



## **The range of clinical procedures conducted by physicians in a group general practice setting**

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### **Summary**

#### **Background:**

General practitioners are often involved in carrying out a variety of procedures on patients in the office setting. The range of these procedures will depend on the level of skill of the physician and the types of problems being managed. Assessing the types of clinical procedures carried out in general practice can help trainers to gauge training needs and identify gaps in the provision of medical care. Inter-physician variations of various procedures can also be used to gain insights into different styles of practice. This study aims to determine the range of clinical procedures undertaken by physicians working in a group family practice and to assess inter-physician variations in procedure rates.

**Methods:**

For the period January to June 2001, procedure listings for 3 general practitioners who were on regular service at a private group medical centre in Kingston, Jamaica were reviewed. A count and categorisation was made of all the procedures undertaken by each practitioner for the 6-month period. Only clinical procedures that had to do with the immediate care of the patient were counted. Rates of procedures were generated using patient-visits as the denominator and comparisons made among physicians. The practitioners were labelled physician 1, 2 and 3 for the purposes of this study.

**Results:**

The modal procedure for all physicians was injections reaching as high as 41% for physician 2. Dressings accounted for approximately 25% of all procedures for each physician. Injections featured as the procedure with the highest rate for all physicians (74 per 1,000 patient-visits for physician 2). Surgical procedures (e.g. suturing, incision and drainage and removal of nails) all had relatively very low rates (< 5 per 1,000 patient-visits). There was a statistically significant difference in the pattern of distribution of procedures with frequency greater than 5 per 1,000 patient-visits ( $p=0.002$ ). Inter-physician variability in glucometer use was marked (range 6.8 to 28.2 per 1,000).

**Conclusion:**

Injections and dressings are the most frequent clinical procedures performed in this general practice setting. There is a very small load of surgical procedures. Variability in procedure rates among physicians may be related to differences in clientele profile and physician practice styles.

**BACKGROUND**

General practice calls for an array of skills in managing patients presenting with a wide range of complaints. As primary care physicians, these skills are of varied sophistication and scope. In

recent years with a closer examination of continuing medical education and advanced training in family medicine there is a more detailed consideration of the kind of physician which training institutions in the Caribbean region should be producing (Paul TJ et al, 2000). Renewed training initiatives have however called for a more caring physician and have looked at issues of ethics and the need to foster lifelong learning traits. The issue of developing and enhancing procedural skills in general practice however has been neglected.

The revamped Masters in Family Medicine programme of the University of the West Indies which started in 2001, is offered primarily by distance education and although it addresses important issues in graduate family physician training (Paul TJ et al, 2000), does not give strong emphasis to building competence in procedural skills. Yet there is a sense that general practitioners would like opportunities to improve their competence in procedural skills in the office setting. Practical exposures are often seen as central to job satisfaction and are an important part of comprehensive care (Fraser J, 2003). Before a consideration is made of curriculum inputs as far as procedural skills are concerned, there is a need to ask the question as to what kind of procedures are general practitioners engaged in on a day to day basis? Family practice residency programmes have been shown to have widely varying expectations of procedural skills for their residents (Van Der Goes T et al, 1999). Despite the fact that the type of clinical procedures performed in office will be influenced by perceived competence and availability of resources, getting a handle on the common office procedures of physicians is an important building block in any discussion of improving training or standards of care in practice.

### **AIM**

In this paper we examine the range of procedures undertaken by physicians working in a group family practice in Kingston, Jamaica and determine inter-physician variations in procedure rates.

## **METHODS**

Health Plus Associates is a small group medical practice with a team of 4 general practitioners providing service to a Kingston suburban community and its environs since 1993. The medical centre has two consulting rooms through which the family physicians and two specialists (gynecologist and dermatologist) rotate 6 days a week. In addition to the consulting room there is a treatment room equipped to carry out basic office procedures and to observe very ill patients. The four family physicians are all graduates of the Bachelor of Medicine, Bachelor of Surgery (MB BS) degree programme of the University of the West Indies. Two of the four practitioners hold graduate training in Public Health. All practitioners have had a minimum of five years experience post graduation in hospital and community medicine.

The receptionist on duty records all treatment room procedures on the daily operating worksheet for the practice. The physician gives the name of the procedure to the receptionist. The specific name is important as it has implications for billing. At the end of each month a list of all procedures for each practitioner is culled from the relevant worksheets for that month in order to meet financial and administrative obligations of the practice group.

For the period January to June 2001 procedure listings for 3 physicians who were on regular service were reviewed. A count was made of all types of procedures for each practitioner for the 6-month period. Rates of procedures were generated using patient-visits as the denominator and comparisons made between physicians.

## **RESULTS**

### **Distribution of Clinical Procedures**

The distribution of procedures by physicians is shown in Table 1 with a list of 15 procedures. The modal procedure for all physicians was injections reaching as high as 41% for physician 2. Approximately 25% of all procedures for each physician were dressings.

The rates of procedures per patient-visits are shown in Table 2. Injections featured as the procedure with the highest rate for all physicians. The highest rate for any procedure for physicians was 74 per 1,000 patient-visits for physician 2. Surgical procedures (e.g. suturing, incision and drainage, removal of nails etc) all had relatively very low rates (< 5 per 1,000 patient-visits).

### **Inter-Physician Variations**

The most striking inter-physician variation was for glucometer use which was more than double for physician 3 when compared to the others. The differences in the rate of use of glucometer between physicians (range 6.8 to 28.2 per 1,000 patient-visits) were consistent with the absolute numbers as in Table 1. The rank order frequency for procedures (measured by rate of occurrence) among physicians is shown in Table 3 highlighting that four of the top five procedures are common to all physicians. However there was a statistically significant difference in the pattern of distribution of procedures among physicians for those procedures with frequency greater than 5 per 1,000 patient-visits ( $p=0.0002$ )

### **DISCUSSION**

Definition of a clinical procedure in general practice appears fairly straightforward. In this study all “treatment room” procedures were considered as clinical procedures. This is likely to be a reliable and workable definition for capturing the data in our setting. Since administratively, there are fees attached to these procedures, there is an incentive by physicians to ensure that these procedures appear on the practice records so that they will be properly compensated. A question of moral hazard might arise however where physicians are tempted to carry out more clinical procedures in a fee-for-service setting with the expectation of higher revenue. The assumption is that this was not operating in this study and that decisions for clinical procedures were based on the best clinical judgment of need.

The mix of procedures performed by physicians in this practice appears somewhat limited (total of 15) particularly with respect to the scant proportion of surgical type procedures. In one the list of procedural skills for family medicine residency, at Canadian Universities, survey ranged from 10 to 75 with a mean of 36. The frequency of performing a procedure is likely to be linked to the patient profile, the availability of the technical resources and the skills and competence of the practitioner. No effort was made in this initial study to examine these variables but knowledge of the practice schedule highlights at least one basic difference among physicians. Physician 3 occupies the day shift (9.00 am to 3.00 p.m.) primarily and tends to see a higher proportion of older individuals. The other two physicians work primarily during evening hours (4.00 p.m. to 8.30 p.m.) and patient profile tends to be a younger age group with less chronic diseases. This may explain the differences in use of glucometer with Physician 3 having such a high usage pattern.

Patients in an urban setting are perhaps less in need of procedural skills from the physician as opposed to rural practices where it has been shown that a much broader range of skills are often required (Reid SJ et al, 2000). It also begs the question as to whether patients are being referred for procedures which could have been done in the general practice office, had the practitioner had additional training and experience. This could include minor surgical options such as lumpectomy, removal of warts and injection of joints. Or is it that practitioners already possess a high level of skill but are simply responding to what comes in?

Altogether, the range of clinical procedures conducted by physicians in this group general practice appears more limited to aspects of routine patient care. Approximately 25% of procedures done by each physician were dressings. This is consistent with the wider epidemiological picture of Jamaica with a growing incidence of trauma/injury and underlying conditions such as diabetes and hypertension which precipitate chronic leg ulcers. In the public sector a sizeable proportion of curative visits are for dressings (34.4%, 14% females) (Planning Institute of Jamaica, 1997).

The use of injections by physician 2 raises some interest as the rate is 1.5 times more than that of the other physicians. This is the highest rate for any procedure (74 per 1,000 patient visits). Injections in this study actually include a mix of immunisations, therapeutic injections and contraception. A disaggregation of the usage pattern for individual physicians would be needed before any inferences can be drawn. In Southern India one study noted excessive and unwarranted use of injections (Rajasekaran M et al, 2003). Inter-physician variation of injection is likely to be explained by variations in demographic and morbidity profile of clientele. An international study on injection use however, does not suggest excessive use by health care professionals operating in this region (Hutin YJ et al, 2003).

Planned CME interventions to improve skill acquisition by physicians have been shown to improve patient outcomes (Bellamy N et al, 2000). This is important since the period of training prior to graduation cannot of necessity provide a practitioner with all of the skills necessary for practice. Beyond graduation, some physicians might be shy of “learning on the job”, which might include attempting a procedure for the first time on a patient, whereas, others may take liberties and take on procedures way out of the range of expected competencies. This is an issue for medical educators and those regulating the practice of medicine to address.

Without baseline data on what physicians are in fact doing in general practice, there can be no meaningful planning for any intervention focussed on practitioners. This study is the first of its kind to address the issue of procedures in general practice in our setting. Given its focus on one group practice setting, generalizability is limited but it does highlight a number of issues with training and practice considerations. More research needs to be done to examine inter-physician variation on a wider scale and factors associated with such variations in the use of clinical procedures. Training institutions should review this aspect of their curriculum.

## **CONCLUSION:**

This group general practice performed a small range of clinical procedures (15) over a six month period. Dressings and injections accounted for the majority of procedures. Variability in procedure rates among physicians was statistically significant reflecting possible differences in clientele profile and practice styles.

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**Table 1: Distribution of procedures by physicians**

Procedures	Frequency (%)		
	Physician 1	Physician 2	Physician 3
Dressings	32 (24.8)	36 (26.9)	56 (24.6)
Injections	46 (35.7)	55 (41.0)	72 (31.6)
Incision and Drainage	6 (4.7)	3 (2.2)	6 (2.6)
Ear syringing	7 (5.4)	10 (7.5)	9 (4.0)
Nebulization	11 (8.5)	6 (4.5)	14 (6.1)
Glucometer	12 (9.3)	8 (6.0)	48 (21.1)
Suturing	8 (6.2)	3 (2.2)	4 (1.8)
Pregnancy tests	5 (3.9)	9 (6.7)	14 (6.1)
Removal of nail	0 (0)	1 (0.75)	3 (1.3)
Intravenous infusion	0 (0)	0 (0)	1 (0.4)

Removal of callus	0 (0)	1 (0.75)	0 (0)
Joint aspiration	1 (0.8)	0 (0)	0 (0)
Removal of foreign body	1 (0.8)	1 (0.75)	0 (0)
Steristrip	0 (0)	1 (0.75)	0 (0)
Bandage	0 (0)	0 (0)	1 (0.4)
Total	129	134	228

**Table 2: Rate of procedures per patient-visits for January to June 2001**

Procedures	Rate per 1,000 patient visits		
	Physician 1 (n=1,171)	Physician 2 (n=744)	Physician 3 (n=1,703)
Dressings	27.3	48.4	32.9
Injections	39.3	74.0	42.3
Incision and Drainage	5.0	4.0	3.5
Ear syringe	6.0	13.4	5.3
Nebulization	9.4	8.1	8.2
Glucometer	6.8	10.1	28.2
Suturing	4.3	4.0	2.3
Pregnancy tests	8.5	12.1	8.2
Removal of nail	0	1.3	1.8
Intravenous infusion	0	0	0.6
Removal of callus	0	1.3	0
Joint aspiration	0.9	0	0
Removal of foreign body	0.9	1.3	0
Steristrip	0	1.3	0
Bandage	0	0	0.6

**Table 3: Rank order of frequency of clinical procedures**

Rank	Procedure		
	Physicain 1	Physician 2	Physician 3
1 <sup>st</sup>	Injections	Injections	Injections
2 <sup>nd</sup>	Dressings	Dressings	Dressings
3 <sup>rd</sup>	Nebulization	Ear syringe	Glucometer
4 <sup>th</sup>	Pregnancy test	Pregnancy test	Pregnancy test
5 <sup>th</sup>	Glucometer	Glucometer	Nebulization



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