

**Report on Orthopaedic Clinical Assistants in Manitoba  
June 2007**

**National Standards Committee  
Canadian Orthopaedic Association  
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## **Executive Summary**

The Canadian population is severely under-served by orthopaedic services while experiencing the longest waiting times of any specialty for elective consultation and surgery. Resource restrictions further exacerbate this problem. The University of Manitoba Joint Replacement Group (UMJRG) at Concordia Hospital in Winnipeg, Manitoba has met these challenges by adopting the physician assistant model. Known as clinical assistants (CA) in Manitoba, CAs have been practicing since 2003.

Working under a supervisory physician, orthopaedic physician assistants perform the following: take medical histories; examine and treat patients under supervision; order and interpret investigations to make diagnoses; chart operative and progress notes; write orders; assist in the operating room; and write prescriptions.

Strong empirical evidence from the literature indicates that physician assistants enhance physician productivity and economic efficiency. They also enhance access and patient satisfaction. The literature on PAs in orthopaedics, while limited, indicates strongly positive outcomes for PA-orthopaedic surgeon practice.

There are four components to this study: The first examines surgeon time savings; the second is an opinion survey of stakeholders including surgeons, nurses, residents and patients on the role of physician assistants in care delivery; the third is a costing analysis; and the fourth examines reduced waiting times attributed to running two operating rooms employing clinical assistants.

In this study, physician assistants were found to free up for their supervising orthopaedic surgeon the equivalent of four 50 hour work weeks per year. Surgeons can in turn use this time for other activities such as administrative work, research, and other clinical activities.

The use of physician assistants as first assistants in the operating room instead of general practitioners freed up the equivalent of 1.5 general practitioners working 40 hours per week for 44 weeks per year based on a surgical volume of 1400 joint replacements per year.

Operating room and ward nurses feel that physician assistants are important team members that improve care delivery. Nursing staff do not feel that physician assistants fill an expanded healthcare provider role that should be in the domain of nursing.

Orthopaedic surgeons feel strongly that physician assistants improve the quality of care of their patients both in the operating room and on the ward, and that physician assistants greatly reduce the amount of “scut work” that they have to perform. Patients report very positively that physician assistants improve the care that they receive on the ward, and that they are important members of the care team.

Physician assistants can greatly improve surgical throughput and greatly improve surgeon capacity. In this study, the double room model facilitated an increase in primary joint volumes of 42%. The increased throughput associated with the double room model has reduced median wait times in this particular surgical group by 14 weeks down to 30 weeks, which is quite close to the national benchmark. This is a reduction in median waiting times of 32% over the previous year. Improved efficiencies would also be anticipated under other operating room arrangements where PAs are employed.

Evidence supports that employing PAs reduces health system expenditures. While the forgone general practitioner surgical assist fees in 2006 (\$270,000) correspond to the total salary costs for the 3 physician assistants (\$270,000 to \$327,000), these numbers underestimate the real cost savings of PAs. (The value added benefits of PAs noted above and the flexibility of PAs to work in both the OR and on the ward are not reflected in these salary only numbers.)

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## *Introduction*

### **Background**

The Canadian population is severely under-served by orthopaedic services. A physician human resources model developed by the National Standards Committee of the Canadian Orthopaedic Association indicates that the orthopaedic surgeon density in Canada was 3.7 per 100,000 population in 2006. On a full time equivalent (FTE) basis, the 2006 density was 3.0 orthopaedic surgeons. Projections over the next twenty five years indicate that the density of orthopaedic surgeons in Canada is expected to increase only marginally above this level. In 2029, the density may reach the clinically appropriate density of 4.5; however the FTE density will only reach 3.6 orthopaedic surgeons per 100,000 population. Accordingly, Canada ranks near the bottom of peer countries with respect to the orthopaedic surgeon density.

As outlined in the National Standards Committee's *National Workforce and Services Report (2004)*, waiting times for elective orthopaedic consultation and surgery are the longest of any surgical specialty. Evidence indicates that demand for orthopaedic services will continue grow significantly in the future due to ageing of the population, unmet need and expanding indications for orthopaedic surgical procedures.

Resource restrictions further reduce the potential of the Canada's limited orthopaedic workforce. In Canada, orthopaedic surgeons spend only 1/3 of their time operating, with 2/3 of their time taken up by services that could potentially be at least partially provided by less expensive healthcare professionals<sup>1</sup>. Orthopaedic surgical skills are under-utilized. As a community, orthopaedic surgeons are working at only 82% of FTE capacity according to the Canadian Institute for Health Information. While a few surgeons are working at above one FTE, an ever increasing number of surgeons are working at well below a full time equivalent level.

Improving resource availability would have a positive effect on surgeon retention in Canada as resource access is commonly cited as a primary reason for surgeons leaving Canada to practice in the US. With the 2004 federal government announcement to tackle excessive waiting times in hip and knee replacement surgery (as part of the "big 5"), there has been a significant increase in resource allocation to hip and knee replacement surgery<sup>2</sup>. While this increase in resources in one area of orthopedics may cause some surgeons to reconsider leaving Canada, it has not been accompanied by any drastic increase in residency training positions for orthopedic surgery. As a result, the number of Canadian orthopedic surgeons is likely unaltered. This combination of increased

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<sup>1</sup> Critical Shortage of Orthopaedic Services in Ontario, Canada, *The Journal of Bone and Joint Surgery (American)* 85:1710-1715 (2003)

<sup>2</sup> *Surgical Volume Trends Within and Beyond Wait Time Priority Areas*, CIHI, (2007)

resources and unaltered orthopedic human resources has led to the exploration of ways to improve the productivity of the current orthopedic workforce.

The University of Manitoba Joint Replacement Group (UMJRG) at Concordia Hospital in Winnipeg, Manitoba has met the challenge of increasing surgical volumes and resources in the presence of a fixed number of orthopedic surgeons by adopting the physician assistant model.

This paper describes the nature of clinical assistant practice in Manitoba; it reviews the literature on physician assistants; and it analyzes health care delivery provided by orthopedic physician assistants at Concordia Hospital in Winnipeg.

There are four components to the study: The first examines surgeon time savings; the second is an opinion survey of stakeholders including surgeons, nurses, residents and patients on the role of physician assistants in care delivery; the third is a costing analysis; and the fourth examines reduced waiting times attributed to running two operating rooms employing clinical assistants.

### **What is a Physician Assistant?**

Formally trained in the physician model, physician assistants (PAs) provide diagnostic, therapeutic and preventive health care services as delegated by their supervising physicians. They are dependent practitioners who practice medicine autonomously, but not independently. As a physician extender, a PA augments a physician's practice thereby increasing productivity & efficiency. The role of PAs is different from that of nurse practitioners, who consider themselves to be independent practitioners.

Examples of services provided by orthopedic physician assistants include taking medical histories, examining and treating patients under supervision, ordering and interpreting investigations to make diagnoses, charting of operative and progress notes, writing orders, assisting in the operating room and writing prescriptions.

Physician assistants have played a formal role in the delivery of health care for over 40 years in the United States, where there are over 60,000 PAs in practice. In Canada, the Canadian Forces employ approximately 130 PAs. Manitoba is currently the only province where physician assistants are formally employed in the civilian health care system and the only province with enabling legislation. In Manitoba, they are known as clinical assistants (CA) and are employed by the regional health authorities.

There is one PA training program in Canada. It is operated by the Canadian Armed Forces and is based at CFB Borden Ontario. The Canadian military has utilized PAs for several decades to support healthcare services needed for military personnel both at home and while on deployment in foreign countries. The University Of Manitoba Faculty of Medicine is developing the first civilian PA training program in Canada and expects to launch the program shortly. Physician Assistant training programs are 27-36 months in duration, and are based on the physician medical model.

## **Manitoba Clinical Assistant Roles & Responsibilities**

In Manitoba, regulations permitting the establishment of clinical assistants were approved in 1999. The physician-CA supervisory relationship is mandated through the legislation. The first CA was hired by the Winnipeg Regional Health Authority (WRHA) in early 2002, and there are now approximately 40 CAs practicing in a variety of medical and surgical specialties throughout the WRHA.

The profession was developed to help improve access to health care services, assist in wait time reduction, provide both acute and chronic disease management, and enhance the collaborative practice provided by the physician-CA team and other healthcare professionals.

In Manitoba, there are two categories of clinical assistants: Certified & Non-Certified. Certified Clinical Assistants (CA cert.) have successfully completed an accredited Physician Assistant (PA) training program in either the U.S. or Canada. They have passed the national credentialing exam for the country in which they trained and are licensed by the College of Physicians & Surgeons of Manitoba (CPSM).

Non-Certified Clinical Assistants (CA) have had their credentials verified and applications approved by the College of Physicians & Surgeons of Manitoba. They must pass the Registered Clinical Assistant (RCA) Part I exam administered by the University of Manitoba.

Applicants for registration as a Non-Certified CA must meet the following requirements: They have a degree in medicine from a faculty of medicine acceptable to the Council; are licensed or registered to provide healthcare under an act of the legislature; or are certified as an Emergency Medical Attendant-level III (EMA III).

After orientation and training within a specific area of practice, the Non-Certified CA completes the RCA Part II exam. The University of Manitoba office of Continuing Medical Education administers this exam. Non-Certified CAs may not continue to practice if they fail to achieve a passing score on the Part II exam.

### **Legislation**

Clinical assistants are registered pursuant to the Manitoba Clinical Assistant Regulation (Regulation 183/99) of The Medical Act (C.C.S.M.c.M90). This permits registration of clinical assistants on Part 2 of the Clinical Assistant Register. The CA must enter into a contract of supervision with a licensed physician(s), and a list of alternate supervising physicians must also be submitted and approved. In conjunction with the contract of supervision, the physician must submit a detailed practice description outlining the clinical assistant's duties and functions. These practice descriptions must be approved by the (CPSM) prior to the CA entering into clinical practice.

Prescriptive Authority is outlined in section 16(1-3) of the Clinical Assistant Regulation. Clinical assistants may not prescribe narcotics or controlled substances as mandated by the federal Controlled Drug & Substances Act, which limits authority to physicians, dentists, and veterinary practitioners. Otherwise, CAs can prescribe in the same manner as their supervising physicians.

The supervising physician is responsible for giving direction and providing regular review concerning the medical services provided by the clinical assistant. The supervision of certified CAs requires that the supervising physician be available to supervise by telephone or otherwise, for at least the number of hours per week that the contract of supervision specifies. The physician's physical presence is not required for this weekly supervision of the certified clinical assistant, who may be providing medical services in a location separate from the supervising physician's regular practice location. In addition, the physician is required to provide personal on-site supervision for at least the number of hours per month that the contract of supervision specifies.

The supervision of Non-Certified CAs requires that the supervising physician provide daily on-site, personal supervision.

### **Scope of Practice**

The clinical assistant's scope of practice must mirror that of the supervising physician. The CA effectively extends the same services to patients as does the physician. This is often determined by the CA's level of experience & negotiated between the physician & CA. The CA may not provide services for any physician that is not listed in the contract of supervision, or that are outside of the supervising physician's scope of practice. Each supervising physician must submit a detailed practice description outlining the duties & functions of the CA in relation to the physician's practice. This practice description must be approved by CPSM.

### **Practice Settings & Training**

Currently CAs are employed by the WRHA and work in hospital based settings. The ability of CAs to work in other settings has been limited because Manitoba Health has not extended fee for service funding to CAs, and until recently there was no private carrier liability insurance coverage available to CAs in Canada. In addition, CAs have been dependent on HIROC (Healthcare Insurance Reciprocal of Canada) policies provided through the regional health authorities. The Anaesthesia & Critical Care programs have created detailed training programs for their clinical assistants. All other programs employing CAs in the WRHA provide on the job training.

Programs employing CAs in the WRHA include Cardiac Surgery, Vascular Surgery, Neurosurgery, Plastic Surgery, Trauma, Orthopaedic Surgery, Anaesthesia, Rheumatology, Hepatology, Oncology/Bone Marrow Transplant and Critical Care.

## ***Literature Review***

Evidence from the United States & Canada supports the benefits of employing physician assistants. Productivity, cost effectiveness, access to care and patient satisfaction are all enhanced when PAs work with physicians.

### United States

PA productivity is equivalent to or exceeds that of physicians (Hooker, 1993, 2000, 2000a, 2006; Larson, 2003; MGMA, 2006). PAs fulfill roles largely equal to that of physicians (Grzybicki, 2002). PAs can see more patients per hour than physicians because: they see the lower acuity patients; have fewer distractions and responsibilities than physicians; and are able to spend more time in the practice.

PAs provide cost effective care. They have higher volumes and lower salaries. In various practice settings including orthopaedics, those with PAs have costs per patient that are lower (Hooker, 2005). Salaries of orthopaedic surgeons are significantly higher (Hooker, 2005). PAs in managed care are cost effective too (Hooker, 2002). Training costs for PAs are one fifth that of physicians (Hooker, 2000a).

Patient access to care is improved with PAs. Under-serviced populations are more likely to receive care from PAs (Grumbach et al, 2003; Larson et al, 2003). Patient satisfaction with PAs is equivalent to that with physicians (Hooker, 2000a).

### Canada

Sigurdson (2006) using data from two Halifax, Nova Scotia hospitals demonstrates that the employment of PAs would significantly increase surgical productivity. The accompanying business case analysis shows this would be achieved in a cost effective manner. In addition, the utilization of a PA would allow one surgeon to run simultaneously two operating rooms achieving even greater efficiencies.

## ***Methods***

The University of Manitoba Joint Replacement Group consists of 4 fellowship trained surgeons specializing in primary and revision hip and knee arthroplasty. They perform approximately 1400 joint replacements per year. About 24% of there are revisions. Emergency fracture work and “surgical procedure add-ons” during revision surgery account for approximately another 450 procedures per year. Because of this high volume of work and the low number of residents rotating through their service, the group hired two physician assistants in January of 2003. Since May 2006, three physician assistants have been working with the group. The PAs: take first call with their supervising physician; provide first assist services in the operating room; write post-operative orders;

write the operative note; undertake daily rounds on patients; and complete discharge summaries.

For this study, the impact of physician assistants was examined in 4 different areas:

1. Time savings for orthopedic surgeons (relief of “scut work”)
2. Perceptions of patients, operating room nurses, ward nurses, orthopedic residents and attending orthopedics surgeons about the roles & activities of physician assistants
3. A cost analysis comparing the salary costs of physician assistants to the forgone GP operating room assistant fees.
4. Impact on the waiting times for hip and knee replacement surgery.

In the first component, an examination of the various tasks performed by one of the arthroplasty service CAs was undertaken to determine the time savings for the surgeon. This was accomplished by the use of a daily diary, as well as calculating the total time saved per typical joint replacement patient. A monetary value was applied to this time saving using the specialist hourly rate recommended by the Manitoba Medical Association.

In the second component, data was gathered by means of a survey administered to all full time ward nurses on the surgical ward, all full time operating room nurses, residents who had rotated through the arthroplasty rotation when physician assistants were present, a convenience sample of 25 patients, and all 4 surgeons. The University of Manitoba Biomedical Research Ethics board provided ethical review and approval for this survey.

The third component was a costing analysis. This was undertaken by comparing the salary costs of 3 physician assistants to the savings generated by the forgone general practitioner surgical assist fees. These general practitioner surgical assist fees refer to the billings that would normally have been generated for the GP OR work, but were not because a PA was assisting in the procedure. The savings were calculated by reviewing the last 100 surgical procedures performed in 2006 by each of the 4 surgeons, calculating the forgone GP surgical assist fees as a percentage of the surgeons’ total billings, and then applying this percentage to the surgeon’s total billings for the year. Fees for each surgical procedure and associated assist fee were obtained from the April 1, 2007 Manitoba Physician’s Manual published by the Manitoba Ministry of Health (<http://www.gov.mb.ca/health/manual/>).

The fourth component examines the reduction in the number of patients on the group’s arthroplasty waiting list, and the subsequent decrease in waiting times that could be attributed to running two operating rooms with the help of the clinical assistants.

## ***Results***

### **1. Time Savings**

The amount of time that the surgeons “saves” per patient by having the physician assistant provide assistance in both the operating room and on the ward was calculated

through discussions with the physician assistants and observation of the time required for the various tasks. Table 1 (below) outlines the typical 50 minute time savings for a surgeon per arthroplasty patient. The time saved by the surgeon may be used for other activities, such as operating in a second theatre, attending to paperwork, or making rounds.

**Table 1: Clinical Assistant Time Savings Per Patient**

<b>Activity</b>	<b>Time Savings</b>
Foley/position/Prep	15 minutes
Wound Closure	10 minutes
Orders & OR note	3 minutes
Daily rounds	15 minutes
Discharge prescriptions	3 minutes
Discharge summary	4 minutes
<b>Total</b>	<b>50 minutes</b>

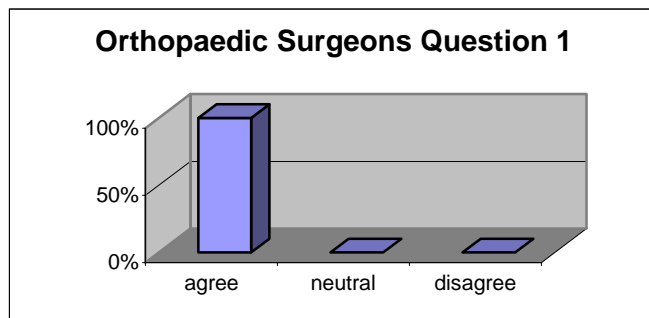
The total surgical volume for the group was 1409 primary and revision joints in 2006. Physician assistants were involved in approximately 69.4% of these cases (the residents provided coverage for the rest). This translates into a surgeon time savings of 815 hours per year; approximately 204 hours per surgeon, or four 50 hour work weeks per surgeon. This realized time can be utilized, as described, for other patient care related activities, research activities, or administrative work. If one uses a conservative estimate of the worth of a specialist's time of \$250/hr (personal communication, Roger Jamieson, compensation specialist, Manitoba Medical Association), the value of this time saving is \$203,717.

## 2. Stakeholder Opinion Survey

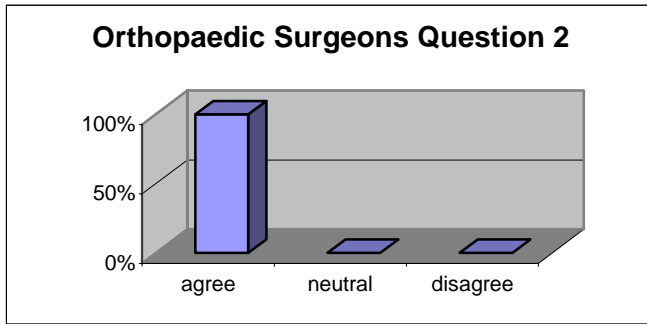
### Orthopaedic Surgeon Survey

All 4 orthopaedic surgeons completed the survey. Overall surgeons have very positive opinions of CAs. For all questions, 100% of surgeons responded that they agreed. One surgeon even notes that the capabilities of CAs exceed that of R5 residents.

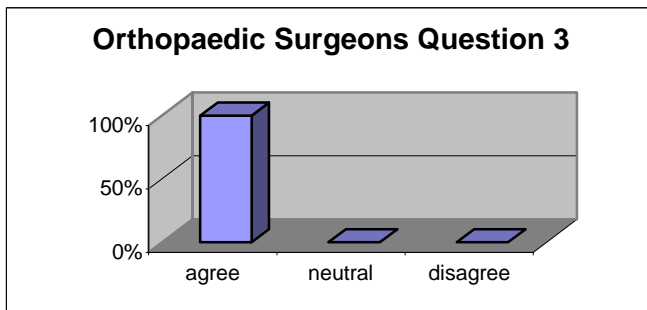
1. A fully trained CA provides surgical assistance equal to that of an R5



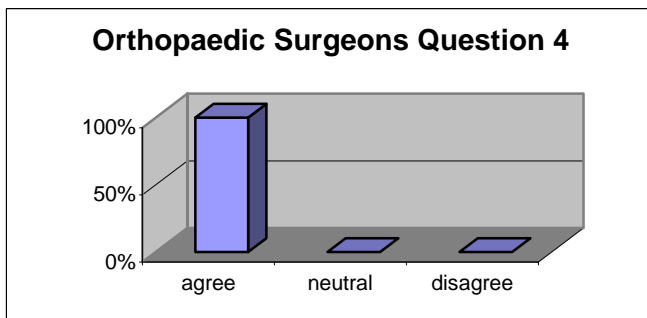
2. The presence of CAs has improved your job satisfaction



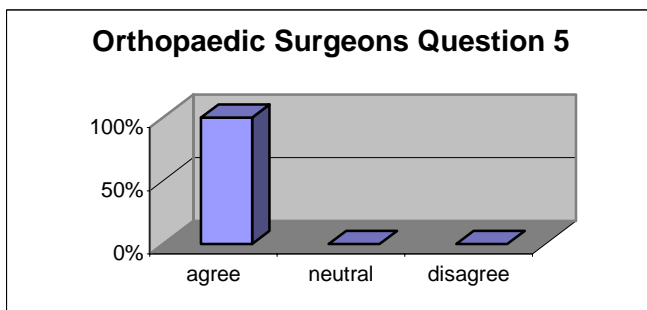
3. The presence of CAs has safely allowed you to do more surgical volume



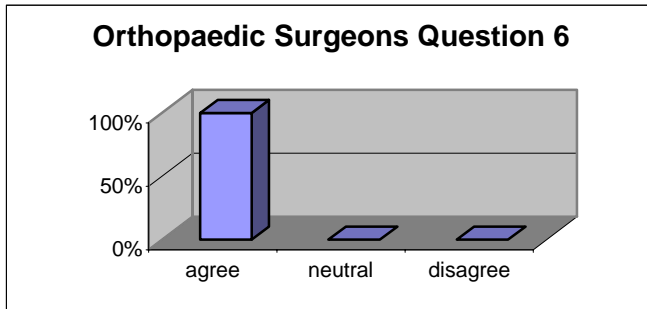
4. The care of your patients on the ward is improved by the assistance of CAs.



5. The care of your patients in the operating room is improved by the assistance of CAs



6. Clinical assists greatly decrease the amount of “scut work” that you have to do.

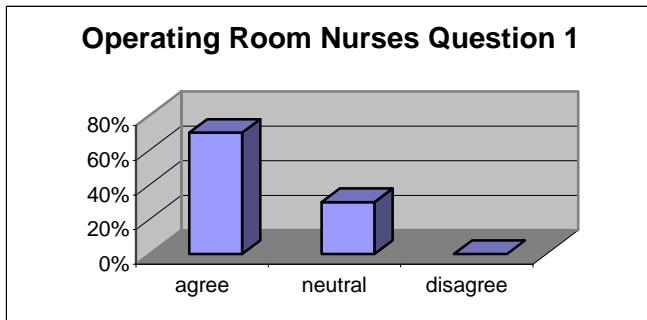


### Operating Room Nurse Survey

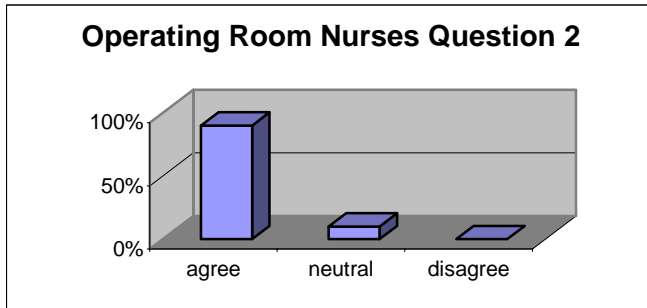
Surveys were distributed to all 12 OR nurses; 10 completed and returned the questionnaires (83% response rate). Overall the OR nurses judged CAs to be valuable members of the team in the OR. Responses to questions were either agree or neutral. No OR nurses responded that they disagreed with any questions. Clinical assistants improve the care of orthopedic surgery patients in the operating room (70% agreed). OR nurses responded that CAs provided surgical assistance superior to family practitioners (90% agreed); that CAs are necessary to run two ORs (90% agreed) and that CAs are important team members on the OR.

Unlike the ward nurses, a significant number of OR nurses felt that tasks performed by CAs in the OR fell within the scope of nursing practice: Forty percent said they agreed with this question while sixty percent of OR nurses were neutral to this question. Discussion with several of the operating room nurses as well as the OR manager revealed that these responses reflect the fact that CAs were often doing nurse-specific tasks such as inserting foley catheters or helping to position patients instead of the nursing staff. The nursing concern was not that the physician assistants were filling an expanded allied healthcare role that should be performed by nurses, but that during an operating room day they were undertaking some activities that were traditionally performed by nurses.

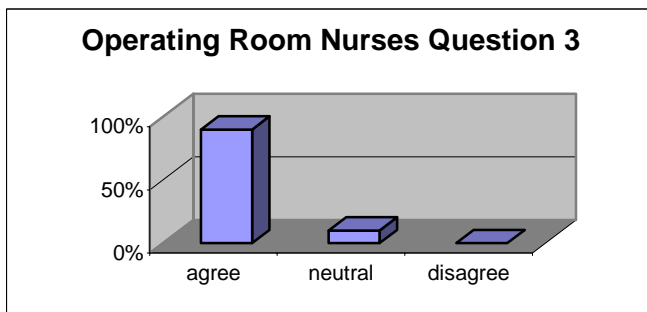
1. Clinical assistants improve the care of orthopedic surgery patients in the operating room



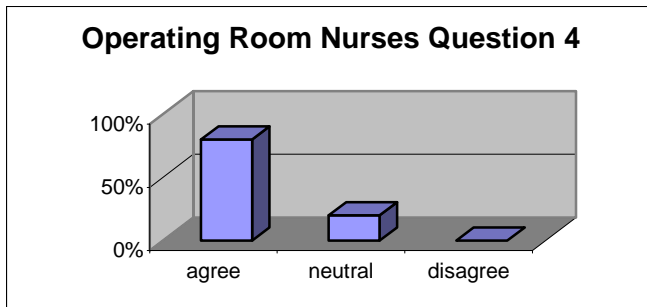
2. Clinical assists generally provide a level of surgical assistance superior to family practitioners.



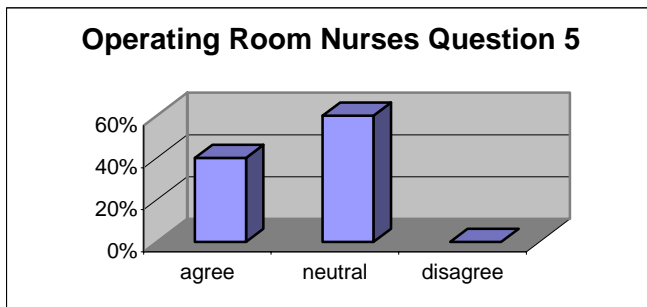
3. Clinical assists are necessary for a surgeon to run 2 operating rooms effectively.



4. Clinical assists are important team members in the operating room.



5. Clinical assists perform tasks that really should fall within the scope of nursing practice.

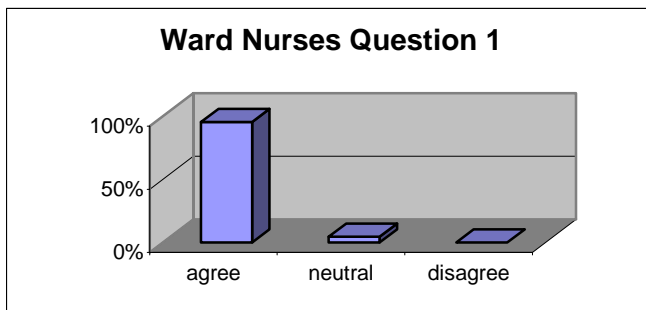


## Ward Nurse Survey

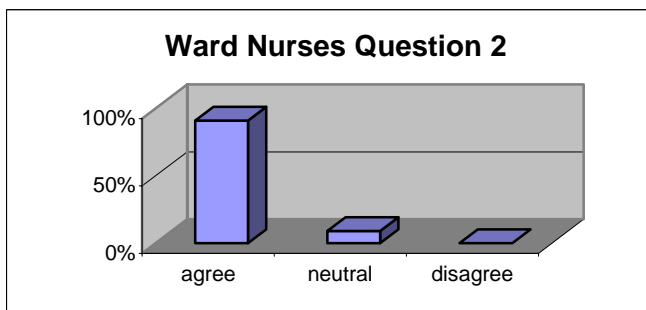
The survey was administered to all 22 ward nurses and all completed the surveys fully. Responses on the first four questions indicated that over 90% of ward nurses agreed with the questions. None expressed disagreement with any of the first four questions. Patient care, information flow and patient rounds are highly enhanced by CAs working on the ward. Clearly, ward nurses feel that CAs are significant members of the team providing care on the ward.

Results from the final question (number five) which asked whether clinical assistant tasks fell within the scope of nursing were a little ambiguous. Twenty seven percent responded that they agreed; 27.3% responded that they held a neutral opinion; while 45.4% noted that they disagreed. Looking at individual responses indicates that opinion on this question was polarized: many agreed while other disagreed. One ward nurse commented just what critical members of the team CAs are. A discussion with the clinical resource nurse on the ward (formerly termed “charge nurse”) revealed similar opinions to those expressed by the operating room nurse. Some of the tasks that the physician assistants were occasionally performing on the ward traditionally fell within the scope of nursing practice: removing hemovac drains, changing dressings for wound inspections, and inserting foley catheters. Thus, the concern was not that the physician assistants were filling an expanded allied healthcare role that should really be performed by nurses, but that that on the ward they were occasionally undertaking some activities that were traditionally performed by nurses.

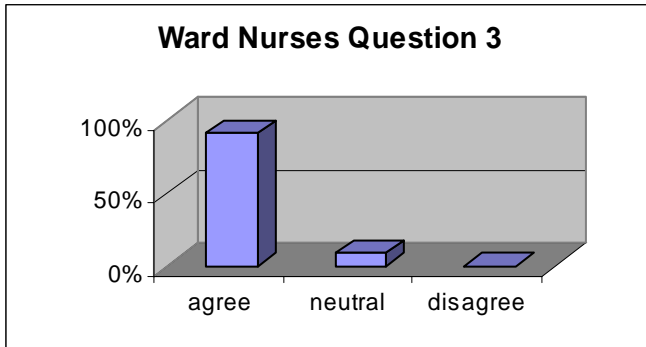
### 1. Clinical assistants improve the care of orthopedic surgery patients on the ward



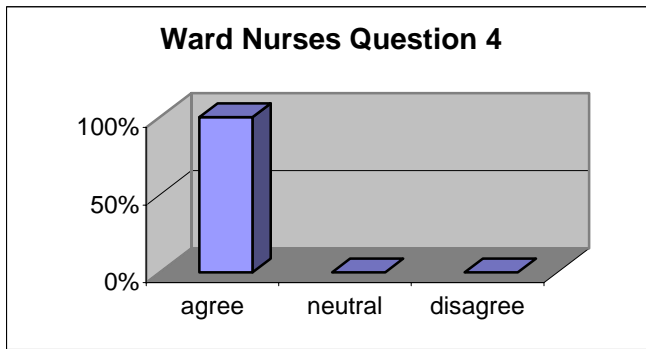
### 2. Clinical assistants improve the flow of information to patients and their families.



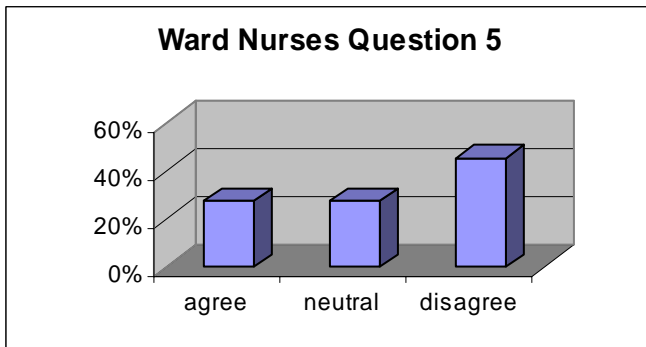
3. Clinical assists facilitate patient rounds



4. Clinical assists are important team members on the ward



5. Clinical assists perform tasks that really should fall within the scope of nursing



Orthopedic Resident Survey

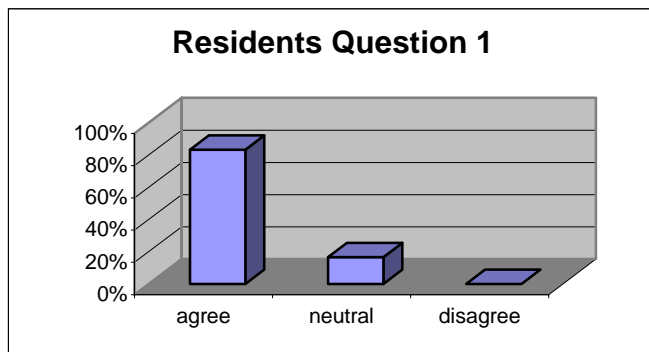
Surveys were administered to six orthopedic residents who had completed rotations with CAs and who had not yet graduated from the orthopedic training program; all completed responses fully. Responses by residents in general were more variable than were responses by all other participant groups.

Residents are nearly unanimous that CAs reduced their workload (5/6 agreed and 1 was neutral). In the OR on the other hand, residents have mixed feelings about whether CAs improve the OR experience (2/6 agree, 3/6 neutral and 1/6 disagree).

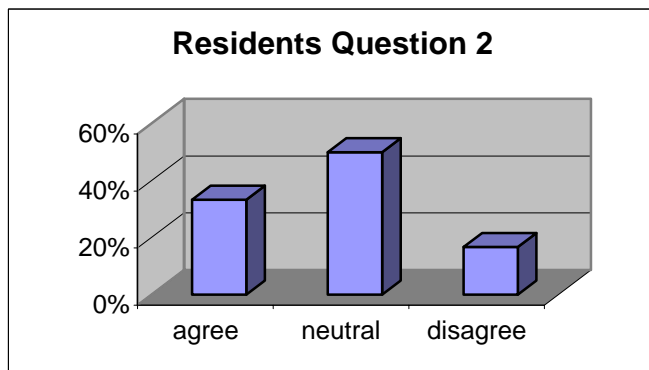
Fifty percent of residents agree that “clinical assists facilitate your training experience during the Arthroplasty rotation” while fifty percent have a neutral opinion to this question. Residents’ opinions about CAs on the ward are also mixed. No residents agreed that “clinical assists improve your learning experience on the ward”. They responded: 4/6 neutral and 2/6 disagree. The overall majority (4/6) of residents feel that CAs provide relief from clinical responsibilities so they can attend teaching. Only 1 expressed a neutral opinion and 1 disagreed.

The varied responses about physician assistants improving the learning experience likely reflect the fact that if a resident is on a surgeon’s rotation, then the physician assistant is not present in the operating room, nor is the physician assistant primarily responsible for taking care of that surgeon’s patients on the ward. Thus, the residents would receive little direct teaching or supervision from the physician assistants. However, the orthopedic residents do feel that the physician assistants do reduce their workload and provide relief from clinical activities so that they can attend teaching.

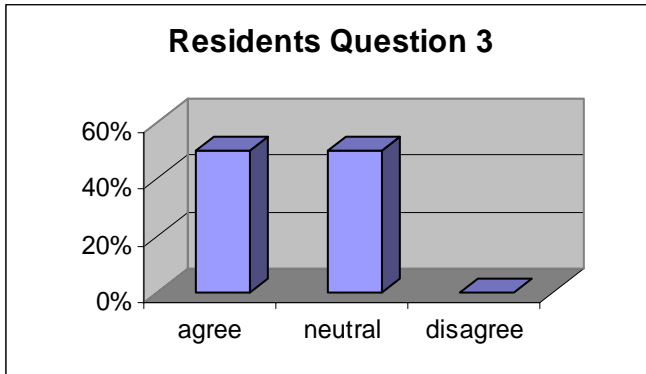
### 1. Clinical assistants improve Residents workload



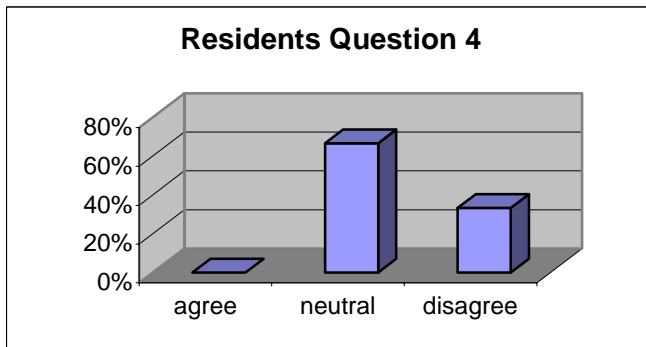
### 2. Clinical assistants improve the OR experience



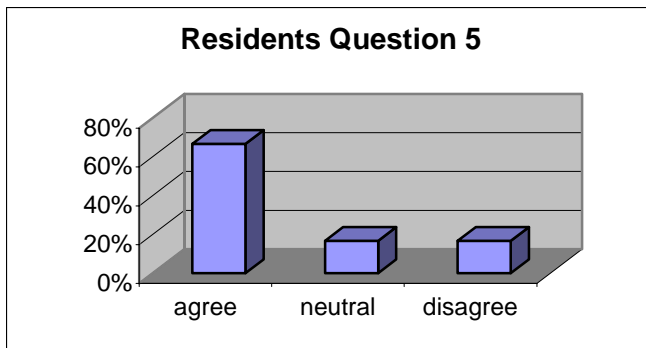
3. Clinical assists facilitate your training experience during the Arthroplasty rotation



4. Clinical assists improve your learning experience on the ward



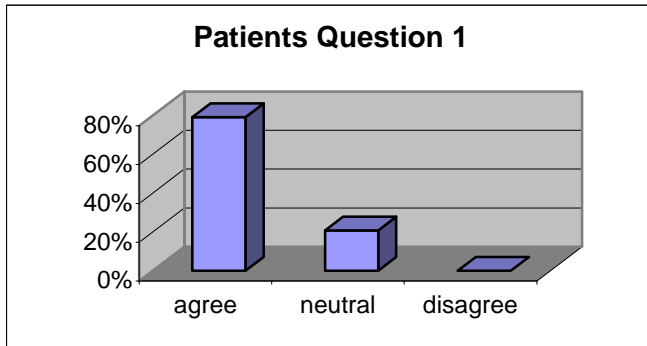
5. Clinical assists relieve you of clinical responsibilities so you can attend teaching



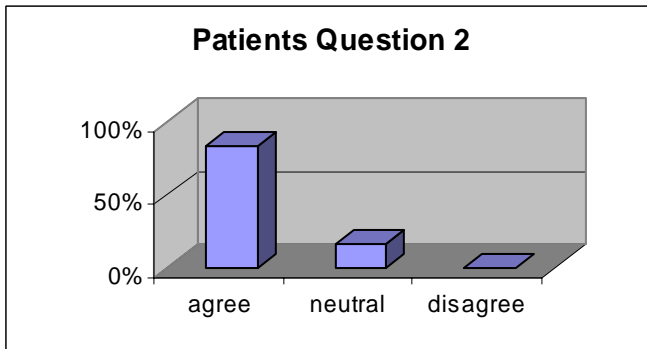
Patients Survey

The survey was administered to twenty-five patients and responses were received from twenty-four. (response rate: 96%). Overall, patients have very positive opinions of CAs. Patients feel: that CAs help with their care on the ward (79.2% agree and 20.8% neutral); improve flow of information (83.4% agree and 16.7% neutral); are a good idea (95.8% agree and 4.2% neutral); are important team members (91.7% agree and 8.3% disagree); and they are satisfied with the care received (95.8% agree and 4.2% neutral). Some patients commented that CAs were helpful in providing information and explaining things.

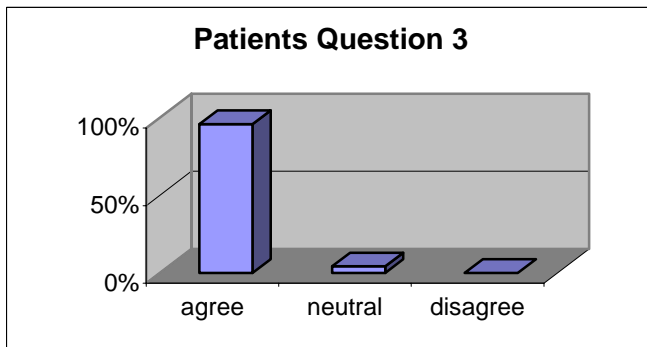
1. Clinical assistants improve your care on the ward



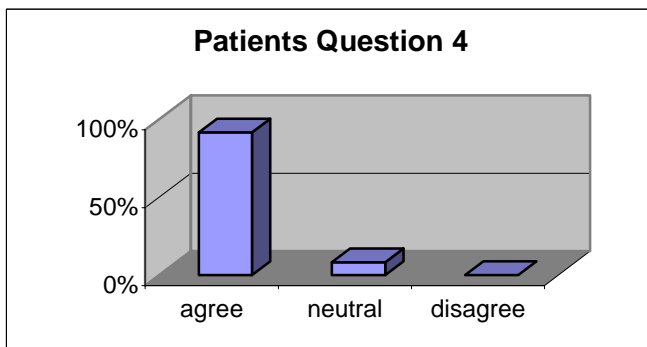
2. Clinical assistants improve the flow of information to patients and their families



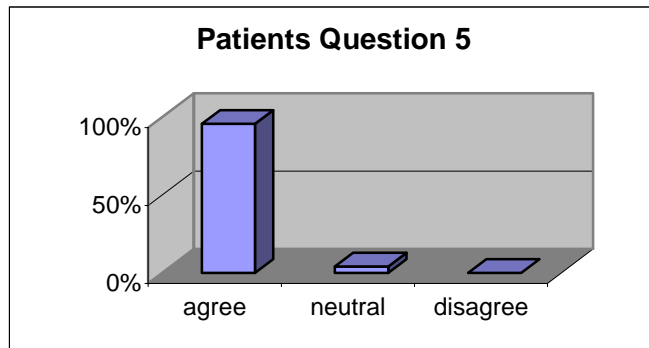
3. I think clinical assistants are a good idea



4. Clinical assistants are important team members on the ward



5. You are satisfied with the care you've received from the clinical assistants



### 3. Costing Analysis

For each of the 4 surgeons, the last 100 surgical procedures performed in 2006 were reviewed to determine the percentage of cases that a physician assistant was involved with, and the value of the forgone GP surgical assistant fees. The total forgone physician assist fees were \$56,113.00 for the 402 procedures (average of \$139.58 per procedure); physician assistants were present for 279 of 402 procedures (69.4%)

Data on total annual procedures was obtained for all 4 surgeons in 2006. The total number of surgical procedures was 1,936 (this included fracture work and “surgical add-ons” for revision cases). Based on the average forgone physician assist fees per procedure of \$139.58, the estimated total annual forgone GP surgical assist fees is \$270,226.88.

The WRHA remuneration schedule for CAs indicates that the cost of employing 3 CAs in 2006 would range between \$270 000 and \$327 000 dollars. This compares exceedingly favorably to the \$270 226.88 that was not billed to the Manitoba Ministry of Health for GP assist fees because clinical assistants were performing surgical assist duties. The comparison improves considerably when one considers the orthopedic surgeons feeling that PAs provide surgical assisting at the level of an orthopedic R5 resident, and that they provide a large amount of service work outside the operating room, something that the GP surgical assists do not provide at the surgeons’ hospital. In summary, these salary only numbers underestimate the real cost savings of PAs to the health care system.

An indirect benefit of using physician assistants in the operating room is the possibility of freeing up general practitioners to remain in their clinic in order to provide primary care. This is particularly salient, as access to primary care physicians is an issue across Canada<sup>3</sup>. In fact, if one assumes conservatively that assisting with one arthroplasty procedure or emergency case would take a GP away from the office for a minimum of two hours, the 1344 surgical cases (both elective and emergency) that the physician

<sup>3</sup> *When the Clock Starts Ticking - Wait Times in Primary Care*. The College of Family Physicians of Canada, Nov (2006)

assistants provided first surgical assistance for equals 2688 hours in the office, or sixty seven 40 hour work weeks, or the equivalent of 1.5 general practitioners working 40 hours per week for 44 weeks per year.

#### **4. Waiting Times**

The addition of clinical assistants to the UMJRG’s team allowed a single surgeon to run two rooms during a single operating day, thus increasing volumes from 3-4 primary joints per day to 7-8 primary joints per day. This was accomplished by using 1 physician assistant per room, with each room having its own dedicated nursing team and anesthesiologist. While the surgeon was performing surgery in one room with assistance from the first physician assistant, the second physician assistant was helping to position, prep, and drape the next patient in the second room. At the completion of the first operation, the surgeon could depart the first room to immediately start operating in the second room. When the surgeon departed the first room, the first physician assistant was left to close the incision, complete the paperwork and assist with room changeover. Due to the unpredictability of revision surgery, the group did not undertake revision surgeries during double days.

In Table 2 (below), the addition of double rooms aided the group in significantly increasing surgical volumes and reducing waiting times for patients. In fact, the double rooms in 2006 increased primary joint volumes by 316, an increase from the 754 that would have been done had no double rooms been used. This is an increase of 42% in primary joint volumes directly attributable to the double room model. This significant increase in volumes was possible due to the double rooms, as the surgeons had very little time in their schedules to pick up any more OR time, other than by creating “double days”. Improved efficiencies would also be anticipated under other operating room arrangements where PAs are employed.

**Table 2: Surgical Volumes & Waiting Times**

<b>Calendar Year</b>	<b>Wait List Count at end of year</b>	<b>Annual Total Procedures</b>	<b>Annual Primary procedures</b>	<b>Median Wait Time Weeks</b>	<b>Number of “double” days</b>	<b>Extra Joints due to double days</b>
2004	1129	758	462	40	0	0
2005	1131	1085	755	44	34	136
2006	980	1409	1070	30	79	316

#### ***Conclusions***

Strong empirical evidence from the literature indicates that physician assistants enhance physician productivity and economic efficiency. They also improve access to care and

patient satisfaction. The literature on PAs in orthopaedics, while limited, indicates strongly positive outcomes for PA-orthopaedic surgeon practice.

This examination of physician assistants working in the University of Manitoba Joint Replacement Group demonstrates several important points:

1. Operating room and ward nurses feel that physician assistants are important team members that improve care delivery.
2. Nursing staff do not feel that physician assistants fill an expanded healthcare provider role that should be in the domain of nursing.
3. Orthopedic surgeons feel strongly that physician assistants improve the quality of care of their patients both in the operating room and on the ward, and that physician assistants greatly reduce the amount of “scut work” that they have to perform.
4. Patients report very positively that physician assistants improve the care that they receive on the ward, and that they are important members of the care team.
5. Physician assistants can greatly improve surgical throughput by facilitating the use of “double rooms”, whereby greatly improving surgeon capacity. In this study, the double room model facilitated an increase in primary joint volumes of 42%. The increased throughput associated with the double room model has reduced median wait times in this particular surgical group by 14 weeks down to 30 weeks, which is quite close to the national benchmark. This is a reduction in median waiting times of 32% over 2005. Improved efficiencies would also be anticipated under other operating room arrangements where PAs are employed.
6. In this study, physician assistants were found to free up for physicians the equivalent of four 50 hour work weeks per year. Surgeons can in turn use this time for other activities such as administrative work, research, and other clinical activities.
7. Evidence supports that employing PAs reduces health system expenditures. While the forgone general practitioner surgical assist fees in 2006 (\$270,000) correspond to the total salary costs for the 3 physician assistants (\$270,000 to \$327,000), these numbers underestimate the real cost savings of PAs. (The value added benefits of PAs noted above and the flexibility of PAs to work in both the OR and on the ward are not reflected in these salary only numbers.)
8. The use of physician assistants as first assistants in the operating room freed up the equivalent of 1.5 general practitioners working 40 hours per week for 44 weeks per year.

This examination of physician assistants working in a busy Canadian joint replacement practice demonstrates that physician assistants integrate well into the care team and can increase surgical volumes to reduce wait times cost effectively while providing a large amount of value added service.

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