medical and surgical illness that presents to the ED.
- The privilege of often being the first physician to deal with acute illness.
- The opportunity to treat children and their families with all their varied characteristics.
- A sense of good collegial relations with all members of the health care team.
- The opportunity to teach health care learners of all types
- The defined parameters of the clinical duties that accompany the role of a pediatric emergency physician.
- The flexibility of being able to work full or part time
- Certain aspects of shift work.

Nozicka asked the respondents of his 1993 survey to rank 7 aspects of PEM in order of desirability. "Diversity of clinical practice" was ranked as the most desirable aspect of PEM, and "medical acuity of clinical practice" was the second.(28) This is really identical with the top three points in our series. No other papers provided similar data to enable any other comparisons.

One of the defined clinical parameters that was mentioned as a positive aspect about PEM was the freedom from a pager.

"I like the fact that we don't have to carry a beeper, that you can have a schedule far in advance and sort of make changes to that schedule to fit your lifestyle."

I was interested in this statement because in the quantitative section 38% of the physicians answered affirmatively to the question, "Are you ever on-call, so that when the

ED is very busy you can be called in?” No administration is happy with long patient wait times. To deal with the problem of a sudden influx of patients, several departments have an on call system, so that if the ED is busy, an on-call physician is called in. This policy may conflict with the pleasure of being free from a pager.

5.8.2 Respect

“I think perhaps some of the other pediatricians might start recognizing the ER folks (physicians) as subspecialists rather than just residents out there trying to figure out their careers.”

Most of the physicians felt that pediatric emergency medicine was not recognized as a valid and satisfying career by the majority of their pediatric colleagues. One physician pointed out that this was the case with general emergency medicine when it first started, but that opinion slowly changed. Another physician acknowledged that respect was slowly being gained. Nozicka noted numerous comments regarding the “lack of acceptance” by colleagues. No other PEM literature commented on this.

These attitudes towards those who work in PEM reflect the newness of the specialty, and will likely disappear with time.

5.8.3 Shift work

Shift work, in the interviews, was described as having positive characteristics and negative characteristics.

The positive aspects of shift work that were mentioned included the ability to have a very flexible schedule. This allowed our physicians to go climbing while the rest of the world is at a desk, take 2 weeks off and not lose a lot of income, go shopping or visit

attractions at non-peak times. For those with young children it has allowed parents to be with the child during the day, and often allowed a parental team to care for their children without resorting to regular babysitters.

“...the shift work I do like to some degree. I like having days off to go and climb when the rest of the world is at a desk somewhere 9 to 5...”

“For us it was ideal (being able to work evenings and nights) because you could be with your child for so much of the time. We did not see it as a hardship. We saw it as the best compromise; to have a career, make a contribution, and yet be available to your children.”

For some physicians the knowledge that when they are not in the ED, they are not going to be paged and then called on for patient care is a bonus, although 38% of our cohort do take call for clinical duties in the PED.

The negative aspects of shift work were mentioned by all the physicians who worked rotating shifts. Two physicians were finding the evening shifts very difficult given their family circumstances with teenagers and school aged children who were becoming involved in team sports. One physician found that when she was working full time, she really noticed that she had to work every second weekend, while her husband and his social group had every weekend off. The physical effects from constantly changing shifts, and the effects of night shifts and their impact on sleep, well being, and aging were raised as issues that did not have obvious solutions.

“It wasn’t as difficult when they were under 5 and they were home most of the time. Now that they are often in soccer, in swimming and a lot of activities it is somewhat more difficult to juggle.”

“It becomes very difficult when he has all the weekends off ... and I’m working half the weekends in a month.”

“I think just your physical tolerance of doing shift work and bumping back and forth between days, nights ... I didn’t believe ... when I was 30 or 35 that it would affect me. People always said by the time you’re 50 its going to be horrendous.

Well, I don’t think that I can ignore what they’ve said now”

Shift work seems to suit physicians who are young. The disadvantages appear with age, family commitments and specifically older children. I have already argued that the effect of shift work is seen to impact on job satisfaction scores indirectly through 3 other variables: number of clinical shifts per month, number of children at home, and partner works shift work.

This study is not alone in suggesting that shift work is difficult. Two studies have looked at the reasons why physicians have left the discipline of emergency medicine.(1;36) Both Lloyd and Hall found that shift work, emotional stress and family considerations were the top 3 reasons provided by the physician for leaving the field of emergency medicine, with shift work being the top reason in both studies. In our study 59% of those physicians who used to work full time, and who now work part time did so because of the effects of shift work. Nozicka’s full time cohort ranked “shift work and schedule” as the least desirable aspect of their practice.(28) Fifty-seven percent of Losek’s cohort of program directors did not believe that the majority of clinical faculty could practice PEM after the age of 50 years in a full time capacity. The primary reason for believing this was the shift work and overnight shifts.(27)

The effects of shift work on health in general have been looked at in increasing depth over the past 20 years. It is clear that shift work is associated with sleep disorders,

gastrointestinal disease, cardiovascular disease, lipid problems and possibly an increase in type 2 diabetes.(41;42) Working a night shift increases the likelihood of being involved in a traffic accident, and duration of wakefulness after 25 to 27 hours provides the same type of task performance to having a blood alcohol level of 0.1%.(41;43) One may point out that shift workers should not be up for 25 hours at a time. Unfortunately, many physicians have trouble sleeping prior to their first night shift, and so by the time they are finishing their shift, they often have been up for most of the past 24 hours.

“I don’t sleep before (a night shift) and I don’t sleep well after.....I don’t feel right for 2 or 3 days after (a night shift)”

It is known that some people seem to be able to adapt to the shifts better than others. Hennig(44) studied 24 nurses who were night shift workers and was able to divide the group into 6 non-adapters, and 18 adapters. The non-adapters did not show changes to their circadian cortisol secretion, and this was associated with lower durations and less consistency of recovery sleep.

To sum up, shift work has its positive and negative aspects. For the life of the individual who has chosen to work in the field it is part of the work. The advantages and ability to thrive on shift work attract the younger physician. The negative aspects have more of an effect on the older physician. One way of mitigating the effects of shift work is to work part time, thereby reducing one’s exposure to the less pleasant aspects. Our study suggests that this occurs.

5.9 Answers to hypotheses

The first hypothesis is that there would be a larger proportion of part time physicians in this study than full time physicians. This guess was correct. Sixty-five percent of the cohort work part time. The high proportion of part time staff in Winnipeg was not unique to Winnipeg, but a reflection of the PEM field across Canada.

The second hypothesis was that there would be a significantly higher proportion of women as compared to men in the part time cohort when compared with the full time cohort. This hypothesis was wrong. There is a higher proportion of women in the part time cohort (53%) than the full time cohort (39%), but the result was not statistically significant ($p = 0.12$, table 14)

The third hypothesis was that part time physicians would have higher job satisfaction scores than full time physicians. This hypothesis was wrong. In the regression analysis, full time status was a significant factor in explaining both the EPJS and GJS. In both cases full time status was associated with higher satisfaction scores than part time status.

The fourth hypothesis was that certain aspects of shift work such as an increasing number of nights per month and a longer recovery time following nights would be associated with a decrease in job satisfaction. These two particular aspects of shift work were not found to be statistically significant in the models. Therefore this hypothesis was wrong. However the rationale was provided that linked partner working shift work, number of children at home, and number of clinical shifts per month with shift work. Each of these variables was involved in having an impact on job satisfaction.

The fifth and final hypothesis was that part time physicians will have worked longer in the field of PEM than full time physicians, and that full time physicians with a

larger administrative portfolio will have worked longer than those who do not. This was correct. Part time physicians had worked a median of 8 years at their current job, while full time physicians who were not directors had worked for a median of 4 years (tables 18 and 23). Full time physicians who had an administrative portfolio have worked a median of 6.5 years at their current job. Each of these values was statistically significant from each other.

5.10 Strengths of study

- Included all physicians who work 2 or more regular shift in a Canadian pediatric emergency department.
- No other study has looked at PEM in Canada.
- No study has looked at the part time physician group.
- Used a validated multi-item measure of satisfaction.
- High response rate indicating strong subject interest.
- Incorporated open ended interviews which added depth to the quantitative survey.
- Designed to have a longitudinal component.

5.11 Weaknesses of study

- Survey was done in 2000, and results are not yet published. PEM is a new and potentially fast changing field. As a consolation, Wiley's study took 5 years to get published.

- Age ranges and earning ranges were asked instead of specific figures. This made the analysis of these variables much more difficult.
- Satisfaction score has not been validated on part time physicians. For those who were very part time, a major part of their job satisfaction would have been produced by their other work. This could have obscured important factors to full time PEM physicians from being significant on the regression analysis.

5.12 Further research questions

- To do manpower planning in Canadian PEM, it would be very useful to know what the attrition rate is in the field. It is also necessary to know how many PEM physicians plan on working part time, and how part time is comfortable for them.
- There is no literature on how many shifts are necessary to maintain competency in this acute care field. Given the proportion of part time physicians this is a question that should be addressed. It is possible that teaching a PALS course on a regular basis, or going to the operating room with the anaesthetist is an adequate way to maintain acute care skills.
- Work should be done to find out why so many physicians in the field do clinical work outside emergency and is the rate higher than other pediatric subspecialists? The answer to these questions could be important in career counselling.

Chapter 6 - Conclusions

Pediatric emergency medicine is a new sub specialty and as such the parameters that define it are still being laid down.

The first objective of this study was to describe the sociodemographic characteristics, training, job description and history, shift work parameters and job satisfaction of physicians providing emergency care in Canadian pediatric emergency departments. The second objective was to explore the relationship between job satisfaction and any of the aforementioned parameters. Interviews added depth to the quantitative data.

The first objective has been achieved. Forty-four percent of the time, a patient coming to a pediatric emergency department will be treated by a physician who considers themselves a part time physician within the department. This part time physician has a 53% chance of being female, and likely does other clinical work outside the department. She has been at her job for a median of 8 years, and has an 85% probability of having her FRCPC in pediatrics. She works 5.5 shifts a month in the emergency, and has a 28% chance that she used to work full time for the department. Her gross annual earnings in the year 2000 would likely be between \$120,000 and \$139,000.

There is a 56% chance that our patient will be seen by a full time physician. This physician has a 61% chance of being male and has worked at his current place of work for a median of 4 years, if he is not a director. He does 13.6 shifts per month and 2 weekends per month. He has likely participated in research, and is involved in teaching even when he is not on shift. There is a 30% chance that this individual has done a fellowship in pediatric emergency medicine. Gross annual income would likely be the same as his part time colleague.

The second objective has been achieved. Factors that affect job satisfaction in this cohort include married status, partner working shifts, number of children at home, full time status, income level and the number of monthly shifts. Hospital administration may have some input into the latter three factors, but has no jurisdiction over the first three.

“To maintain a high-quality emergency health services system, we need to keep experienced physicians with proven clinical skills on the job.”(1) Pediatric emergency medicine is a field that offers exciting and satisfying clinical medicine. It provides a niche for those physicians who want to work full time or part time. As physicians age, the side effects of shift work can undermine the benefits. All physicians involved in the field need to provide careful thought to how best keep their field content and functioning within the constraints of providing reliable and excellent clinical care 24 hours a day, 365 days of the year. Time will tell if the parameters that surround the job of PEM will allow it to flourish, or if the problems that assailed casualty medicine in England will affect this area too.

The End

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Appendix 1 Development of a satisfaction tool for emergency physicians

1.1 Development

In 1994 Lloyd published "Development of the Emergency Physician Job Satisfaction Measurement Instrument." (26). Lloyd's first step was a literature review to discover if there was any reliable scale that had been developed to measure emergency physicians' job satisfaction; he was unable to find such a scale. The development of his instrument was based on the methods as per *Health Measurement Scales: A Practical Guide to their Development and Use*. (45) Once it was ascertained that no scale existed, he set about developing domain development, devising items and choosing scaling options.

Six domains were generated by a review of previous research, theories/hunches, and expert opinion. These domains are: administrative autonomy, clinical autonomy, resources, challenge, relationships to others, and lifestyle. Using the same domain generating techniques, at least 20 items for each domain was generated. Six experts in emergency medicine evaluated each item for readability, clarity, face and content validity. A total of 228 items were developed. A 7 point Likert scale was used with the scale ranging from -3 to +3. Vertical bars were placed at the ends and between each number. The adjectival descriptions placed at either end were: strongly disagree over -3, and strongly agree over +3. Neutral was placed over the central 0. A global instrument was also developed. The instrument was then sent (in 2 mailings) to 100 Ontario emergency physicians. The goal was to ensure a sample of at least 50 full time emergency physicians. Sixty-one full time physicians completed the instrument which allowed frequency endorsement analysis, and analysis for homogeneity. Frequency endorsement analysis eliminated 35 of the 228 items, and analysis for homogeneity eliminated 36

items. No items were eliminated for redundancy. The final pilot instrument was therefore left with 142 items with the global instrument having 15 items.

The pilot instrument was sent to 395 emergency physicians across Canada using Dillman's method for postal surveys. The response rate was 67.9% (268 of 395). Of these only 223 were full-time physicians. Factor analysis, using the SPSS Factor Program, was performed using these responses. Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) test were used to test the appropriateness of the data within each domain. Eliminating 28 items ensured the all the individual remaining items had a KMO value of greater than 0.7. Cattell's scree test was then performed. This test identified a given number of factors in each domain. Varimax rotation caused the elimination of an additional 38 items. The final Emergency Physician Job Satisfaction (EPJS) instrument has 6 domains with a total of 79 items. The global job satisfaction (GJS) instrument has one factor with 12 items (Table A1).

The three factors within the domain of Administrative Autonomy are method of payment, shift work, and department administration. One of the two factors within the domain of Resources has to do with resources for direct patient care, and the other addressed personnel development. The two factors which comprised Relationships With Others are the emergency team and patients. One of the two factors within Lifestyle deals with friends and family, and the other with more general issues of health and income. All the other domains, including the GJS had but one factor.

The score for the each instrument is the sum of all the domain scores. The domain score is the arithmetic mean of all the items in that domain. This means that the EPJS, having 6 domains, can have a score of -18 to +18. The GJS score can range from -3 to +3.

Table A1. Number of Items, factors and internal consistency of the EPJS and the GJS instruments

| | No of Items | No of Factors | Alpha |
|---------------------------|-------------|---------------|-------|
| Domain | | | |
| Administrative autonomy | 22 | 3 | 0.87 |
| Clinical autonomy | 88 | 1 | 0.84 |
| Resources | 12 | 2 | 0.84 |
| Challenges | 5 | 1 | 0.71 |
| Relationships with others | 15 | 2 | 0.81 |
| Lifestyle | 17 | 2 | 0.89 |
| | | | |
| Instrument | | | |
| EPJS | 79 | 11 | 0.81 |
| GJS | 12 | 1 | 0.91 |

(modified from Lloyd 1994)

Cronbach's α has been provided for each domain in table 4.1. Cronbach's α is one of the tests used to ensure that the items on a given scale are reasonably homogeneous and as such is a measure of internal consistency of a scale. All of the items for a given domain should be measuring different aspects of the same thing, rather than different parts of different attributes.(45) Ideally α should be between 0.7 and 0.9. An α below 0.7 indicates that the scale is not reliably measuring a single attribute, and if the value of α is higher than 0.9, the scale likely has some redundant items.

1.2 Field and validity testing

At this stage the EPJS and GJS have documented face and content validity with internal consistency. The authors now needed to test the scales' convergent or concurrent validity. There are already tests that measure job satisfaction, and burnout in a general sense, and so this new instrument should at least have some correlation with other known and validated instruments. It has been suggested that the correlations between the instruments should lie between 0.4 – 0.8. Lower correlations suggest that either the reliability of one the measures are not up to par or the scales are measuring different phenomena. A higher correlation puts into question the need for developing a new scale in the first place.

Table A2. Correlation of the EPJS instrument scores with scores from other validity measures

| Validity Measure | Pearson Coefficient |
|------------------------------------|---------------------|
| GJS instrument | 0.69 |
| Index of job satisfaction | 0.58 |
| Satisfaction wth life scale | 0.42 |
| CES-D self report depression scale | - 0.42 |
| Burnout inventory | |
| Personal accomplishment | 0.39 |
| Depersonalization | - 0.42 |
| Emotional exhaustion | - 0.45 |

Modified from Lloyd(26)

The 268 physicians who were each sent a copy of the pilot instrument (used for the final factor analysis) were also sent four other instruments: Brayfield-Roth Index of

Job Satisfaction(46), Satisfaction With Life Scale (SWLS)(47), CES-D Self Report Depression Scale (CES-D)(48), and the Maslach Burnout Inventory (MBI)(49). All the correlations between these tests and the EPJS were between 0.4 to 0.8 with a $P < 0.001$ (see table A2). All the between the GJS instrument were also between 0.4 and 0.8 (see table A3).

Table A3. Correlation of the GJS instrument scores with other validity measures

| Validity Measure | Pearson Coefficient |
|------------------------------|---------------------|
| EPJS instrument | 0.69 |
| Index of job satisfaction | 0.58 |
| Satisfaction with life scale | 0.50 |

(All statistically significant at $P < 0.001$)

The final test of the instruments reliability was evaluated through a test-retest study. The instruments were given to the same subjects on two separate occasions, but separated by 30 days. Fifty subjects were chosen by a random process from the group who had undergone the Factor Analysis study. Forty-two (86%) of the 50 responded, which was higher than the minimum of 30 subjects which had been deemed necessary to complete this phase. Test-retest reliability is measured by analyzing the correlation between the respondents' scores on the initial answering and then the retest by using Pearson's correlation. A coefficient greater than 0.7 is considered an acceptable demonstration of stability. Table A4 (from Lloyd) provides the Test-retest correlations as well as the mean scores for the different domains, as well as for the overall EPJS instrument.

Table A4. Test and retest correlation of EPJS domains and final EPJS scores

| Domain | Mean (SD) | Test-Retest Coefficient |
|---------------------------|--------------|-------------------------|
| Administrative Autonomy | | |
| Test | 0.67 (0.59) | 0.72 |
| Retest | 0.88 (0.83) | |
| Clinical Autonomy | | |
| Test | 0.86 (1.16) | 0.80 |
| Retest | 1.10 (1.16) | |
| Resources | | |
| Test | -0.38 (1.10) | 0.88 |
| Retest | -0.34 (1.02) | |
| Relationships with others | | |
| Test | 0.10 (0.71) | 0.86 |
| Retest | 0.23 (0.62) | |
| Lifestyle | | |
| Test | 0.41 (0.96) | 0.88 |
| Retest | 0.66 (0.89) | |
| Challenge | | |
| Test | 0.65 (1.10) | 0.82 |
| Retest | 0.67 (0.98) | |
| Final EPJS instrument | | |
| Test | 2.80 (3.46) | 0.83 |
| Retest | 3.25 (3.99) | |

In Lloyd's abstract to his thesis he writes, "This thesis has developed and tested a reliable, valid and stable instrument for measuring emergency physician job satisfaction." (50) He does go on to state that predictive validity awaits further research.

1.3 Predictive value of the EPJS and GJS

In the winter/spring of 1994, three and a half years after Lloyd finished his work in constructing the EPJS and GJS instruments, he set out to test the predictive value of the instruments. The 223 full-time Canadian emergency physicians who were used in the

factor analysis and validation stage of the instruments were the included subjects. Each was mailed a survey which contained 42 pretested questions. Four questions asked about current job status, 12 were demographic, 12 comprised the GJS instrument, and for those who left EM, there were 14 "reasons for leaving" which incorporated a 3 point scaling device.

Of the 223 survey questionnaires mailed, 209 were returned, for a response rate of 93.7%. The current job status of 12 physicians was determined through telephone follow-up, giving a response rate for the primary study questions of 99% (221/223). Over the three and a half years, 19% (42/221) physicians had left their original positions for new EM jobs. Twenty-three out of 223 (10.4%) had left the field of EM completely, and 21 out of 193 (10.9%) were no longer in full time practice. Fifty-one respondents out of 194 (26.3%) were department heads.

The 1990 scores on the EPJS ranged from -12 to +12 (mean = 2.32, SD = 3.8), and the scores on the GJS ranged from -3 to +3 (mean 0.90, SD = 1.1). There was a significant difference ($p = 0.004$) between the GJS mean scores for physicians who left the practice of EM compared to those who stayed in EM. There was no difference in the EPJS scores between those who left and those who stayed. Neither scale could predict who was going to change jobs. Table A5 provides the mean scores along with the standard deviations (SD) of the GJS and EPJS for three physician groups: those who stayed in the same EM job, those who changed one EM job for another EM job, and those who left the field of EM completely.

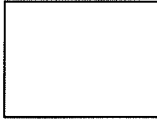
Table A5. Instrument scores for each physician group

| Instrument (Range) | Same job | Different EM Job | Left EM Field |
|--------------------------|-------------|---------------------|------------------|
| GJS (-3 to +3) | 0.98 (1.03) | 0.89 (1.05) | 0.15 (1.61) |
| EPJS (-18 to +18) | 2.48 (3.66) | 2.42 (3.58) | 1.59 (4.41) |

No significant difference between any of the EPJS scores

Both GJS scores of those who stayed in EM significantly different from those who left

A receiver operating curve (ROC) for the GJS instrument was conducted. The best cut-off was a score of 0; those having a score ≤ 0 being 2.6 times as likely to leave as those with a score of > 0 . The positive predictive value (PPV) was 22.4%, which is not highly predictive of those who will leave. The negative predictive value (NPV) of 90.4% for those with GJS scores > 0 suggests that the instrument can predict who will stay in the field. The authors were quite disappointed in the predictive validity of the EPJS. They hypothesized that although each individual scale scores were internally consistent; the sample size was not large enough to do a factor analysis on the multiscale instrument as a whole. To do so would require at least 790 respondents.



Appendix 2
Canadian Pediatric Emergency Survey 2000
Demographics and Job Satisfaction
Emergency Physician Job Satisfaction Instrument (Lloyd)

To start out we have some questions about your administrative autonomy

| | STRONGLY DISAGREE | | | | NEUTRAL | | STRONGLY AGREE | |
|---|----------------------|----|----|---|---------|---|-------------------|--|
| 1. I take part in the planning of policies in my hospital and department. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 2. I am satisfied with the payment schedule for treating non-urgent patients. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 3. Adequate attention is paid to our suggestions about the administration of my department | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 4. There is a mechanism for dealing with EP complaints about other physicians, nurses or consultants that allows problems to be resolved. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 5. I feel the administration frustrates my efforts to get committee work done. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 6. I am satisfied with the way the department is administratively organized. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 7. I have adequate say in the development and maintenance of the nurses skills | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 8. I am pleased with the number of shifts I'm expected to work each month. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 9. I am satisfied with the current method of payment. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 10. I feel I do an appropriate number of night shifts. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 11. I feel satisfied with the process of my annual reappointment to hospital staff. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 12. I do a reasonable number of holiday shifts. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 13. I have a decision making role in developing standards of practice in our department. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 14. I am satisfied with the payment schedule for the treatment of seriously ill patients. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 15. Our Emergency department administration consults with us about everyday problems. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 16. The hospital administration makes it difficult to deal with the everyday problems in our department. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 17. I feel the provincial fee schedule appropriately reimburses EP for the clinical services we provide. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 18. Our department is organized in a way that creates problems with my holiday selection. | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |
| 19. I think patient complaints are dealt with adequately in our department | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |

| | | | | | | | |
|---|----|----|----|---|---|---|---|
| 20. I'm satisfied with the way our department is managed. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 21. I am satisfied with the shift rota in our department. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 22. I have to work too many weekends. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

Now a few questions about your clinical autonomy

| | STRONGLY DISAGREE | | NEUTRAL | | STRONGLY AGREE | | |
|---|----------------------|----|---------|---|-------------------|---|---|
| 1. In my hospital non-emergency clinical colleagues make decisions affecting my practice and I have little direct control. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 2. I feel there are conflicting clinical directives from my non-emergency physician colleagues. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 3. I have sufficient input into decisions that affect the way I practice. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 4. The hospital administration has too much control of my clinical practice. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 5. I am frustrated by decisions made at an administrative level which limit the type of patients I see, eg. Pediatrics, trauma. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 6. I am allowed to care for patients in my own way. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 7. I am sometimes required to do things at work that are against my better clinical judgement. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 8. Administrative decisions at this hospital interfere too much with my patient care. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

This section considers the resources available to you in your work as an emergency physician.

| | STRONGLY DISAGREE | | NEUTRAL | | STRONGLY AGREE | | |
|--|----------------------|----|---------|---|-------------------|---|---|
| 1. Our department has out of date equipment. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 2. Our department is set up to facilitate the flow of patients. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 3. I am satisfied with our department's role on the trauma team. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 4. There is a patient flow bottleneck in our department especially at peak times. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 5. I am satisfied with the degree to which I can delegate routine tasks to nurses or aides. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 6. A shortage of orderly and clerical staff in our department results in delays in patient care. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 7. A shortage of nursing staff in our department results in delays in patient care. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 8. Dealing with admitted patients who do not have an inpatient bed has clearly altered our work environment. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

| | | | | | | | |
|--|----|----|----|---|---|---|---|
| 9. We have an adequate number of nurses in our department. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 10. Our nurses have an adequate CME program | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 11. We have sufficient clerical help in our department | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 12. There are an adequate number of nurses in our department assigned to emergency care. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

This section looks at your work relationships

| | STRONGLY DISAGREE | | NEUTRAL | | STRONGLY AGREE | | |
|---|----------------------|----|---------|---|-------------------|---|---|
| 1. Our nursing staff care about the patients | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 2. There is a good deal of teamwork and cooperation between the various levels of medical personnel on my service, eg. Nurses, orderlies. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 3. I doubt whether the majority of patients I see are actually sick. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 4. New employees are quickly made to "feel at home" in my department. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 5. There are nursing staff in our department with whom I don't care to work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 6. Nursing personnel at this hospital do a lot of complaining about their work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 7. Patients complain no matter what you do. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 8. Our department is the brunt of too much adverse media publicity | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 9. Emergency patients have a realistic expectation of my role in their health care. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 10. I feel the nursing staff blame others for problems with patient flow rather than accepting responsibility. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 11. There is a good team relationship among the ED staff at work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 12. My patients do not exaggerate their physical complaints. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 13. Patients call ambulances only when it is really necessary. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 14. Many emergency patients are manipulative. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 15. The nursing personnel on my service don't hesitate to pitch in and help when things get busy. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

This section contains questions relating to your present lifestyle.

| | STRONGLY DISAGREE | | NEUTRAL | | STRONGLY AGREE | | |
|---|----------------------|----|---------|---|-------------------|---|---|
| 1. I worry about my personal life when at work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 2. My friends understand my work commitments. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 3. When I come home from work I worry about my job. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

| | | | | | | | |
|---|----|----|----|---|---|---|---|
| 4. I feel torn between my personal life and the demands of my job. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 5. My family life is interrupted by work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 6. Since working in this department, my family troubles have increased. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 7. I receive recognition from others for the nature of my work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 8. I have the standard of living I deserve. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 9. I have maintained good physical health since I started my present job. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 10. I feel physically tired too often. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 11. After leaving work I feel drained of all energy. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 12. The people I live with understand my work commitments. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 13. I can do and buy most things I want. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 14. I have enough money to do what I want with my leisure time. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 15. The people I live with are supportive when it comes to my work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 16. I am satisfied with my present state of health. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 17. I have enough time off for leisure. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

Now some questions related to the challenges associated with your job.

| Now some questions related to the challenges associated with your job: | | | | | | | |
|---|----------------------|----|---------|---|---|-------------------|---|
| | STRONGLY DISAGREE | | NEUTRAL | | | STRONGLY AGREE | |
| 1. I have the opportunity to manage a variety of interesting cases. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 2. I see too many non-emergency problems in my department. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 3. I see an adequate mix of acute and chronic cases. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 4. The vast majority of patients seen in our ED do not present a clinical challenge. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 5. My work gives me an adequate opportunity to feel that I have done a good job of case management. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

Global Physician Job Satisfaction Instrument (Lloyd)

| | | STRONGLY DISAGREE | | NEUTRAL | | STRONGLY AGREE | | |
|----|---|----------------------|----|---------|---|-------------------|---|---|
| 1. | I feel stagnant in my present position. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 2. | I am fed up with my job and would like to work in another hospital. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 3. | I feel my current position is right for me. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 4. | I feel I am achieving worthwhile results through my work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

| | | | | | | | |
|---|----|----|----|---|---|---|---|
| 5. I feel like I'm at the end of my rope. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 6. I feel like I am becoming burnt out from my work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 7. I feel enthusiastic about my work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 8. After working in this department, crisis seems repetitive. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 9. I am pleased with what I am accomplishing in life. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 10. I feel frustrated by my work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 11. I feel enthusiastic about my present position at work. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| 12. I would like to change to another type of practice. | -3 | -2 | -1 | 0 | 1 | 2 | 3 |

A This section asks about your training

1. In which year did you finish medical school? _____
2. Do you have your FRCPC in pediatrics? Yes _____ No _____
3. Do you have your FRCPC in emergency medicine? Yes _____ No _____
4. Do you have your CCFP? Yes _____ No _____
5. Do you have your CCFP-EM? Yes _____ No _____
6. Have you done a fellowship in pediatric ER? Yes _____ No _____
 - 6a. If yes to above, then where did you do it? _____
7. When did you decide upon pediatric emergency medicine as a career?

_____ during medical school
 _____ during residency
 _____ while out in practice
 _____ other
8. Have you taken the PALS course? Yes _____ No _____
9. Do you teach the PALS course? Yes _____ No _____
10. Have you taken the ATLS course? Yes _____ No _____
11. Do you teach the ATLS course? Yes _____ No _____
12. Have you taken the ACLS course? Yes _____ No _____
13. Do you teach the ACLS course? Yes _____ No _____
14. Have you taken the APLS course? Yes _____ No _____
15. Do you teach the APLS course? Yes _____ No _____

B This section examines your job description and what you do

1. How many years have you been at your current place of work? _____ years
2. Do you do any other clinical work outside pediatric emergency? Yes _____ No _____
 - 2a. If 'YES' please describe. _____
3. Do you work full time in pediatric emergency? Yes _____ No _____

If 'NO' go to question 6
4. How many years have you worked full time in pediatric emergency? _____ years
5. Have you always worked in pediatric emergency? Yes _____ No _____

Questions 6 through 10 apply if you are currently part time in emergency

6. How long have you been part time? _____
7. How part-time are you? i.e. 0.2 , 0.5, etc _____
8. Did you ever work full time in emergency? Yes ____ No ____
- 8a If yes to question 7, how long did you work full time? _____ years
9. Did you choose part-time work because of family commitments? Yes ____ No ____
10. Did you choose part-time work because of the effects of shift work? Yes ____ No ____

Rest of the questions in this section apply to all

11. How many annual weeks of vacation are you entitled to? _____ weeks
12. How many weeks of vacation have you taken in the last year? _____ weeks
13. How many annual days of conference leave are you entitled to? _____ days
14. How many days of conference leave did you take in the last 12 months? _____ days
15. Are you ever on-call, so that when ER is very busy you can be called in? Yes ____ No ____
16. Do you have a "fast track" system where you work? Yes ____ No ____
17. Have you drawn up, or helped in drawing up, a research protocol? Yes ____ No ____
18. Have you ever received a grant to do research? Yes ____ No ____
19. Have you been involved in the data analysis portion of research? Yes ____ No ____
20. Have you been involved in the writing of a peer reviewed scientific paper? Yes ____ No ____
21. Do you participate in teaching? Yes ____ No ____
22. Do you teach apart from when you are working shifts? Yes ____ No ____
23. Are you a member of a hospital committee? Yes ____ No ____
24. Do you participate in continuing medical education? Yes ____ No ____

C The following questions try to understand your shift-work schedule

1. Do you have a regular shift rotation? (eg. Four on, three off) Yes ____ No ____
2. How long is your day shift? _____ hours
3. How long is your evening shift? _____ hours
4. How long is your night shift? _____ hours
5. Do you usually work two or more nights in a row? Yes ____ No ____
6. How many nights do you usually do a month? _____ nights
7. Do you routinely get some sleep while working your night shift? Yes ____ No ____
8. If the above is yes, how many hours? _____ hours
9. Do you have housestaff on all night? Yes ____ No ____

10. On average how many hours do you sleep after finishing your last night? (assumes that your next shift is NOT a night shift) _____ hours
11. How long after finishing a night shift does it take for your sleep to normalize? (first night, second night, etc) _____ night
12. How long does it take you to "recover" from the fatigue of a night shift? _____ hours/days
(Able to concentrate while reading, not feel afternoon waves of fatigue)
13. How many clinical hours per month do you do in emergency? _____ hours
14. How many clinical shifts is this? _____ shifts
15. How many clinical hours per month does your institution consider full time? _____ hours
16. How many weekends do you work a month? _____ weekends
17. How many hours a month is this? _____ hours
18. Is there ever a period when two attending physicians are on duty in your emergency? Yes ____ No ____
19. If yes to the above, during which hours of the day? _____
20. On average how many shifts per year do you miss due to illness? _____ shifts
21. Are you a medical director of emergency? Yes ____ No ____
22. Are you an assistant director of emergency? Yes ____ No ____
23. Are you a research director? Yes ____ No ____
24. Are you a fellowship director? Yes ____ No ____

D This section deals with some personal demographics. We are aware that these can be considered intrusive questions. This is to remind you that even though this is an anonymous, confidential survey, you are under no obligation to answer any question.

1. What is your gender? Male ____ Female ____
2. Are you currently married? Yes ____ No ____
3. Have you been divorced? Yes ____ No ____
4. Do you currently have a partner? Yes ____ No ____
5. Does your partner / spouse work outside the home? Yes ____ No ____
 - 5a. If your answer to the last question is "yes", is your partner's work outside the home full-time? Yes ____ No ____
 - 5b. Does your partner work shift work? Yes ____ No ____
6. How many children do you have? _____
7. How many children are living with you? _____
8. At the completion of medical school, did you expect to do shift work in your future career? Yes ____ No ____

9. If you could relive your medical career would you still choose pediatric emergency medicine as a career?

Yes ____ No ____ Not sure ____

10. Do you have plans to leave pediatric emergency medicine in the next

| | | | |
|------------|----------|---------|---------------|
| One year | Yes ____ | No ____ | Not sure ____ |
| Five years | Yes ____ | No ____ | Not sure ____ |
| Ten years | Yes ____ | No ____ | Not sure ____ |

11. Do you have plans to change jobs in the next

| | | | |
|------------|----------|---------|---------------|
| One year | Yes ____ | No ____ | Not sure ____ |
| Five years | Yes ____ | No ____ | Not sure ____ |
| Ten years | Yes ____ | No ____ | Not sure ____ |

12. My gross annual earnings are:

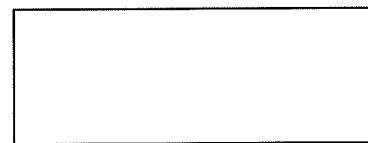
1. less than \$40,000
2. \$41,000 to \$60,000
3. \$61,000 to \$89,000
4. \$90,000 to \$104,000
5. \$105,000 to \$119,000
6. \$120,000 to \$139,000
7. \$140,000 to \$159,000
8. \$160,000 and greater
9. I would rather not say

13. My age range is:

1. Less than 24 years
2. 25 – 29 years
3. 30 – 34 years
4. 35 – 39 years
5. 40 – 44 years
6. 45 – 49 years
7. 50 – 54 years
8. 55 years and greater
9. I would rather not say

Thank you very much for taking the time to fill in this survey.
Should you have any comments please feel free to express them here.

Appendix 3 Cover form for the survey



Canadian Pediatric Emergency Survey 2000

Please fill out this survey to the best of your knowledge. It would be appreciated if you would answer all questions, but you are under no obligation to answer any question.

Please check the box if you do NOT wish to participate in a follow up survey.

☐

Once completed, please enclose survey in self addressed, stamped envelope and mail it.

Thank you.

Appendix 4 Introductory letter

May 25, 2000

CE 208

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Fax ()

Dear Physician

We are writing to you in your capacity as a physician who works 2 or more shifts a month in a Canadian pediatric emergency department. In the next week you will be receiving a survey, and I hope that you will take the time to fill it out.

I (WRC) am a pediatric emergency physician in Winnipeg and am studying (by means of a survey) the demographics of those physicians currently working in Canadian pediatric emergency departments. The survey will look at demographics, number of clinical hours, and job satisfaction. Lloyd's emergency job satisfaction scale (American Journal of Emergency Medicine 1994;12:1-10) modified with a few additional demographic questions will be used. There is a concern regarding physician turnover in the adult emergency literature. Whether this problem exists for pediatric emergency medicine in Canada has yet to be clarified.

The results would have an impact on manpower issues for the future. Marilyn Li's paper (Pediatrics 1989;84:336-42) suggested that 75% of those physicians providing care in pediatric emergency departments worked part time. Is this true in Canada today?

All responses will be treated with confidentiality, and the covering letter accompanying the survey will remind you that if there are any questions that you feel uncomfortable answering, that you are under no obligation to do so. All responses will be kept completely confidential. Your name will not be attached to the survey data file. I will be asking your permission to allow this study to be longitudinal. If you agree to this, then your name will remain on a list so that a follow up survey can be done in three to five year's time, and those survey's results will be able to be linked to this survey by means of a number.

This survey is being sent to all physicians who work in a Canadian pediatric emergency room. In contrast to this, I will be approaching one person from each department to request a taped in-depth interview. This interview will address issues facing pediatric emergency medicine, as well as inquiring about factors that make

the job attractive and those factors that detract from the job. The majority of these interviews will be conducted around the time of the CPS conference.

This study has had REB review.

**William Craig, MD, CM FRCPC
Emergency Department, Children's Hospital
Assistant Professor, Department of Pediatrics
University of Manitoba**

**Milton Tenenbein, M.D., FRCPC
Director, Emergency Services Children's Hospital
Professor, Department of Pediatrics
University of Manitoba**

Appendix 5 Cover Letter Attached to Survey

Dear Pediatric Emergency Physician,

I am hoping to gather data that will give us a sense of who is providing pediatric emergency care in Canada. This includes demographics, job satisfaction, and longevity. There has been a significant amount of research done with full time adult emergency physicians on the number who leave emergency medicine and why they choose not to stay, but very little research has been done with pediatric emergency physicians be they full or part time. Data of this type can help emergency groups to predict how many fellows will be needed over the next few years. If there are certain job factors that shorten our ability to work in this field, maybe they can be quantified and altered in some way so that pediatric emergency medicine is a viable long-term career.

Without your help this study can not be done. The survey has been tested and should take less than 20 minutes of your time. Some of the questions you will find interesting and others you will not. You are under no obligation to answer any question. All individual information will be kept completely confidential. No names will be mentioned in any presentation or publication, nor will any data be presented in such a way that a physician could be identified by his or her peers.

You will notice that your survey has a four-digit number on it. This allows me to keep track of non-responders so that I can follow up with gentle reminders. It also allows linkage of these survey results with a planned follow-up survey. (Three to five years time.) Should you not agree to participate in a follow up survey please check the box on the following page. The University of Manitoba Ethics Committee has reviewed this study. Should you have any questions do not hesitate to contact me at:

Work

Home

Fax

Thank you,

**William Craig MDCM, FRCPC
Assistant Professor, Pediatrics and Child Health**

Appendix 6

Consent Form for Interview

Project Title: The Demographics and Job Satisfaction of Physicians Working in Canadian Pediatric Emergency Rooms

Investigator: Dr. William Craig Phone:(

Thesis Advisors: Dr. Michael Moffatt
 Dr. Patricia Kaufert
 Dr. Milton Tenenbein

The purpose of this interview is to examine the issues that have arisen from the survey of the Canadian Pediatric Emergency Physicians Survey. Estimated interview time will likely be 40 minutes, but will not exceed one hour. Themes that arise from these interviews will be incorporated into a thesis and any publications that arise from this endeavour. The interviews will be taped and transcribed. There may be anonymous quotations used in the thesis or any other publication. Should participants want a copy of the thesis or any papers arising it will be made available to them.

This is to certify that I, _____ hereby agree to be interviewed.

I understand that there will be no health risks to me resulting from my participation in this interview.

I hereby give permission to be interviewed and for these interviews to be tape-recorded. I understand that at the completion of this project the tapes will be erased. I understand that anonymous quotations may be published, but that neither my name nor identifying data will be associated with the quotation.

I understand that I am free to deny any answer to specific questions during the interview. I also understand that I am free to withdraw my consent and terminate my participation at any time during the interview, without penalty.

I have been given the opportunity to ask whatever question I desire, and all such questions have been answered to my satisfaction.

Participant

Investigator

Date

Date