

MEDICAL GENETICS

(1) INTRODUCTION

Medical Genetics is that branch of medicine concerned with the effect of genetic variation on human development and health and also with the study, diagnosis, management, and prevention of disease in individuals, families and communities.

The practice of clinical genetics is based on an in depth knowledge of basic genetic principles, a broad range of knowledge of genetic disease as it affects all body systems and individuals of all ages, and a clear understanding of the principles of genetic counseling.

Five years of approved **residency** training this *must include*:

- 1) **24 months** (minimum) of **basic clinical training**, which *will include*:
 - a) 8 months (minimum) in each of internal medicine and pediatrics
 - b) 2 months (minimum) in high-risk obstetrics/fetal assessment
 - c) 1 month (minimum) full-time or full-time equivalent in a counseling and communication theory/practice area outside the actual genetics unit
 - d) up to 5 months of selective experiences relevant to medical genetics (with no more than 3 months in a clinical genetics unit)
- 2) **36 months** (minimum) of **approved residency** in medical genetics, which *must include*:
 - a) 2 months (minimum) in a cytogenetics laboratory
 - b) 2 months (minimum) in a molecular genetics laboratory
 - c) 2 months (minimum) in a biochemical genetics laboratory
 - d) 18 months (minimum) in a clinical/medical genetics unit, which will include a year of senior residency;
 - e) completion of an educational program at the advanced level (equivalent to an honors or a graduate level course) to cover the following areas:
 - i) cell biology/molecular genetics
 - ii) cytogenetics
 - iii) human genetics
 - iv) genetic epidemiology/population
 - f) Up to 12 months may be taken for research or elective residency in areas relevant to medical genetics. This may be full time research or clinical training relevant to medical genetics taken in an accredited residency program, as approved by the candidate's program director and by the Credentials Committee.

(2) MEDICAL GENETICS PROGRAMS ACROSS CANADA

Université de Montréal ¹
McGill University ¹
University of Ottawa / Université d'Ottawa
University of Toronto
University of Manitoba ¹
University of Calgary ²
University of British Columbia

¹ All eligible candidates compete for the same positions as graduates of Canadian and United States medical schools

² International Medical Graduates are not eligible to compete for positions

(3) UNIVERSITY OF MANITOBA PROGRAM

PROGRAM CONTACT

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PROGRAM INFORMATION

APPROXIMATE QUOTA: 1

Number of applicants 2005/2006: 6

Number of interviews 2005/2006: 5

Average out-of-town applicants matched 2004-2006: 0%

Resources

The Medical Genetics Residency program at the [University of Manitoba](#) is an interdisciplinary program with training sites at the [Children's Hospital](#), Women's Hospital, Psych Health Centre and General Hospital at the Health Sciences Centre and the research laboratories at the Bannatyne Campus of the University of Manitoba. All of these centres are located within a four block area which is centrally located in the city of [Winnipeg](#). A strength of our programme is the integration of basic human genetics with clinical genetic sciences. The program facilitates and encourages residents to enter the graduate program towards an MSc in [Biochemistry and Medical Genetics](#). Our centre offers modern in-patient/out-patient facilities and we have state-of-the-art diagnostic genetic laboratory. Our clinical program accommodates approximately 350 in-patient consultations and over 2000 out-patients per year.

Medical genetics residents have a dedicated office with two computers for their own use. Electronic access is available via the internet through the University of Manitoba library to multiple online journals including New England Journal of Medicine, Lancet, Prenatal Diagnosis, American Journal of Medical Genetics, American Journal of Obstetrics and Gynecology, Annals of Human Genetics, British Medical Journal and many more. In addition, the residents will have direct access to MedLine, OMIM (Online Mendelian Inheritance in Man), POSSUM (pictures of standard syndromes and undiagnosed malformations) and the London Dysmorphology Database and the teratogen inquiry system (TERIS) to name a few. There is a genetics library filled with up-to-date genetic references relevant to medical genetics.

Quick Facts

- Residents may choose to take electives in other locations. Funding opportunities may be available through the Canadian College of Medical Genetics. No more than 6 months total may be undertaken outside of Manitoba.
 - In the 2006/07 academic year, there will be 4 medical genetics residents and 1 clinical chemistry/molecular genetics fellow (CCMG). There are 5 MD medical geneticists.
 - During the medical genetics rotations, the residents function in a consulting role and not as the primary physician responsible for patients
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Curriculum

Training in medical genetics fulfils the requirements noted in the training guidelines established by the Royal College of Physicians and Surgeons of Canada, which was originally developed in 1988. These requirements include:

Five years of approved **residency** training this *must include*:

- 1) **24 months** (minimum) of **basic clinical training**, this *will include*:
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For the **first 2 years**, the **resident will primarily rotate through internal medicine and pediatrics**. In the pediatric rotations, the resident will be exposed to in-patient ward service; child development clinic with experience in managing the family and child with developmental problems and exposure to psychological testing of children; neonatology; general pediatric ambulatory experience and some emergency experience. The resident will be able to rotate through subspecialties such as pediatric endocrinology and/or pediatric neurology. The internal medicine rotation will include in-patient ward care, ambulatory care and subspecialties that might include cardiology, neurology, endocrinology, etc. Our residents will take credit courses at the graduate level including courses entitled "Principles and Practice of Human Genetics", "Human Molecular Cytogenetics", "Cell Biology" and "Genetic Epidemiology". These courses are offered through the Biochemistry & Medical Genetics and can be taken concurrently with rotations beginning in the PGY-3 year.

*There are no mandatory rural rotations.

Research

In relation to the specified credit courses at the undergraduate level in human genetics, the resident will have up to 12 months for a major research elective. Research is emphasized in our training program and it is our expectation that the resident will develop, implement and complete a research project for presentation and reporting of results at a national or an international genetics meeting. The resident will be expected to report results in a peer reviewed journal. The University of Manitoba, Faculty of Medicine and the Department of Biochemistry and Medical Genetics have excellent research facilities. The clinical and basic teaching staffs of the medical genetics training program have a strong commitment to research. Our aim is to provide state-of-the-art training to future academic Medical Geneticists with a very strong clinical background supplemented by effective research skills enabling our residents to either pursuing highly competitive further research training or to begin an academic career as a practicing medical geneticist.

Revised on January 25, 2007

(4) MEDICAL GENETICS PRACTITIONER'S SURVEY

There are 5 Medical Genetics specialists in Manitoba. All 5 were sent surveys, of which 4 replied.

BACKGROUND

Do you have a special focus?

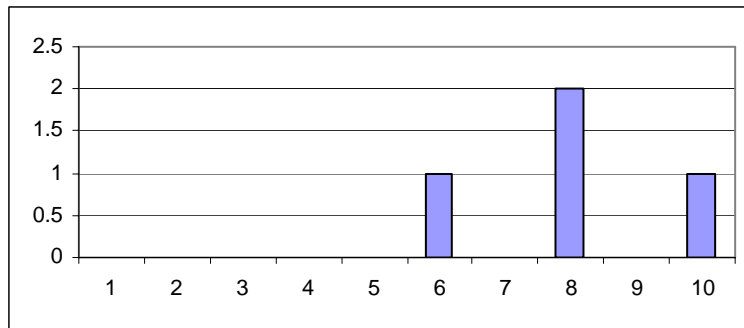
Pediatric genetics

How many years practicing?

1 to 5 years	0
6 to 10	2
11 to 15	1
16 to 20	0
21 to 25	1
26 to 30	0
Above 30	0

How much do you interact professionally with other physicians?

(1-on my own most of the time 10- as a part of a team most of the time)



Are you in a solo practice or group practice?

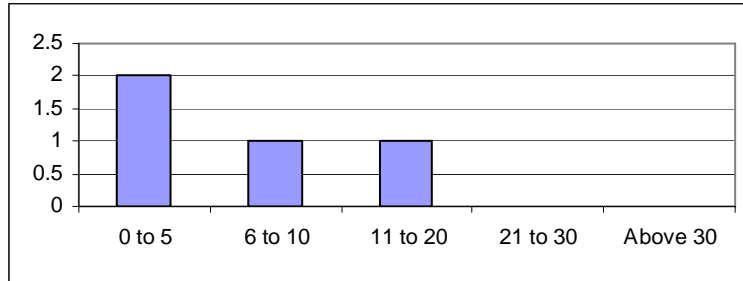
Solo 0 Group 4

If group, how many doctors do you share a practice with?

1 to 3 1 4 to 6 3

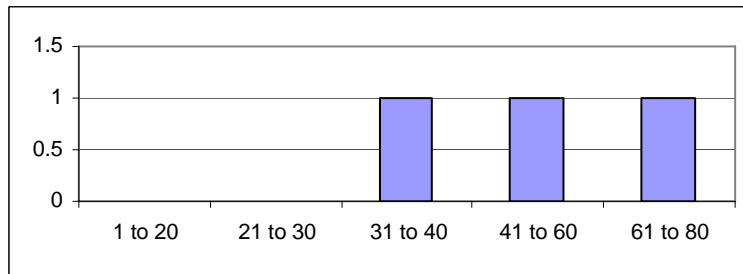
AVERAGE DAY

How many patients do you see on an average per day?



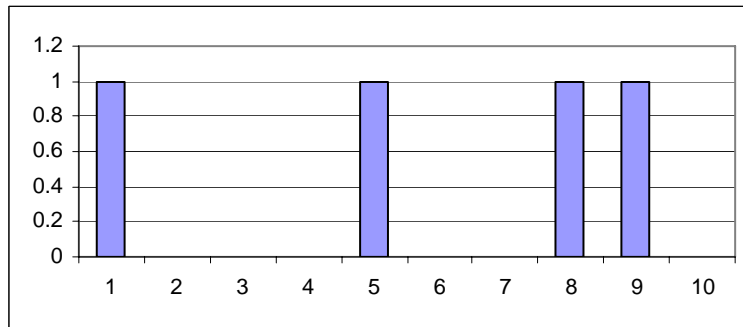
How many hours per week - not including call time?

(i.e. including CME, clinical work, administration, teaching)



What sort of schedule do you have in your work?

(1- irregular/unpredictable, 10-regular/predictable)



Are you ever on remunerated call?

Yes 4 no 0

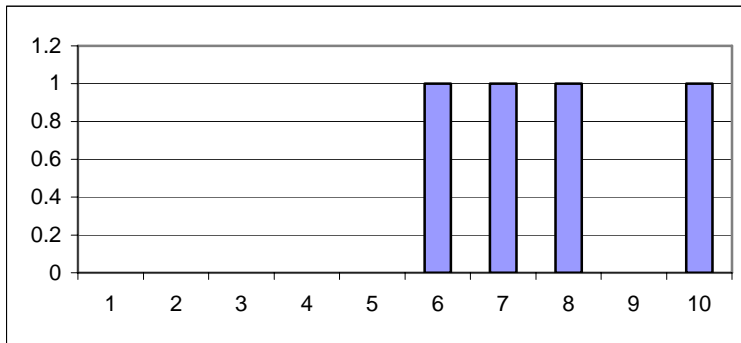
How many days are you on call? (Days/month)

1 to 5 0
6 to 10 0
11 to 20 4
21 to 30 0
Everyday 0

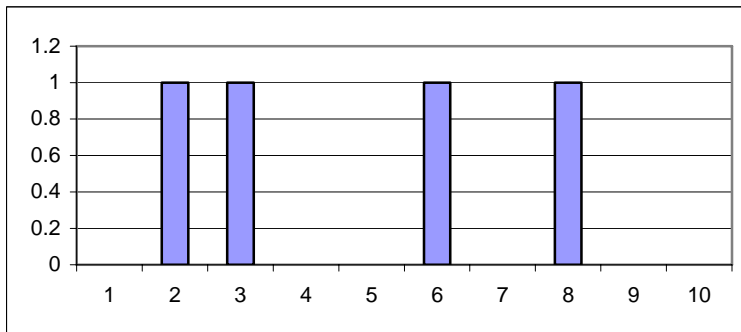
How many hours per shift?

1 to 10 0
11 to 16 0
16 to 23 0
24 hours 4

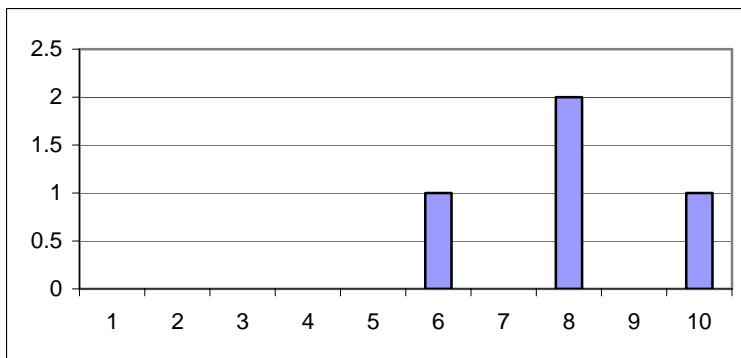
How much routine (similar work or diversity/different tasks, activities) do you have in your work? (1-great deal of routine, 10- great deal of diversity)



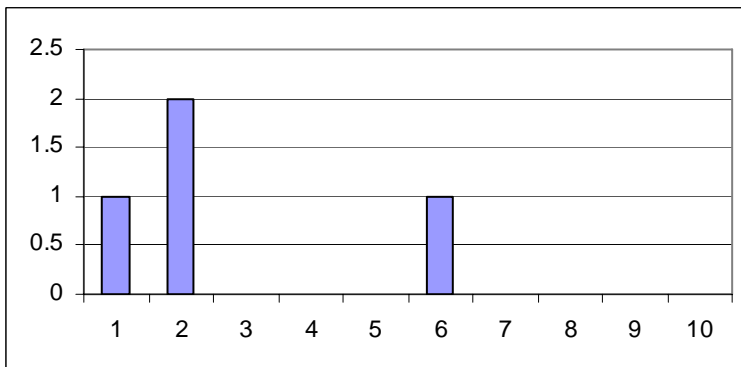
What type of intellectual approach to problem solving do you need to have to perform your work duties? (1-specific problem approach 10-theoretical)



Do you have a sharply defined area of expertise or general expertise? (1-General expertise, 10 - Sharply defined expertise)



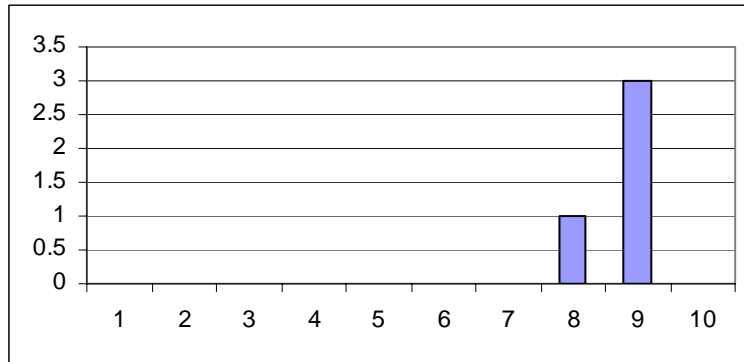
How much do you need to use manual/mechanical activities for highly skilled tasks? I.e. doing procedures, performing operations (1-never 10- most of the time)



JOB SATISFACTION

Overall, how satisfied are you with your career?

(1- Dissatisfied 10- very satisfied)



What is the most appealing aspect of your job?

- Interesting, challenging, rewarding
- Spending time with patients and teaching
- The patient population, making a diagnosis, providing information to patients
- Working with patients and teaching students

What is the least appealing aspect of your job?

- I don't have my own secretary and have embarrassing physical space for our team
- Bureaucracy of HSC/ University
- Administration

PATIENT CHARACTERISTICS

Presenting complaints most often seen?

- Developmental problems/ delay 3
- Muscle disorders
- Metabolic disturbances 2
- Bone disorders
- Advanced maternal age
- Abnormal fetal ultrasound
- Family history of Mental Retardation 2
- Family history of cancer
- Prenatal concerns
- Hereditary breast cancer
- Alcohol/ drug antenatal exposure
- Dysmorphic features

Age group most often treated?

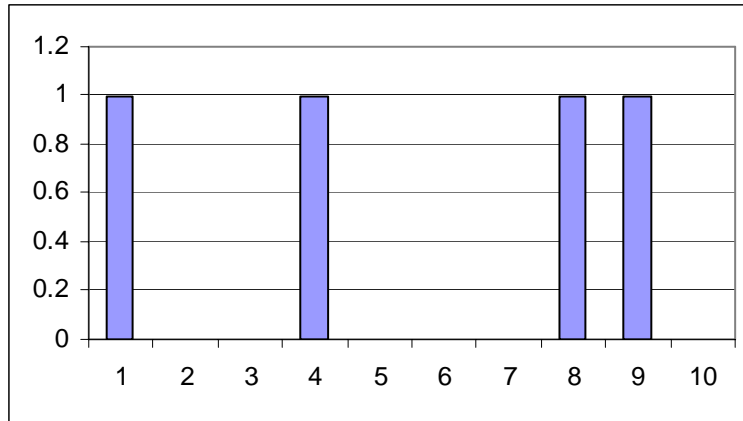
Infants 1
Children 1
Adults 2
Elderly 0
All groups 2

General Health Status of Patient Population

Gen. Healthy	2
Chronically ill	2
Terminally ill	0
Acutely ill	0
All groups	0

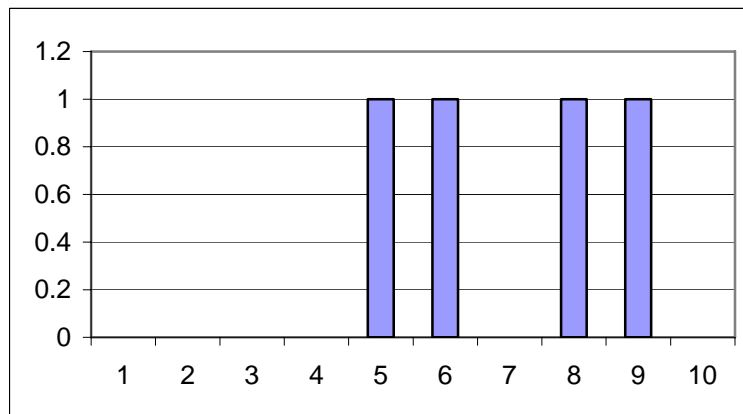
Do you have short-term or long-term relationships with patients?

(1- short term, 10-long-term)



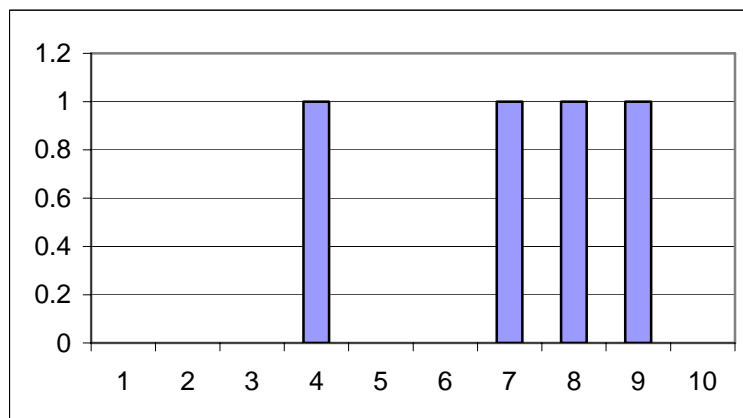
How much time do you spend in direct contact with patients?

(No time at all - 0, most of my time - 10)



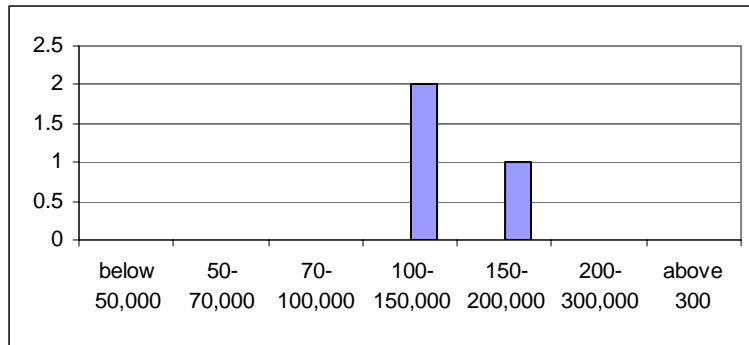
How much opportunity to see end results do you have in your work?

(1- little opportunity, 10- great deal of opportunity)



FINANCIAL

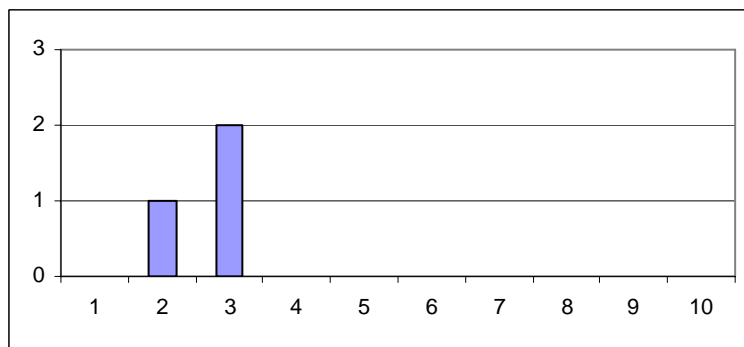
What is your income bracket after taxes and overhead, etc?



*Don't want to answer 1

What income level do you feel you have in comparison to other specialties?

(1-lower, 10- higher)



*I refuse to comment on income questions 1

Are you satisfied with your income?

Very satisfied	0
Satisfied	1
Somewhat satisfied	2
Dissatisfied	0
Extremely dissatisfied	0

Comments:

- ❖ Overall, I feel that my work is undervalued
- ❖ Satisfied, but I think in genetics we are paid low compared to other specialties.

Do you feel your current income compensates your workload?

Yes 1 No 2

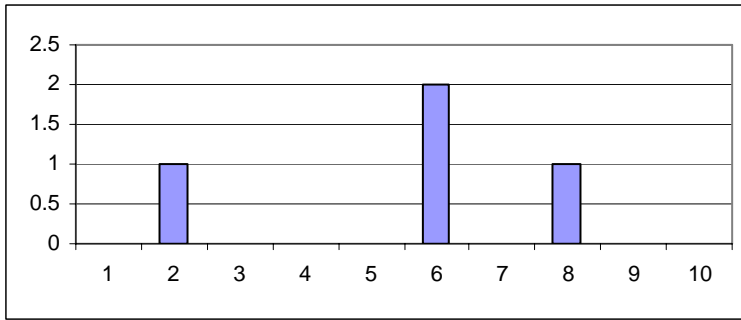
What is the Basis of your current income?

- Fee-for-service 2
- Salary 1
- Index cont 0
- Sessional 0

FAMILY LIFE/FREE TIME

How much time does work allow for family/leisure activities?

(1- little free time, 10- ample free time)



Are you satisfied with the amount of free time you have?

Very satisfied	0
Satisfied	1
Somewhat	1
Dissatisfied	2
Extremely dis	0

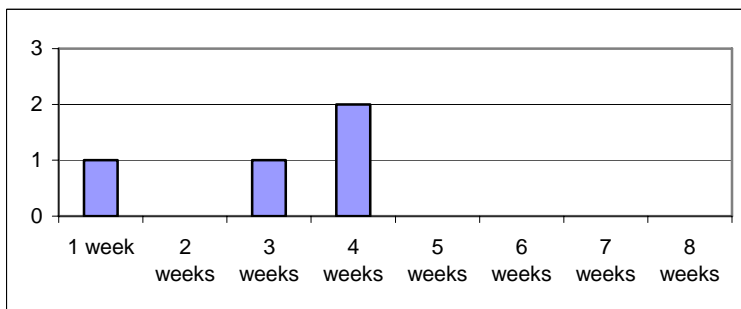
Do you have the ability to limit your workload should you need more free time?

Yes	1	No	3
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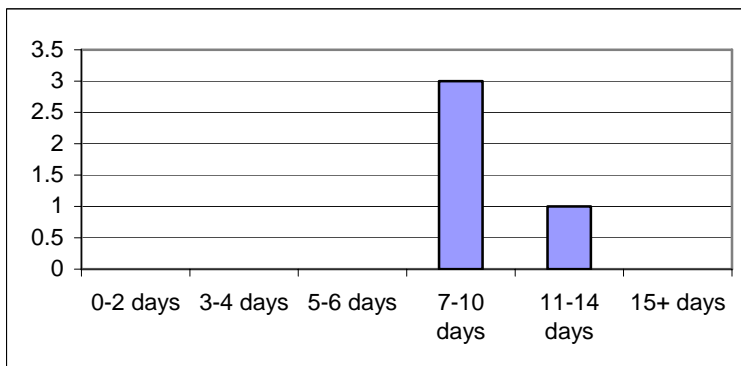
Do you take vacations?

Yes	4	No	0
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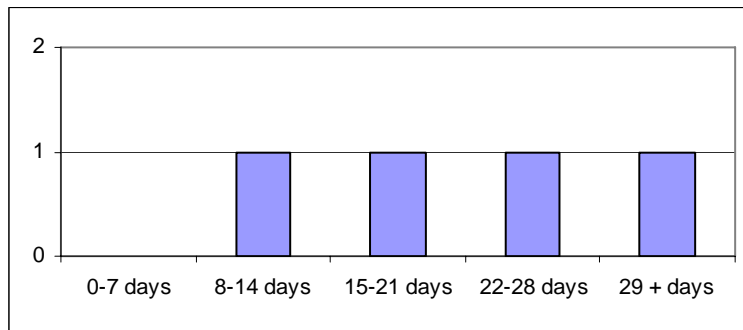
How much time for vacations annually?



How much time away from work for CME related conferences?



Maximum amount of consecutive days away from work annually?



PERSONAL

What were the major factors that guided your decision to choose this specialty?

- Friend/family 1
- Clerk exp. 0
- Med.sch.exp 2
- Dr. example 3
- Type of pt. 2
- Lifestyle 2
- Residency 0
- Others 1
 - Academic interest, and guidance from faculty

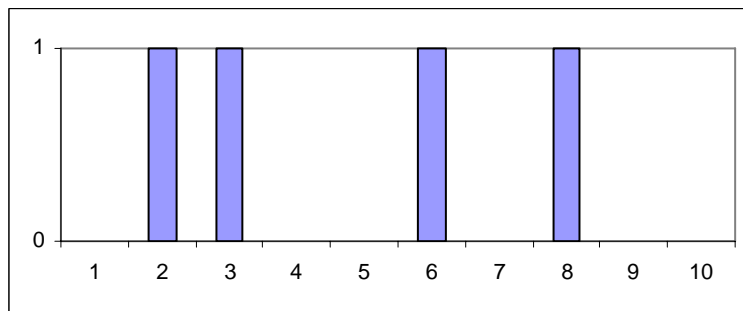
MOST IMPORTANT

- Undergraduate professor
- Lifestyle choices
- Interest in genetics

Would you choose the same specialty again?

Yes 4 No 0

What professional status (in comparison to others) do you feel you have? (1- lower 10- higher)



Do you feel colleagues in other specialties respect your specialty?

Yes 3 No 1

Do you feel the community at large respects your specialty?

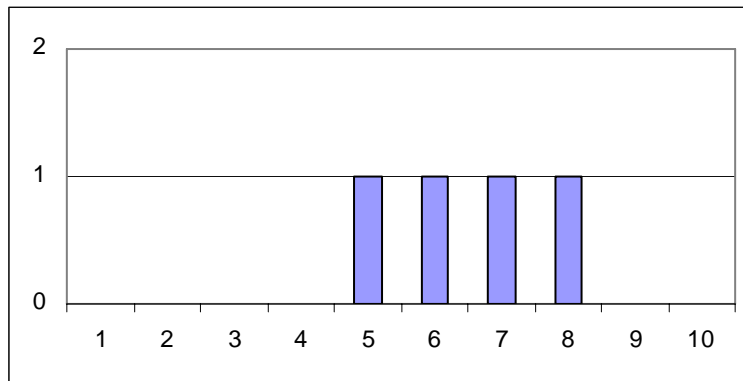
Yes 3 No 1

Comments:

- ❖ I feel that medical colleagues don't think we are real doctors and scientific research colleagues don't appreciate the clinical responsibilities we have
- ❖ A lot of colleagues/ patients have no idea what I do (including my mother)

PRESSURE

How much pressure do you have in your work?



What aspect of your job do you find the most stressful?

- Balancing research and clinical work
- Not spending enough time with my kids and their activities. I was not the mom who could escort them and help in the lunch room - I tried. I was always struggling and it was stressful. I never showed it though, I tried not to.
- Determining if a newborn has Down's Syndrome
- Time commitment with job and family.
- Dealing with very difficult terminal or very sick cases and occasionally unreal expectations.

Have you ever considered taking a leave of absence due to stress?

Yes 1 No 3

Have you ever taken a leave of absence due to stress?

Yes 1 No 3

GENDER ISSUES

Do you feel discrimination in your job based on your gender?

Yes 0 No 4

What qualities do you think a student needs for this specialty or area of practice?

- A desire to work hard, like basic science research and/or clinical research, enjoys working with young children and families.
- Good communication skills.
- Patience! Desire for academic career.
- Patience, understanding, team player and academic excellence.

What advice would you have for a student considering this specialty or area of practice?

- Do it! There is a tremendous need for specialists in medical genetics. It is a career that will sustain your interest for many decades.
- Remember it is a privilege to be a doctor. You will not make as much money as a Neuro surgeon, but you will never lack anything.
- Spend time, for example an elective or a few clinics on our service.
- Read! Elective time to see if the student really enjoys genetics.
- Genetics is the specialty to be in! It is the future of medicine. A lot of work satisfaction, however don't choose it if you want to make only money.



Planning your future as a doctor in Manitoba