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Original Research Article

Diagnostic hysteroscopy in a procedure room setting compared to diagnostic hysteroscopy in the operating room

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ABSTRACT

Background: To examine patients' perceptions of and satisfaction with diagnostic hysteroscopy with endometrial biopsy in a procedure room/office setting as compared to diagnostic hysteroscopy with dilation and curettage (D&C) performed in the operating room (O.R.).

Methods: This comparative quality improvement study contrasts diagnostic hysteroscopy with endometrial biopsy in a procedure room and diagnostic hysteroscopy with dilation and curettage in the operating room. 66 women participated in the study. Variables examined were: length of hospital stay, anesthesia and analgesia used, pain scores, recovery time, overall experience and satisfaction associated with the procedure.

Results: The O.R. group spent on average an additional 2 hours and 21 minutes in hospital compared to the procedure room group. The procedure room group received local blocks without the presence of an anaesthetist whereas the O.R. group received a range of intravenous (I.V.) medications given by an anaesthetist in addition to a local block. There was a slight increase in perceived pain among the procedure room group immediately following the procedure. However, no difference was observed between the pain scores collected upon discharge. More women from the O.R. group missed work due to their procedure compared to those in the procedure room group. Those from the procedure room group were able to return to their normal activities much sooner than those in the O.R. group and all of them indicated that they would prefer the same location in the future. A quarter of the patients in the O.R. group would prefer to have it performed in the procedure room, instead of the OR in the future

Conclusions: Diagnostic hysteroscopy is currently considered a valuable investigational tool for endometrial abnormalities and abnormal uterine bleeding. Most of these procedures can be performed in a procedure room setting without I.V. sedation or pre-operative narcotics. In our experience, a utero-sacral block using lidocaine is quite effective in controlling discomfort while passing various instruments through the internal cervical os. These techniques result in good visualization of the endometrial cavity, adequate and appropriate endometrial sampling with tolerable discomfort. The patients spend less time in the hospital, experience a much faster recovery and have less pre-operative restrictions.

Keywords: Diagnostic hysteroscopy, Endometrial biopsy, Operating room, Patient satisfaction, Procedure room, Recovery time, Utero-sacral block

INTRODUCTION

It is estimated that approximately 30% of all visits to gynaecologists are linked to symptoms of abnormal uterine bleeding (AUB). AUB is the second most

common gynaecological complain and has traditionally been investigated by dilation and curettage (D and C). The sensitivity of a D and C when performed alone is only 65% compared to 98% when combined with hysteroscopy. Due to availability of other less invasive

and more sensitive and specific modalities, D and C is used less frequently. These include the use of hysterosalpingogram, vaginal ultrasound, hysterosonogram and diagnostic hysteroscopy. Raziel et al. demonstrated a sensitivity of 74% and specificity of 60% for hysterosalpingography, whereas Vercellini et al. showed the vaginal ultrasound values to be 85 and 84%. 7.8

Hysterosonogram revealed a sensitivity of 88.8% and a specificity of 84.4% in a study done by Gumus et al.⁹ Fedele et al. reported the sensitivity of hysteroscopy to be 100% and the specificity to be 95%. 10 Pelvic ultrasound and endometrial biopsy are the traditional initial investigations for abnormal uterine bleeding. However, the low specificity and sensitivity in diagnosing intra uterine disease may delay the ultimate diagnosis and appropriate management. Diagnostic hysteroscopy with endometrial sampling enables the clinician to make the correct diagnosis and initiate appropriate therapy rather than waiting for possible resolution of the problem or resorting to more aggressive therapy such as New technologies with hysterectomy. instrumentation are as well tolerated as office endometrial biopsy with no significant increase in morbidity and a more accurate diagnosis. 11,12

Diagnostic hysteroscopy may be used as the first line of investigation for various gynaecological complaints including AUB, postmenopausal bleeding and amenorrhea.¹

Whereas endoscopy is accepted to be performed in a procedure room in gastrointestinal medicine, the same is not true of diagnostic hysteroscopy in the gynaecology field. It has been estimated that only 15% of gynaecologists in the United States routinely perform procedure room hysteroscopy, with only a little over a third of the membership of the American Association of Gynecological Laparoscopists even occasionally performing procedure room hysteroscopy. 1,13

The purpose of this study was to examine patients' perceptions of and satisfaction with diagnostic hysteroscopy with endometrial biopsy in procedure room without the presence of an anaesthetist as compared with diagnostic hysteroscopy and D and C performed in the O.R. for AUB.

METHODS

Patients were given a self-administered questionnaire to complete during recovery and participated in a telephone interview between one and three days following their procedure. Additional information, such as admission time, discharge time, age, diagnosis and medications administered was collected from the patients' health records.

SPSS for analysis was utilized. Ethics approval was obtained. Participants were recruited by means of convenience sampling. Every woman with a diagnosis related to abnormal bleeding and scheduled for hysteroscopy in the procedure room or a hysteroscopy and D and C in the operating room between June and August 2008, were asked to participate. Those patients undergoing additional procedures such as thermal endometrial ablation; polypectomy; laparoscopic tubal ligation; diagnostic laparoscopy; replacement, removal, or insertion of an intra-uterine device (IUD); and tension free vaginal tape obturator (TVTO) were excluded. None of the subjects approached declined to participate. Subject recruitment took place over a period of 10 weeks.

All surgeons in both groups were experienced gynaecologists. Visualization of the endometrial cavity was satisfactory in all cases and endometrial sampling yielded appropriate histological samples.

Procedure room diagnostic hysteroscopy

Patients undergoing diagnostic hysteroscopy and biopsy in the procedure room arrived approximately half an hour before their scheduled procedure. Patients were asked to consume clear fluids only for four hours pre-op. The procedure itself began with a pelvic examination to assess uterine size and for adnexal masses. Approximately 2-3 cc of lidocaine was injected into the anterior lip of the cervix prior to grasping it with a single toothed tenaculum. Then, 10 cc of lidocaine was injected into the utero-sacral ligaments on each side. This was done at 5 and 7 clock and a total of 20cc was used, in order to alleviate discomfort during the procedure. Hysteroscopy was performed with a 2.3 mm rigid hysteroscope with a 3.5 mm outer sheath. No forceful dilation with dilators was used and dilation of the internal os was accomplished by hydro distension under direct vision. A continuous flow of distension fluid (normal saline) allowed a good view of the endometrial cavity and tubal ostia. Hysteroscopic images were displayed on a high definition monitor for both the patient and physician to view. Endometrial biopsy was then performed. Results of the hysteroscopy were communicated orally to the patient immediately following the procedure once they were stable.

Operating room hysteroscopy

Patients undergoing diagnostic hysteroscopy with D and C in the O.R. were admitted to the surgical centre approximately 2 hours before their scheduled procedure. Patients were required to fast during the 12 hours preceding hysteroscopy. All Patients were given intravenous sedation (Figure 1) and a paracervical block using lidocaine. Hysteroscopy was performed with a 5 mm outer sheath rigid hysteroscope, preceded by dilation of the cervix using dilators. Curettage was then performed with a sharp curette.

RESULTS

A total of 66 women participated in the data collection for this project, with an equal number (33) in each group (Table 1). Those from the O.R. group spent on average an additional 2 hours and 21 minutes in hospital than those from the procedure room group.

Table 1: Characteristics of patients from the procedure room compared to the O.R.

Patient Characteristic	O.R. (n = 33)	Procedure room (n = 33)	Total (N = 66)
Mean age (range)	50.5 (39- 66)	46.1 (29-69)	48.2 (29-69)
ALOS* hrs: min (range)	4:06 (1:50- 7:22)	1:45 (1:05-2:22)	2:48 (1:05- 7:22)
Primary diagnosis			
Menorrhagia	9	16	25
Post-menopausal bleeding	12	3	15
Abnormal uterine bleeding	_	6	6
Dysfunctional uterine bleeding	5	-	5
Thickened endometrium	2	1	3
Endometrial polyp	2	_	2
Menometrorrhagia	2	_	2
Other	_	2	2

^{*}Average Length of Stay

Table 2: Average level of pain post-procedurally and at discharge for women undergoing diagnostic hysteroscopy performed in the O.R. and the procedure room.

	Average level of pain (VAS cm)			
Hysteroscopy location	Post- procedural (range)	Discharge (range)	Post- procedural — discharge	
OR (n = 29)	0.86 (0 – 2.3)	0.47 (0 – 2.0)	0.41	
Procedure room (n = 33)	2.44 (0 – 8.5)	1.12 (0 – 6.7)	1.11	
P value	0.002	0.028	_	

Those who underwent hysteroscopy in the procedure room received only a local anaesthetic (utero-sacral block) whereas those who underwent operative hysteroscopy in the O.R. received a range of medications (Figure 1). All women from the O.R. group received one or more I.V. sedatives, a local anaesthetic (lidocaine) and at least one analgesic medication. Most women (93.9%) also received an antiemetic such as dimenhydrinate (Gravol). Some women also received an anti-

inflammatory (39.4%), antacid (36.4%), or respiratory medication (24.2%).

Table 3: Side effects of women undergoing diagnostic hysteroscopy in the O.R. and the procedure room.

Patient response	O.R. (n = 29)	Procedure room (n = 33)
Experiencing nausea		
No	27 (93%)	28 (85%)
Mild nausea	2 (7%)	3 (9%)
Moderate nausea	_	2 (6%)
Severe nausea	_	_
Vomiting	_	_
Feeling faint or dizzy	1	
No	24 (83%)	9 (27%)
Mild dizziness	3 (10%)	20 (61%)
Moderate dizziness	_	2 (6%)
Severe dizziness	_	1 (3%)
No response	2 (7%)	1 (3%)
Feeling drowsy		
No	12 (41%)	25 (76%)
Minimally	11 (38%)	6 (18%)
difficult ^a		
Somewhat	6 (21%)	2 (6%)
difficult ^a		
Very difficult ^a	_	_

^aDifficulty staying awake

Table 4: Patient reported pain and discomfort from diagnostic hysteroscopy performed in the O.R. and procedure room.

Patient Response	O.R. (n = 32)	Procedure room (n = 28)	Total (N = 60)
During procedure	e ^a		
No pain	26 (81%)	1 (4%)	27 (45%)
Very little pain	4 (13%)	6 (21%)	10 (17%)
Some pain	2 (6%)	19 (68%)	21 (35%)
Very bad pain	_	2 (7%)	2 (3%)
After procedure (1-3 days) ^b		
No discomfort	18 (56%)	17 (61%)	35 (58%)
Cramping	8 (25%)	5 (18%)	13 (22%)
General discomfort	6 (19%)	5 (18%)	11 (18%)
Unspecified discomfort	_	1 (4%)	1 (2%)

^aAs recalled during telephone interview, one to three days following procedure; ^bDiscomfort reported at time of telephone interview.

Table 5: Patient satisfaction with diagnostic hysteroscopy performed in the O.R. and Procedure room: expectations, preference to repeat procedure, likelihood of recommending to others.

Patient response	O.R. (n = 32)	Procedure room (n = 28)	Total (N = 60)
Comparison to exp	ectations		
Worse than expected	1 (3%)	7 (25%)	8 (13%)
As expected	10 (31%)	10 (36%)	20 (33%)
Better than expected	21 (66%)	11 (39%)	32 (53%)
Repeat procedure i	n future		
Same way	28 (88%)	28 (89%)	56 (93%)
Without sedation ^a	3 (9%)	_	3 (5%)
With sedation ^b	_	_	_
N/A	1 (3%)	_	1 (2%)
Likelihood of reco	mmending	to others	
Not at all likely	1 (3%)	_	1 (2%)
Not likely	1 (3%)	_	1 (2%)
Somewhat likely	9 (28%)	10 (36%)	19 (32%)
Very likely	21 (66%)	18 (64%)	39 (65%)

^aFully awake; ^bPut to sleep

The patient was in the procedure room for approximately 10 - 15 min and subsequently in the recovery room for an additional 15 min. They were able to drive home. In the O.R. group, following their procedure, patients were taken to the Post Anesthesia Care Unit (PACU) for an approximately 45-minute recovery period. Many patients received various postoperative medications (Figure 1). Recovery then continued for 30 to 60 minutes where patients were monitored until able to be taken home. Patients were not allowed to drive themselves home after this procedure. Women from the procedure room group reported experiencing significantly more pain postprocedure (p <0.01), with a mean pain score of 2.44 out of 10 cm on the VAS, compared with 0.86 cm for those from the O.R. group (Table 2). Although higher, the mean pain score of 2.44 cm is still considered mild or a low level of pain as it falls on the low end of the 10-cm scale. Those from the procedure room gave a mean pain score of 1.12 cm, still significantly higher than those from the O.R. (p < 0.05) who gave a mean rating of 0.47

For those who underwent diagnostic hysteroscopy in the procedure room, post-procedural pain scores were higher on average when biopsy was required. Women who required a biopsy of any abnormalities found during hysteroscopy (n = 19) gave a mean post-procedural pain

score of 3.14 whereas those who did not require biopsy (n = 14) gave a mean pain score of 1.96 (p = 0.066). No difference was observed between the pain scores collected upon discharge.

Table 6: Patient recovery after diagnostic hysteroscopy performed in the O.R. and procedure room.

Patient Response	O.R. (n = 32)	Procedure room (n = 28)	Total (N = 60)
Work missed due t	o procedure		
Did not miss work	12 (38%)	13 (46%)	25 (42%)
Missed work	20 (62%)	14 (50%)	34 (57%)
Mean hrs (days) missed	58.2 (2.4)	16.9 (0.7)	-
N/A	_	1 (4%)	1 (2%)
Able to return to re	egular activiti	es	
No	13 (41%)	1 (4%)	14 (23%)
Yes	19 (59%)	27 (96%)	46 (77%)
Mean hrs (days) ^a	31.3 (1.3)	6.9 (0.3)	19.1 (0.8)
Able to drive after	procedure		
Haven't driven	11 (34%)	5 (18%)	16 (27%)
Immediately after	-	17 (61%)	17 (28%)
24 hrs after	10 (31%)	3 (11%)	13 22%)
48 hrs after	2 (6%)	_	2 (3%)
72 hrs after	_	_	_
N/A	9 (28%)	3 (11%)	12 (20%)

^aMean number of hours before able to return to regular activities

Most women did not report experiencing any significant side-effects as a result of their procedure (Table 3). 2 women (7%) from the O.R. group and 5 (15%) from the procedure room group reported experiencing any nausea. 3 women (10%) from the OR group reported feeling mildly faint or dizzy and 17 (59%) reported feeling drowsy after DandC and hysteroscopy. In contrast, 8 (24%) women from the procedure room group reported feeling drowsy after their procedure and 23 (70%) reported feeling faint or dizzy. Of the latter group of women, 87.0% (20 / 23) reported experiencing only mild faintness or dizziness after their hysteroscopic procedure.

Table 7: Patient preference for hysteroscopy performed in the O.R. or the procedure room.

Patient Preference	O.R. (n = 32)	Procedure room (n = 28)	Total (N = 60)
Operating room	21 (66%)	_	21 (35%)
Procedure room	8 (25%)	28 (100%)	36 (60%)
N/A	3 (9%)	_	3 (5%)

A total of 32 and 28 telephone interviews were conducted with women from the O.R. group and the procedure room group respectively. Women were asked questions regarding aspects of their experience of hysteroscopy such as overall satisfaction, anxiety, pre-procedure preparations and recovery. Responses given during the interviews with respect to anxiety indicated that there were no marked differences between the groups.

While the majority of women from the O.R. group (81%) reported feeling no pain, the majority of women from the procedure room group (96%) reported feeling some degree of pain (Table 4). Women were also asked to report on whether they were experiencing any pain/discomfort at the time of interview. The O.R. group (44%) overall had slightly more discomfort within a few days of their procedure than did those in the procedure room group (39%). Patients characterized current symptoms as cramping in the lower abdomen or general discomfort.

Patients were also asked questions relating to their overall experience with hysteroscopy. Overall, the majority of women (53%) felt that the procedure was better than what they had expected (Table 5): 10 women from each group felt that the procedure was just as they expected it to be; 1 woman from the O.R. group and 7 from the procedure room group felt that it was worse than expected. When asked if they were to have a repeat hysteroscopy procedure, the majority of women reported that they would have it performed in the same way (93%).

In addition, patients were asked questions regarding their recovery after they had returned home. More women from the O.R. group (62%) missed work due to their procedure compared to those in the procedure room group (50%), missing an average of 2.4 days and 0.7 days of work respectively (Table 6). At the time of interview, 13 women from the O.R. group (41%) reported that they had not yet returned to their regular activities while all but 1 from the procedure room had (Table 6). Those from the O.R. group were able to return to their normal activities an average of 1.3 days after hysteroscopy and those from the procedure room group were able to resume normal activities an average of 6.9 hours after their procedure. At the time of interview, many women from the O.R. group (34%) still did not feel they were able to drive, while others required a day (31%) or 2 (6%) to recover before driving. In comparison, the majority of women from the procedure room group (61%) were able to drive immediately after their procedure and none required more than 1 day of recovery before driving.

All those who underwent diagnostic hysteroscopy in the procedure room indicated that they would prefer the same location in the future (Table 7). However, a quarter of those who underwent hysteroscopy in the O.R. would prefer to have the procedure performed in the procedure room without conscious sedation.

DISCUSSION

Although colonoscopy has been accepted and performed in a procedure room in gastrointestinal medicine, diagnostic hysteroscopy is not commonly performed outside of the operating theatre. 14

In this project, patients who have undergone diagnostic hysteroscopy with endometrial biopsy in the procedure room have reported higher severity of pain than those who have undergone diagnostic hysteroscopy with D and C in the O.R. However, the mean pain score of 2.44 cm for those from the procedure room is quite low on a 10cm VAS, and not different from levels of pain many people experience day to day. Similar values of pain intensity have been reported during procedure room hysteroscopy. 14 Results of the telephone questionnaire confirm that pain that was experienced in the procedure room was not lasting or intense enough to trigger a sense of pain during recall questioning as almost all patients from the procedure room group (89%) recalled experiencing only 'very little' or 'some' pain during the procedure. This concurs with results of a similar study, where 78% of patients considered the pain from procedure room hysteroscopy to be less than that usually experienced during menstruation.11

The difference in pain scores observed is not unexpected considering the medications that were administered within each group. Patients in the O.R., due to the use of pain alleviating drugs and conscious sedation, were not able to register or recall the pain. Analgesics were administered to every patient in the O.R. group, with 97.0% receiving more than two kinds of pain-killers of least which at one was narcotic а (morphine/hydromorphone) in addition to an amnesic (midazolam). Although both groups of women received a local anaesthetic before the procedure, those from the procedure room group were not sedated during the cervical injection as were those from the O.R. group. This seems to have contributed to the higher pain scores of women from the procedure room group. During the telephone questionnaire, several women reported that the injection of the local anaesthetic in the cervix was the worst part of their procedure. A similar finding has been reported by Nagele et al. who discontinued the use of a local anaesthetic routinely during procedure room hysteroscopy as many patients found the injection of anaesthetic as painful as the hysteroscopy itself.²

In addition to the administration of local anaesthetic, the need for endometrial biopsy may have also contributed to the higher pain scores. The difference in mean pain scores between women who did and did not require biopsy trended towards statistical significance (p = 0.066), with a difference of 1.18 cm on a 10-cm VAS.

It has been found that age and post-menopausal status are associated with the incidence of intrauterine pathology and pain during hysteroscopy respectively. 16,17 Schettini

D et al. have also found that menopause alterations in the female genitalia usually require the need for additional cervical dilation and tenaculum use, which is another factor associated with pain, especially in patients not having experienced previous vaginal delivery.¹⁸

The patients' experience of hysteroscopy is also influenced by their recovery from the procedure. As those from the procedure room group did not need to recover from conscious sedation, they were able to return to work, to return to regular activities and to drive much sooner. These results are comparable those of Kremer et al. who compared procedure room and O.R. hysteroscopy in a randomized controlled trial; The procedure room group reached pre-operative fitness more quickly than the O.R. group (2 days vs. 3 days; p <0.05) and were fully mobile more quickly (0 min vs. 105 min; p <0.001). 15

The overall experience for patients from both groups was favourable and most patients found their respective procedures to be better than they had expected. Although higher values for pain during procedure room hysteroscopy have been reported, it has been concluded that procedure room hysteroscopy is still well tolerated (19). Although women report pain, Clark et al. (20) and De Iaco et al. have found that 84% and 83% of women respectively have found the procedure to be acceptable. Kremer et al. (15) similarly found that patients' satisfaction with hysteroscopy in a procedure room to be 83.6%, compared with 77.0% for O.R. hysteroscopy.

CONCLUSION

Diagnostic hysteroscopy is currently considered one of the main investigation tools for endometrial abnormalities and abnormal uterine bleeding. Most of these procedures can be performed in a procedure room setting without I.V. Sedation, pre-operative narcotics or cervical preparation. In our experience, a utero-sacral block using lidocaine is quite effective in controlling discomfort while passing various instruments through the internal cervical os. These techniques result in good visualization of the endometrial cavity, adequate and appropriate endometrial sampling with tolerable discomfort. The patients spend less time in the hospital, experience a much faster recovery and have less pre-operative restrictions.

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Institutional Ethics Committee

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Appendix A

Pain/Adverse event data collection form

Hysteroscopic Surgery in a Procedure Room Compared to the Operating Room

- ✓ Mature Women's Centre
- ✓ SurgiCentre

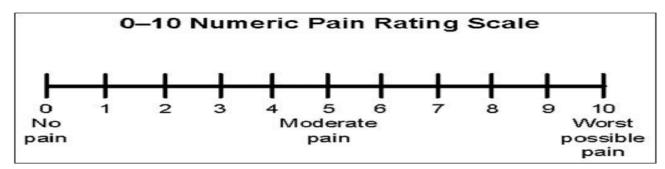
Name:_______Date:___/____(mm/dd/yy)

To be completed immediately POST-OP

Time of Admission:

Visual Analog Scale (VAS):

Please rate the pain you are experiencing now by marking a line on the following scale from no pain to worst imaginable pain:



Are you experiencing any nausea? Y/N

If yes, how would you rate your nausea?

Moderate nausea Severe nausea Vomiting

Do you feel faint or dizzy? Y/N

If yes, how would you rate your faintness/dizziness?

Mild dizziness Moderate dizziness Severe dizziness Not at all difficult Somewhat difficult Very difficult

Do you feel drowsy? Y/N

If yes, how difficult is it to stay awake?

Comments:

Appendix B

Patient Satisfaction Questionnaire	
Hysteroscopic Surgery in a Procedure Room C	Compared to the Operating Room
Interviewer: Na	Jame:
Date:/ (mm/dd/yy) Time:	AM / PM
Before the procedure, did you feel?	
□ Fairly calm □ A bit worried □ Very wo	rorried
To what degree were you bothered by the p	pre-op dietary restrictions?
□ Not at all □ Somewhat □ A lot	
Do you feel that the verbal explanation you	got from the staff before the procedure was?
□ Very helpful □ Fairly helpful □ Not help	pful
During the procedure, did you feel?	
□ No pain □ Very little pain □ Some pain	□ Very bad pain
Would you say that you were treated kindly	y and with respect during your stay?
□ Strongly □ Disagree □ Agree □ Strongly	y disagree agree
Do you feel that the verbal instructions you	were given by the staff when you were discharged (went home) were:
□ Very helpful □ Fairly helpful □ Not help	pful
Compared to how you expected it to be, was	as the procedure:
□ Worse than expected □ As expected □ B	Better than expected
If you needed to have this procedure again,	, would you:
☐ Agree to have it done ☐ Have it done with conscious sedation (fully awake)	conscious sedation the same way (put to sleep) Have it done without
How likely would you be to recommend this	is same procedure to others?
□ Not at all likely □ Not likely □ Somewha	nat likely Very likely
Did you miss any work due to your procedu	ure?
□ Yes □ No	
If yes, how much work did you miss?	
Have you been able to return to regular act	tivities? (i.e. laundry, cooking, chores)
□ Yes □ No	
If yes, how long after the procedure (were you	u able to return to regular activities)?

How soon after your pr	ocedure were you	able to drive a	car?		
□ Haven't driven	□ 24 hrs after	□ 72 hrs after	□ Immediately	□ 48 hrs after	□ N/A
Do you have any curren	nt discomforts rel	ated to your pro	ocedure?		
□ Yes □ No					
What was the worst thi	ng about your pr	ocedure?			
	•••••	•••••			
What was the best thing	g about our proc	edure?			
	•••••				
Ask patients from Surg	iCentre:				
Given the option to have restrictions, very short le you choose to have the p	ngth of time spent	in hospital, and	were able to drive a	and return to work	•
Ask patients from MW	C:				
Given the option to have a greater amount of time return to work, would yo	in hospital, involv	ing more dietary	restrictions and wa	aiting longer befor	e you could drive or
Additional comments:					