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Cerebellar Hemangioblastoma

Infection Prevalence in a Tertiary

Highlights

Health Informatics Integrated

Maternal Health Care Utilization

Discovering Thoughts, Inventing Future

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Health Informatics Integrated System Post- Implementation Evaluation

By Sajeesh Kumar PhD, Anne L. Pedigo, RN MSN
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Abstract- Part of awell-designed health informatics simple mentation process includes the mechanisms put in place to help the day-to-day operators of the systems. Continual appraisal of these methods necessitates up-to-date investigations. Understanding critical elements which support a positive transition of health information technology (HIT) within healthcare facilities is the objective of the following research. To help develop these findings, a prospective post-implementation and use assessment survey was conducted on two hospitalsin Central Texas. The population studied included RN case managers, social workers and supportive staff in the Continuum of Care departmentsat two Scott & White Healthcare acute care facilities. The implementation process appeared to provide a mostly encouraging transition with a small number of components noted of concern to the staff. Areas of enhancement were revealed included improving training specific to job roles and supplying more fitting integration of processes and workflows.

Keywords: health informatics; evaluation, postimplementation.

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Health Informatics Integrated System Post-Implementation Evaluation

Sajeesh Kumar PhD [α], Anne L. Pedigo [σ] RN MSN [ρ]

Abstract- Part of awell-designed health informatics simple mentation process includes the mechanisms put in place to help the day-to-day operators of the systems. Continual appraisal of these methods necessitates up-to-date investigations. Understanding critical elements which support a positive transition of health information technology (HIT) within healthcare facilities is the objective of the following research. To help develop these findings, a prospective post-implementation and use assessment survey was conducted on two hospitalsin Central Texas. The population studied included RN case managers, social workers and supportive staff in the Continuum of Care departmentsat two Scott & White Healthcare acute care facilities. The implementation process appeared to provide a mostly encouraging transition with a small number of components noted of concern to the staff. Areas of enhancement were revealed included improving training specific to job roles and supplying more fitting integration of processes and workflows.

Keywords: health informatics; evaluation, post-implementation.

I. Health Informatics Integrated System Post-Implementation Evaluation

When one speaks of a successful health information technology(HIT) system implementation, there are several dimensions that go into determining that success. While the satisfaction of the workforce is very important, it is only one dependent factor tied to how well the healthcare process has succeeded. How well current practices are redesigned to take advantage of the technologyis a factor. Quality of the data is another influence. Confidence in the documentation and the information it contains us an important aspect. How a system will work through barriers and enable facilitators are other dimensionsof a success implementation. Measurement of improvement to patient care is another facet. So many characteristics go into determining a successful implementation. Finding the right instruments to put into position before, during and after an HIT system implementation is an ongoing task that continually needs to be evaluated. As with the integrated systems, implementation standards need to be studied and enhanced to strive for even better success. A well designed process should allow for success that is on par or surpasses the importance of the former.

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II. Background

A little over a decade ago, the Institute of Medicine put forward that improved patient safety, efficiency of health care delivery competences and quality of care would be realized by make use of an effective integrated HIT(*Crossing the Quality Chasm: A New Health System for the 21st Century*, 2001). More recently, government incentives and mandates have been placed on healthcare institutions advocating for their adoption of HITsystems (DHS, 2010). While there are legislative whys and wherefores that go into the need for an HIT system, the drive to have a system that helps the patient and staff needs to be the driving force in the desire to find mechanisms which encourage a positiveand effectiveapplication.

The purpose of the research topic of interest is to identify elements necessary for a successful HIT system implementation at acute care hospital sites. The research study will help determine what critical elements are necessary to have in place in order for healthcare facilities to have a successful transition from an older medical record system to a new electronic medical record (EMR) system.

The research study will evaluate what operations should be set in place by healthcare facilities before transitioning to an HIT system. Moreover, the research will focus on possible ways to prevent issues that may develop during and from the implementation of the new electronic system. The study will survey employees of healthcare facilities who have already transitioned to an HITsystem and examine how they believe the implementation process could be been improved.Furthermore, barriers to a successful HIT system implementation will be attempted to be identified. As a final point, information found in the study will be used to synthesize material and identification of possible gaps in research.

Information found in the literature review was employed to integrate data and identify gaps in present research such as the need for greater variety of positions giving feedback. While several of the recommendations for successful implementation were

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similar, some studies had opposing views of nurses' attitudes after implementation. The type of support by the healthcare facility before and after implementation may have been a factor in these findings. Moreover, in the majority of studies, nurses were the population studied and findings were based on these responses.

Although in all five articles the implementation of a comprehensive HITsystem was being evaluated, rarely was health care personnel who work outside of direct patient care evaluated. No staff within areas such as admissions or billing was interviewed (Table 1).

Table 1

Summary of Literature Reviews

Author, Year Published	Research Objective	Study Design, Method, Time Frame, Sample and Response Rate	Instrument Used in Study	Analytical Technique	Key Findings and Limitations
(Kirkendall, Goldenhar, Simon, Wheeler, & Andrew Spooner, 2013)	Examination of perceptions, expectations and experiences in regards to the transition from a CPOE system to a fully integrated HIT SYSTEM by healthcare employees within an inpatient setting.	Design & method: One pre-implementation and one post-implementation online surveys Time frame: January 5-9, 2010 (5-day pre-implementation survey; Open for 5 days) and January 10-February 10, 2011 (1-year post-implementation; Open for 1 month) Sample: 751 5-day pre-implementation survey; 1,954 1-year post-implementation survey (Nurses, prescribers, staff positions and other inpatient staff personnel) Response rate: 5-day pre-implementation survey (5.2%); 1-year post-implementation survey (13.6%)	7-factor structure Information Systems Expectations and Experiences (I-SEE) survey which assessed 1) Provider-patient communication, 2) Inter-provider communication 3) Inter-organizational communication 4) Work-life changes 5) Improved care 6) Support & resources 7) Patient care processes Administered online via REDCap.	Construct validity and reliability was assessed with current & previous results. Exploratory factor analysis resulted in a 7-factor structure giving better reliability & validity. SAS statistical software was utilized.	Key findings: 1) Nurses had less positive attitudes about the transition than non-nursing respondents. 2) Differences diminished after implementation. 3) Nursing scores increased significantly for job satisfaction, quality & safety of patient care, organizational support for transition and the rights of patient care but did not increase significantly for communication at 1 year post survey. Limitations: 1) Survey was administered only 5 days prior to rollout which could have influenced motivation to complete survey. 2) Response rate was fairly low. 3) Possibility of some staff having prior HIT SYSTEM experience in outpatient setting. 4)
(Spetz, Burgess Jr, & Phibbs, 2012)	Identification of influences and tactics ssociated with successful implementation of hospital-	Design & method: Qualitative retrospective-mixed-methods of semi-structured	A semi-structured interview guide was developed from a review of the literature of technology implementation	A thematic analysis was performed with initial cods drawn from the content of the interview	Key findings: Five broad themes stemmed from interviews that affected the success 1) Organizational stability and implementation team leadership

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	based information technology systems by patient-care providers and IT staff within an inpatient setting.	interviews Time frame: June 2006-September 2007 (15-month period) Sample: 118 interviews (Nurses, pharmacists, physicians, IT staff and senior management) Response Rate: Not discussed in article if anyone refused interview.	and the effects of IT systems and suggestions from an Advisory Committee consisting of VA medical, pharmacy, nursing leaders and representatives of the VA headquarters.	guides.	2) Implementation timelines 3) Equipment availability and reliability 4) Staff training 5) Changes in work flow Limitations: 1) A retrospective analysis is limited to the memories which may be inaccurate or biased. 2) Furthermore, some staff are no longer available to interview. 3) In addition, the analysis was conducted by only one investigator which may decrease reliability. 4) Lastly, the VA is unique and experiences may differ from that of a freestanding hospital. 5)
(Laramee, Bosek, Shaner-McRae, & Powers-Phaneuf, 2012)	Comparison of attitudes before implementation and 6 & 18 months after implementation of a comprehensive HIT SYSTEM of nurses within an inpatient setting.	Design & method: One pre-implementation and two post-implementation online surveys Time frame: December 2008 (6-months pre-survey; Open for 4 weeks); December 2009 (6-months post-survey; Open for 4 week); December 2010 (1- months post-survey; Open for 4 week) Sample: 312 6-month pre- survey, 410 6-month post-survey & 262 18-month post-implementation survey (RNs, LPNs, APRNs and Management) Response rate: 6-month pre-survey (18%). 6-	Modified Nurses' Attitude Toward Computerization Questionnaire which reflected the HIT SYSTEM rather than the computer with an open-ended question added for the 6-month post-implementation survey and one multiple choice question & an open-ended question added for the 18-month post-implementation survey. All administered online via REDCap.	Data were analyzed using STATA 10.1 software. Descriptive analysis and χ^2 were used to analyze demographic variables. Two-tailed *t* tests were used to compare differences between 3 time periods. A modified Colaizzi's method was used for qualitative analysis.	Key findings: 1) Attitudes became less positive after implementation. Pre-implementation (74.2%), 6 months post-implementation (65.9%) & 18 months post-implementation (67.7%). 2) Nurse age & years of experience affect attitude negatively. 3) Documentation improved despite workload impact. 4) Implementation process was a challenging and dramatic change. Limitations: 1) Description of experiences of nurses at one medical facility, generalization to other HIT SYSTEM implementations is limited. 2) Internal validity may be compromised due to the low respond rate & potential selection bias associated with those who did complete survey.

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		month post-survey (24%); 18-post-implem survey (15%)			
(A. S. Laramee, Bosek, Kasprisin, & Powers-Phaneuf, 2012)	Exploration of factors and strategies believed to be effective in creating positive attitudes and overcoming barriers leading to previous successful application of HIT SYSTEM in preparation of upcoming new implementation at a rural academic medical center.	Design & method: Descriptive exploratory qualitative research design using semi-structured focus groups interviews Time frame: December 2008 (6-months pre-implementation survey; Open for 4 weeks); December 2009 (6-months post-implementation survey; Open for 4 weeks); December 2010 (1- months post-implementation survey; Open for 4 week) Sample: 40 self-selected members in 11 focus groups (RNs, MDs, managers, nurse educators, unit secretaries, techs, dieticians)	Focus group interviews were conducted using semi-structured questions. A seven-item questionnaire was developed & distributed to staff to validate themes identified in focus groups.	Audiotapes were analyzed utilizing the intuit, analyze & describe method. Triangulation of interdisciplinary team and two clinical departments increased breadth of data. At least two researchers analyzed data from each group.	Key findings: Four major themes found to be fundamental to successful implementation of HIT SYSTEM 1) Reduce unrealistic expectations & fears related to individual competency with initial work with HIT SYSTEM. 2) Allow staff time for individual pursuit of learning about the HIT SYSTEM& their skills in using the system. 3) Clear processes for using the HIT SYSTEM are needed. 4) Make the HIT SYSTEM support individuals accessible 24/7 and make it customer-focused. Limitations: Limitations were not discussed in article. Assurance was given regarding the reliability and validity of the qualitative data analysis.
(Ward, Vartak, Schwichtenberg, & Wakefield, 2011)	Assessment of impact of workflow and patient care from the employment of an HIT SYSTEM on nurses within a rural referral hospital.	Design & method: Two pre-implementation paper surveys and one post-implementation online survey Time frame: No specific date is given; Day one of training expectations	7-factor structure Information Systems Expectations and Experiences (I-SEE) survey which assessed 5) Provider-patient communication, 6) Inter-provider communication 7) Inter-	Cronbach α was greater than .70. Confirmatory factor analysis was steady with a priori expectations. Descriptive analyses were used to examine characteristics	Key findings: 1) Eight of the 47 survey items decreased significantly from the first survey to the last. 2) 37 survey items decreased significantly from the second survey to the last. 3) Nurses with previous HIT SYSTEM experience expressed more positive responses than nurses with no previous HIT

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		survey & last day of training survey 3-month pre-implementation; 6-months post-implementation survey Sample: 1,395 anonymous staff, mostly RNs & LPNs over all 3 survey admins. Response rate: Although it was stated that there was a possible 2,700 employees, the break-down per survey was not stated.	organizational communication 8) Work-life changes 9) Improved care 10) Support & resources 11) Patient care processes Administered online via REDCap.	of job categories, work units & survey responses.	SYSTEM experience. 4) Nurses with more years' experience were less positive of HIT SYSTEM perceptions. Limitations: 1) Study focused mainly on feedback of nurses at a single hospital. 2) Due to use of survey of perceptions, response biases may have been demonstrated.

III. Methodology

The methodology of the research study is partedinto its research design, population, and data collection procedures. Additionally, the suitable data collection instrument is determined based on the research design and population. Applied to the study will be the appropriate data analysis.

A prospective post-implementation survey was used as the research method on the comprehensive HIT system within the facility healthcare system. The intent of the design was to help describe the current views of the healthcare staff in relation to the quality of the system, the implementation and its current operation.

Research was conducted at two acute care hospitals that recently rolled out the EMR system within the last year. The study population was end usersof the integrated system within the Continuum of Care departments ofacute care hospital sites in Temple, Texas. The first facility is a 64-bed pediatric specialty care and teaching hospital. The second is a 636-bed specialty care and teaching hospital. The health information technology employed was the commercial software system, Epic. The execution of the research study used the direction laid out in Health Informatics Research Methods: Principles and Practice (Layman, 2009).

a) Data Collection Procedures

Data collection was performed by anonymous submission online via REDCap(REDCap, 2009). Notification was given through the employer email system with permission from management. A cover letter was included stating participation was voluntary and not part of an institutional initiative (Figure 1). After one week, a reminder email was provided to the same staff. At the end of fourteen days, the link to survey was ended.

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Figure 1 : Cover Letter introducing Epic System Post-Implementation and Use Assessment Survey

The following survey is intended to help understand staff perceptions and attitudes regarding the quality of the new electronic medical record system, Epic. In addition, the study will conduct a benefits evaluation to appreciate the quality of the information provided by the system, as well as, the level of satisfaction amongst end-users.

Only respond to this survey if you use the Epic system as part of your usual job responsibilities AND work mainly in a hospital setting.

Participation in survey is completely voluntary. No Protected Health Information is asked. The survey is being conducted for research purposes only and it is not a Baylor Scott & White institutional initiative. All submissions are anonymous and will be maintained on a secure autonomous website.

The survey will take approximately take 15-20 minutes to complete.
Thank you in advance for your participation.

Please follow the link to access online survey.

https://pedsredcap.uthsc.edu/redcap/surveys/?s=4q4p5ZVb9S

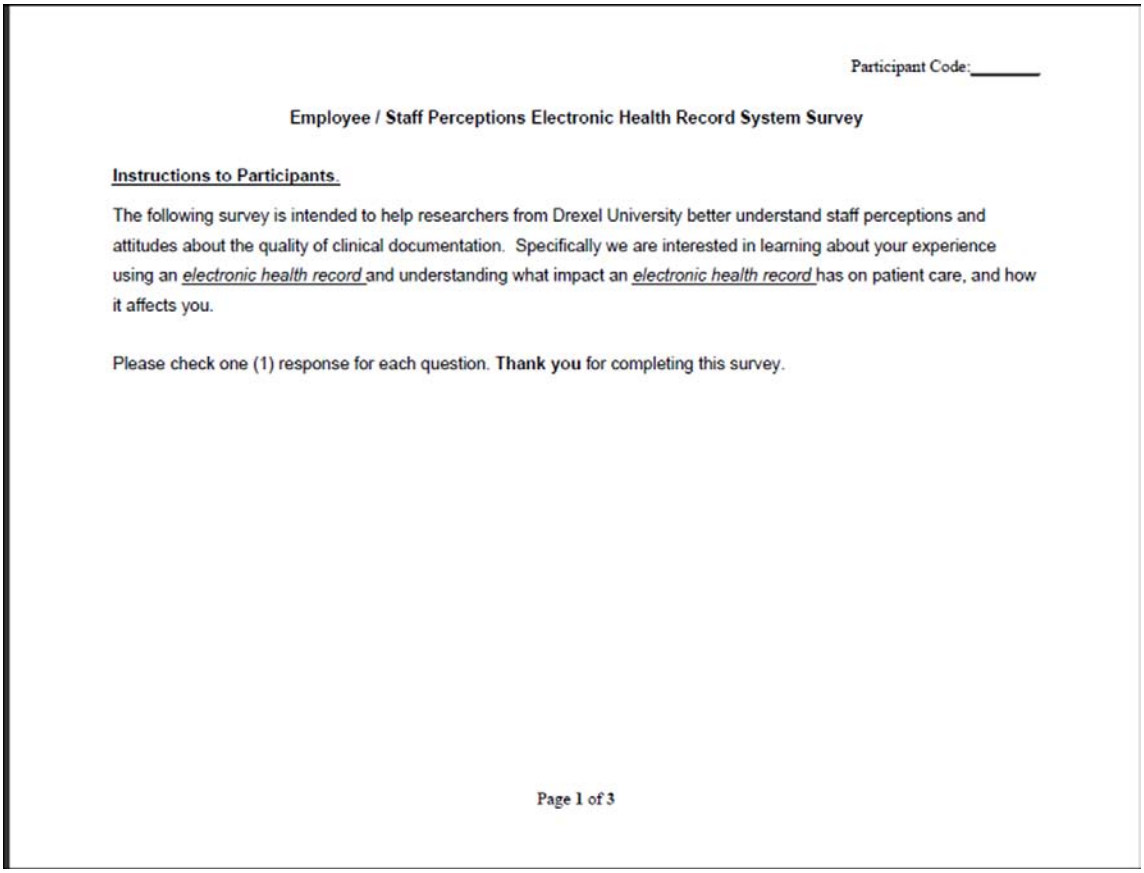
Any questions regarding the survey, please send your inquiries to apedigo@sw.org.

b) Data Collection Instrument

Several articles found during the literature review presented instruments that were further evaluated in formulation of a suitable questionnaire for the research study.The data collection instruction employed was shaped from the merging two public surveys: the Health Information Technology Reference–Based Evaluation Framework and the Canada Health Infoway System and Use Assessment Survey(Sockolow, Weiner, Bowles, & Lehmann, 2011) (Canada Health Infoway, 2007)(Figures 2 and 3). Both surveys were available for public use. Neither survey required permission to use in forthcoming studies. The combined survey measured structural quality, quality of information logistics, effects on quality of processes, effects on outcomes and quality of care, unintended consequences or benefits and barriers or facilitators to clinician's adoption (Figure 4).

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Figure 2 : Health Information Technology Reference–Based Evaluation Framework



Participant Code:_____

Employee / Staff Perceptions Electronic Health Record System Survey

Instructions to Participants.

The following survey is intended to help researchers from Drexel University better understand staff perceptions and attitudes about the quality of clinical documentation. Specifically we are interested in learning about your experience using an *electronic health record* and understanding what impact an *electronic health record* has on patient care, and how it affects you.

Please check one (1) response for each question. **Thank you** for completing this survey.

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Participant Code:_____

Your Job Title _____ Date _____

Have you had prior experience outside of your facility with any electronic health records or computerized provider order entry systems? No____ Yes ____ If yes, about how many years of experience _____

Years working in healthcare _____

Would you rate your computer knowledge as below average; average; above average; advanced?_____

Your Age_____ Gender_____

Please indicate the extent to which you agree with the following statements regarding the **electronic health record.**
Please check only one (1) response per item.

	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
1. The *electronic health record* is consistently available	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. The *electronic health record* is subject to frequent system problems	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. The *electronic health record* is user-friendly	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. Sufficient support is available to use the *electronic health record*	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5. The *electronic health record* features enable me to perform my work well	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
6. Patient care data being recorded is accurate and valid	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
7. Patients have concerns about the *electronic health record* security or confidentiality	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8. Patient care services are provided in a timely manner	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
9. Patient care orders in the *electronic health record* are appropriate	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
10. The *electronic health record* contributes to the safety of patients	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
11. The *electronic health record* supports effective communication between most team members about patient care	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
12. The *electronic health record* contributes to patient outcomes	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Page 2 of 3

Participant Code:_____

	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
13. The *electronic health record* contributes to patient's knowledge of their health condition	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
14. The *electronic health record* is worth the time and effort required to use it	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
15. Overall, I am satisfied with the *electronic health record*	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
16. I think patients are satisfied with clinicians using the *electronic health record*	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
17. My department had a role in introducing the *electronic health record* at my facility	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
18. People who use the *electronic health record* should have had more to say about its design	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
19. I have first hand knowledge that problems with the *electronic health record* interfere with patient care	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
20. A reason for my facility's adoption of the *electronic health record* was the system's ability to exchange patient information with nursing homes and hospitals	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
21. Sufficient resources are provided for me to learn to use the *electronic health record*	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
22. Part of the increase in costs of healthcare is because of computers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

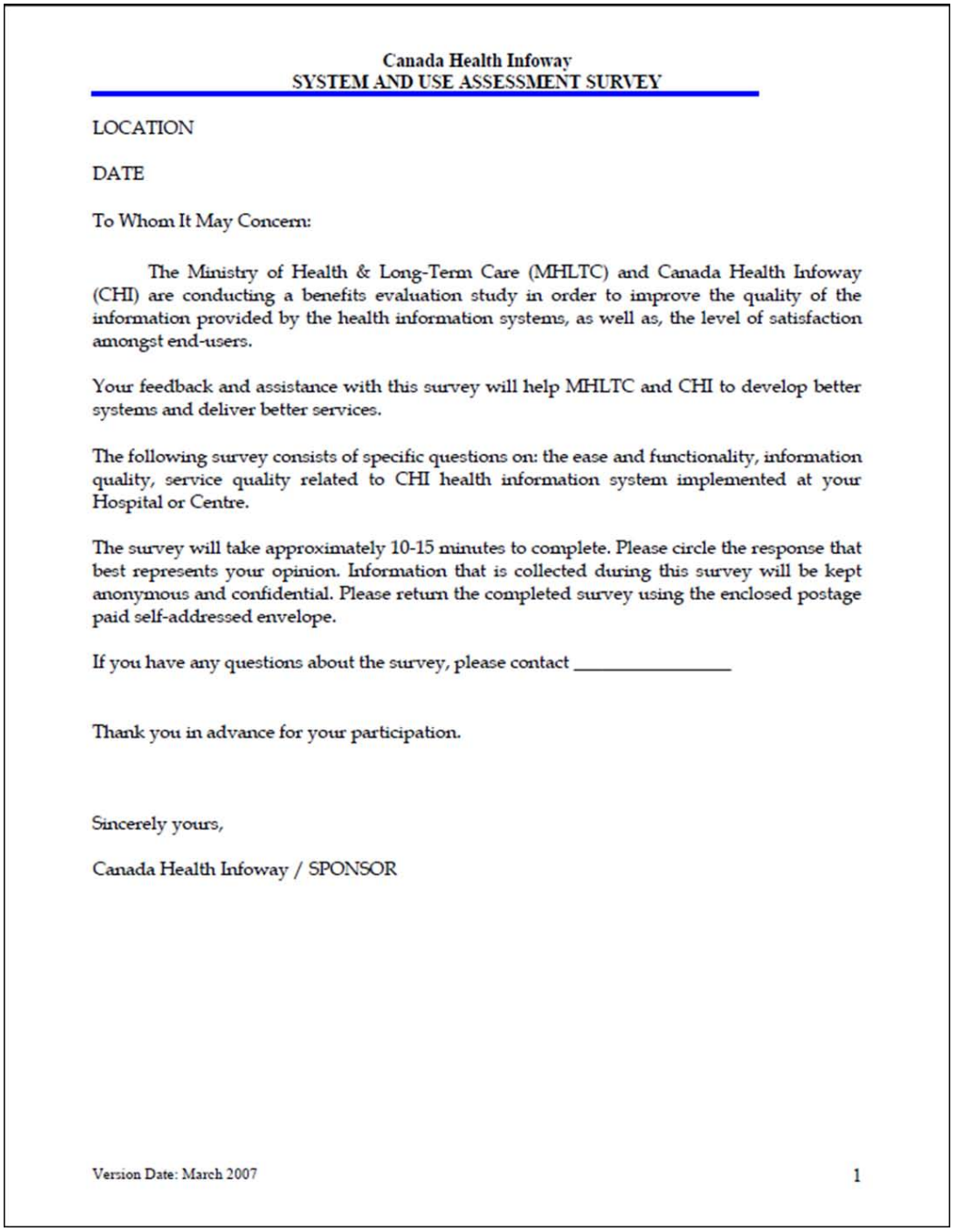
23. What worked well or what are your concerns related to the system:

Thank you for completing this survey.

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Figure 3 : Canada Health Infoway System and Use Assessment Survey



Canada Health Infoway
SYSTEM AND USE ASSESSMENT SURVEY

LOCATION

DATE

To Whom It May Concern:

The Ministry of Health & Long-Term Care (MHLTC) and Canada Health Infoway (CHI) are conducting a benefits evaluation study in order to improve the quality of the information provided by the health information systems, as well as, the level of satisfaction amongst end-users.

Your feedback and assistance with this survey will help MHLTC and CHI to develop better systems and deliver better services.

The following survey consists of specific questions on: the ease and functionality, information quality, service quality related to CHI health information system implemented at your Hospital or Centre.

The survey will take approximately 10-15 minutes to complete. Please circle the response that best represents your opinion. Information that is collected during this survey will be kept anonymous and confidential. Please return the completed survey using the enclosed postage paid self-addressed envelope.

If you have any questions about the survey, please contact _____

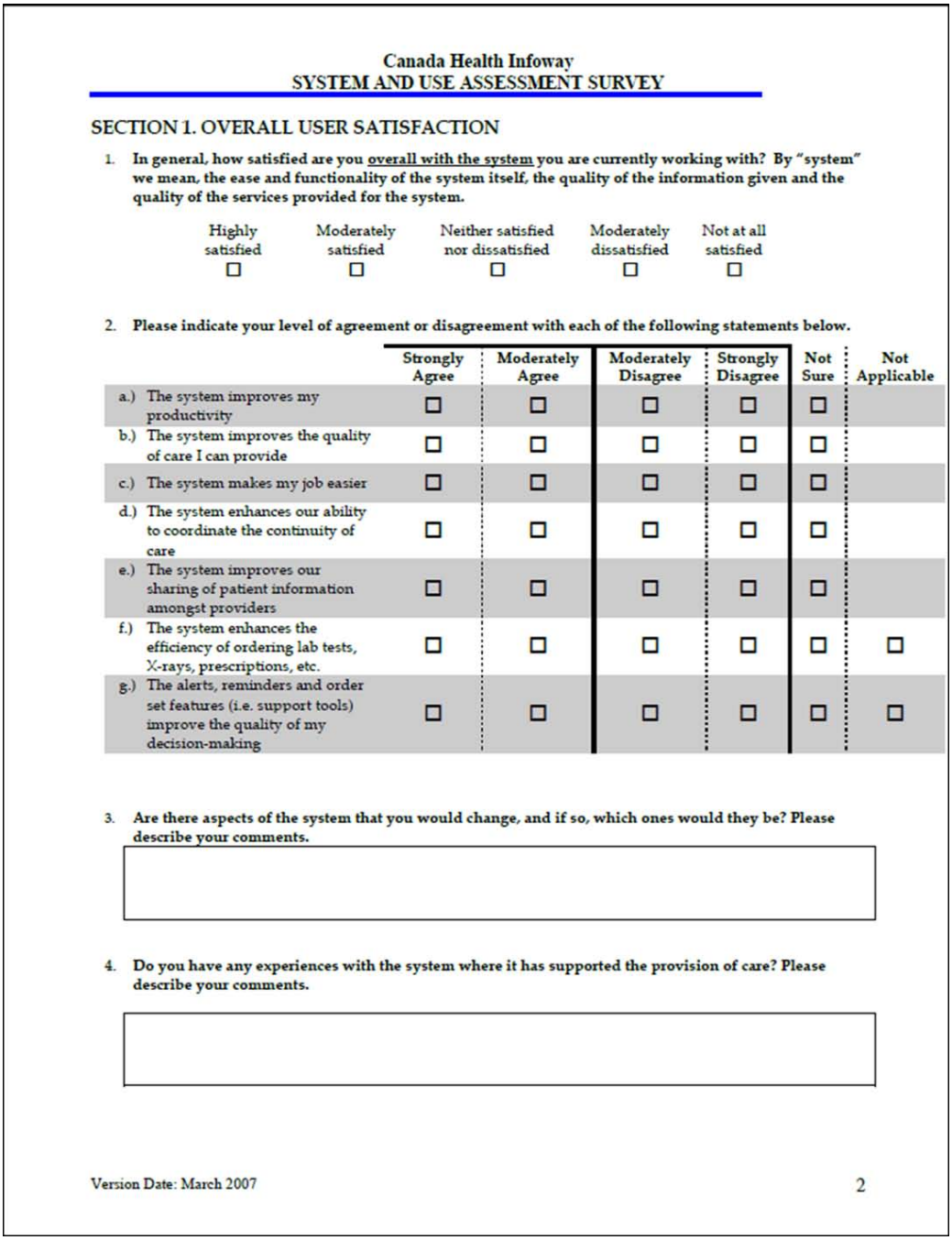
Thank you in advance for your participation.

Sincerely yours,

Canada Health Infoway / SPONSOR

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Canada Health Infoway
SYSTEM AND USE ASSESSMENT SURVEY

SECTION 1. OVERALL USER SATISFACTION

1. **In general, how satisfied are you overall with the system you are currently working with? By "system" we mean, the ease and functionality of the system itself, the quality of the information given and the quality of the services provided for the system.**

Highly satisfied	Moderately satisfied	Neither satisfied nor dissatisfied	Moderately dissatisfied	Not at all satisfied
☐	☐	☐	☐	☐

2. **Please indicate your level of agreement or disagreement with each of the following statements below.**

	Strongly Agree	Moderately Agree	Moderately Disagree	Strongly Disagree	Not Sure	Not Applicable
a.) The system improves my productivity	☐	☐	☐	☐	☐	
b.) The system improves the quality of care I can provide	☐	☐	☐	☐	☐	
c.) The system makes my job easier	☐	☐	☐	☐	☐	
d.) The system enhances our ability to coordinate the continuity of care	☐	☐	☐	☐	☐	
e.) The system improves our sharing of patient information amongst providers	☐	☐	☐	☐	☐	
f.) The system enhances the efficiency of ordering lab tests, X-rays, prescriptions, etc.	☐	☐	☐	☐	☐	☐
g.) The alerts, reminders and order set features (i.e. support tools) improve the quality of my decision-making	☐	☐	☐	☐	☐	☐

3. **Are there aspects of the system that you would change, and if so, which ones would they be? Please describe your comments.**

4. **Do you have any experiences with the system where it has supported the provision of care? Please describe your comments.**

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Canada Health Infoway
SYSTEM AND USE ASSESSMENT SURVEY

SECTION 2. SYSTEM QUALITY

5. **Based on your experiences to date with the system, how acceptable is the quality of the system itself (as described by the specific characteristics listed below)? Would you say it is;**

Highly acceptable	Moderately acceptable	Neither acceptable nor unacceptable	Moderately unacceptable	Not at all acceptable
☐	☐	☐	☐	☐

6. **Please indicate your level of agreement or disagreement with each of the following statements below.**

	Strongly Agree	Moderately Agree	Moderately Disagree	Strongly Disagree	Not Sure
a.) The system is easy to use	☐	☐	☐	☐	☐
b.) The response time is acceptable	☐	☐	☐	☐	☐
c.) The system is integrated with my workflow	☐	☐	☐	☐	☐
d.) The system security is acceptable	☐	☐	☐	☐	☐
e.) The system features enable me to perform my work well	☐	☐	☐	☐	☐
f.) The system is reliable in its performance	☐	☐	☐	☐	☐
g.) Overall, the quality of the system is excellent	☐	☐	☐	☐	☐

SECTION 3. INFORMATION QUALITY

7. **In general, when thinking about the quality of the information provided by the system, do you find the quality of the information to be;**

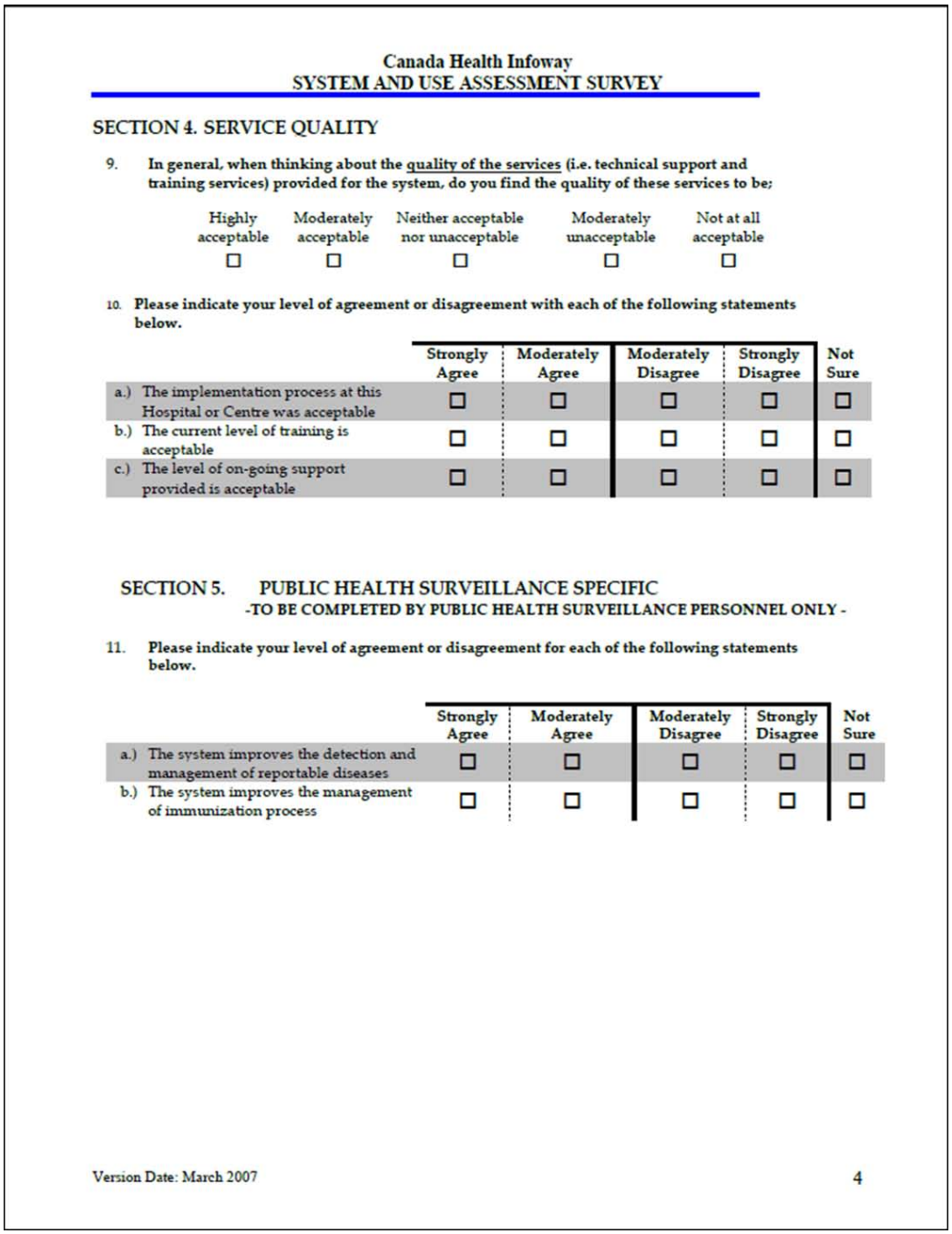
Highly acceptable	Moderately acceptable	Neither acceptable nor unacceptable	Moderately unacceptable	Not at all acceptable
☐	☐	☐	☐	☐

8. **Please indicate your level of agreement or disagreement with each of the following statements below.**

	Strongly Agree	Moderately Agree	Moderately Disagree	Strongly Disagree	Not Sure
a.) The information is complete	☐	☐	☐	☐	☐
b.) The information is quickly provided	☐	☐	☐	☐	☐
c.) The information provided is accurate	☐	☐	☐	☐	☐
d.) The information provided is relevant	☐	☐	☐	☐	☐
e.) The information is available when I need it	☐	☐	☐	☐	☐
f.) The format and layout of the information is acceptable	☐	☐	☐	☐	☐

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Canada Health Infoway
SYSTEM AND USE ASSESSMENT SURVEY

SECTION 4. SERVICE QUALITY

9. **In general, when thinking about the quality of the services (i.e. technical support and training services) provided for the system, do you find the quality of these services to be;**

Highly acceptable	Moderately acceptable	Neither acceptable nor unacceptable	Moderately unacceptable	Not at all acceptable
☐	☐	☐	☐	☐

10. **Please indicate your level of agreement or disagreement with each of the following statements below.**

	Strongly Agree	Moderately Agree	Moderately Disagree	Strongly Disagree	Not Sure
a.) The implementation process at this Hospital or Centre was acceptable	☐	☐	☐	☐	☐
b.) The current level of training is acceptable	☐	☐	☐	☐	☐
c.) The level of on-going support provided is acceptable	☐	☐	☐	☐	☐

SECTION 5. PUBLIC HEALTH SURVEILLANCE SPECIFIC
-TO BE COMPLETED BY PUBLIC HEALTH SURVEILLANCE PERSONNEL ONLY -

11. **Please indicate your level of agreement or disagreement for each of the following statements below.**

	Strongly Agree	Moderately Agree	Moderately Disagree	Strongly Disagree	Not Sure
a.) The system improves the detection and management of reportable diseases	☐	☐	☐	☐	☐
b.) The system improves the management of immunization process	☐	☐	☐	☐	☐

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Canada Health Infoway
SYSTEM AND USE ASSESSMENT SURVEY

SECTION 6. SYSTEM USAGE

12. **In a typical day, how many times do you 'use' the system?**

_____ Number of times, a day

Always .....☐ Rarely .....☐

13. **In a typical week, please indicate the number of days in which you use the system.**

_____ Number of days, a week

14. **Please estimate what percent of your patients do you use the system?**

_____% patients **(FILL IN)**

Don't know .....☐

15. **How likely are you to recommend the system to other healthcare providers at other Hospitals or Centres?**

Definitely	Probably	May or may not	Probably Not	Definitely not
☐	☐	☐	☐	☐

16. **Given a choice, would you like to increase or decrease your future use of the system that you are currently working with? Would that be a significant or moderate increase / decrease, or would you like your future use to stay the same?**

Significant Increase	Moderately Increase	Moderately Decrease	Significant Decrease	REMAIN THE SAME
☐	☐	☐	☐	☐

SECTION 7. OTHER COMMENTS

17. **Do you have any other comments you would like to make regarding the system ?**

_____

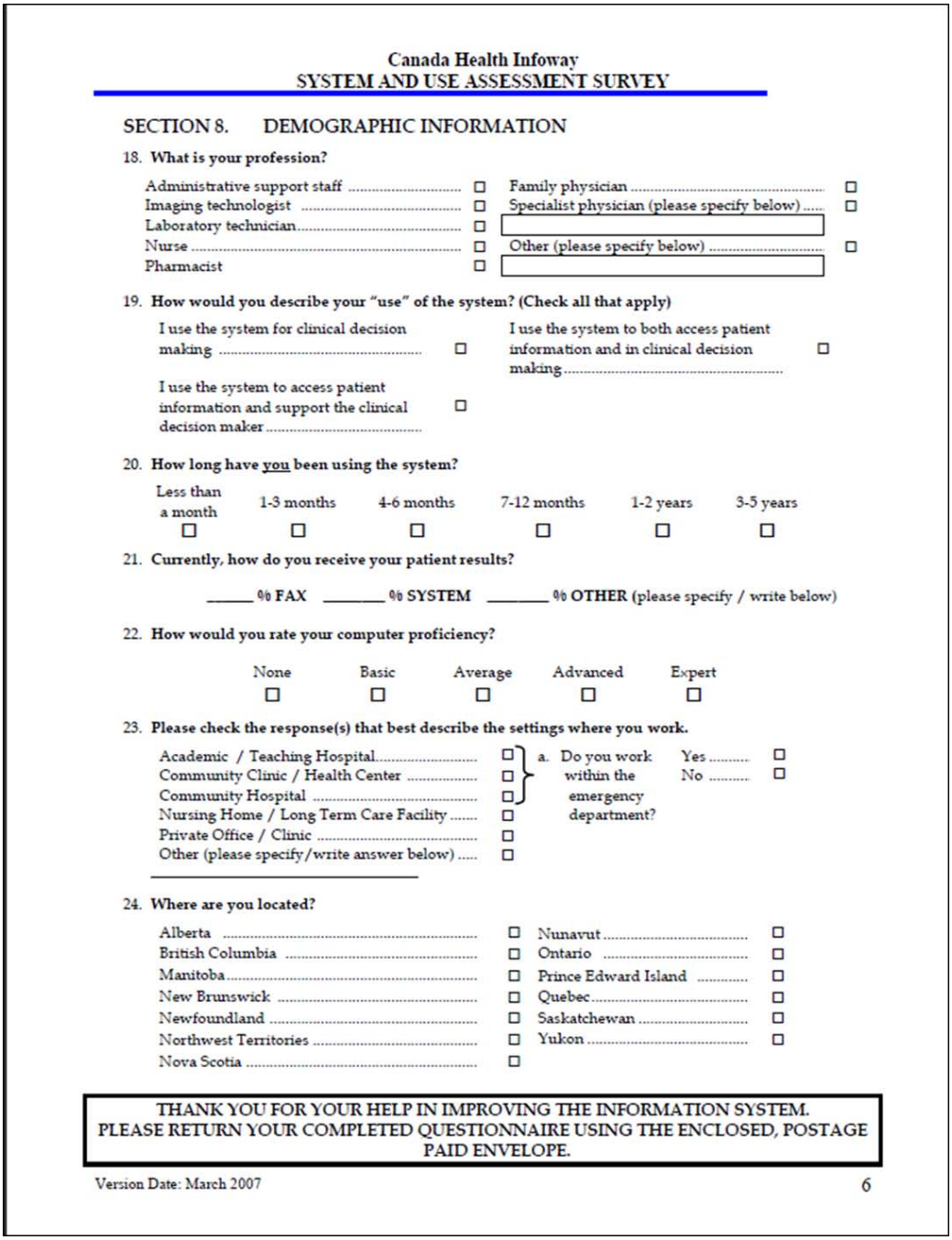
_____

_____

_____

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Canada Health Infoway
SYSTEM AND USE ASSESSMENT SURVEY

SECTION 8. DEMOGRAPHIC INFORMATION

18. What is your profession?

- Administrative support staff ☐
- Imaging technologist ☐
- Laboratory technician ☐
- Nurse ☐
- Pharmacist ☐
- Family physician ☐
- Specialist physician (please specify below) ☐
- Other (please specify below) ☐

19. How would you describe your "use" of the system? (Check all that apply)

- I use the system for clinical decision making ☐
- I use the system to access patient information and support the clinical decision maker ☐
- I use the system to both access patient information and in clinical decision making ☐

20. How long have you been using the system?

Less than a month	1-3 months	4-6 months	7-12 months	1-2 years	3-5 years
☐	☐	☐	☐	☐	☐

21. Currently, how do you receive your patient results?

_____ % FAX _____ % SYSTEM _____ % OTHER (please specify / write below)

22. How would you rate your computer proficiency?

None	Basic	Average	Advanced	Expert
☐	☐	☐	☐	☐

23. Please check the response(s) that best describe the settings where you work.

- Academic / Teaching Hospital ☐
- Community Clinic / Health Center ☐
- Community Hospital ☐
- Nursing Home / Long Term Care Facility ☐
- Private Office / Clinic ☐
- Other (please specify/write answer below) ☐

a. Do you work within the emergency department? Yes ☐ No ☐

24. Where are you located?

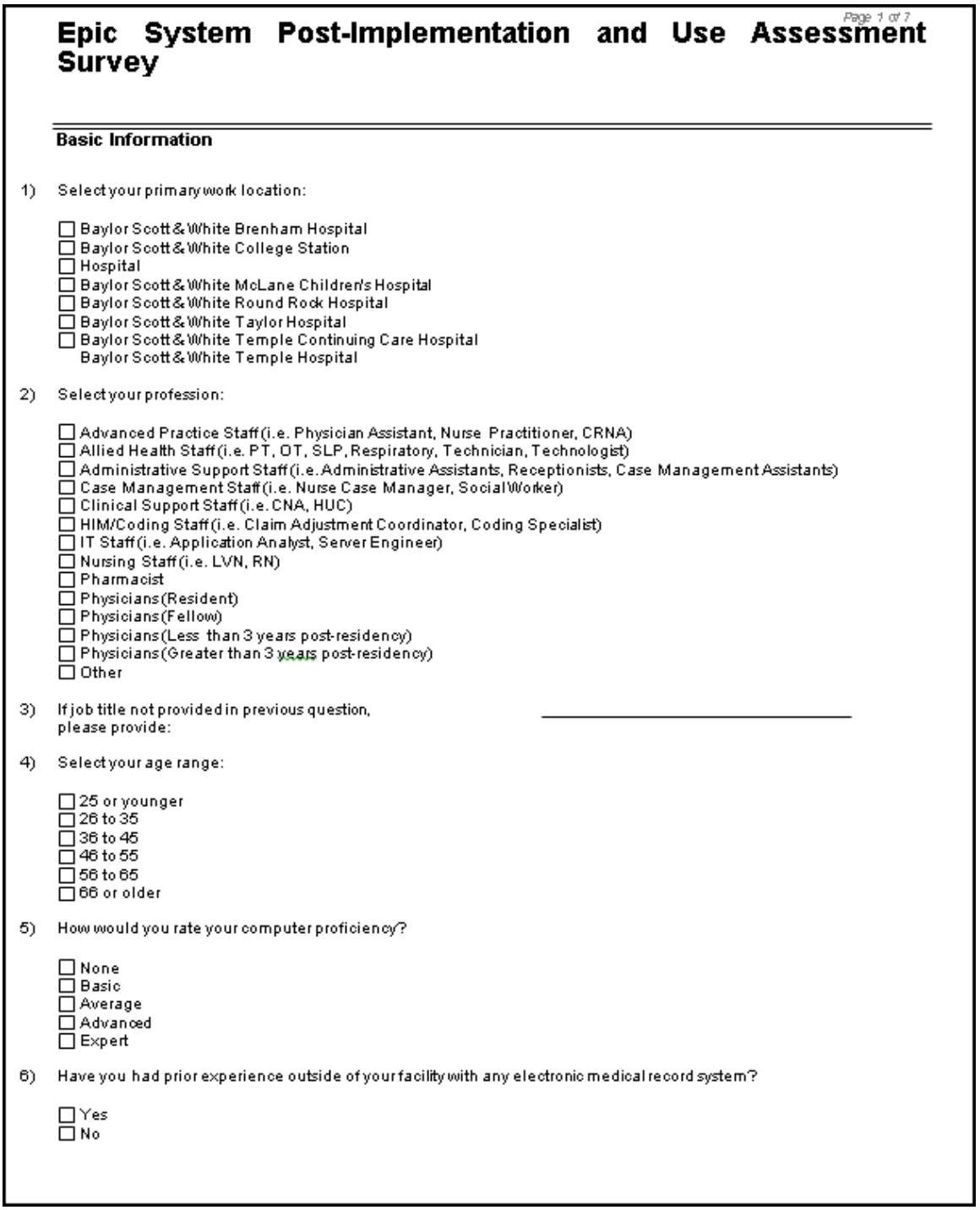
- Alberta ☐
- British Columbia ☐
- Manitoba ☐
- New Brunswick ☐
- Newfoundland ☐
- Northwest Territories ☐
- Nova Scotia ☐
- Nunavut ☐
- Ontario ☐
- Prince Edward Island ☐
- Quebec ☐
- Saskatchewan ☐
- Yukon ☐

THANK YOU FOR YOUR HELP IN IMPROVING THE INFORMATION SYSTEM. PLEASE RETURN YOUR COMPLETED QUESTIONNAIRE USING THE ENCLOSED, POSTAGE PAID ENVELOPE.

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Figure 4



Page 1 of 7

Epic System Post-Implementation and Use Assessment Survey

Basic Information

1) Select your primary work location:

- ☐ Baylor Scott & White Brenham Hospital
- ☐ Baylor Scott & White College Station
- ☐ Hospital
- ☐ Baylor Scott & White McLane Children's Hospital
- ☐ Baylor Scott & White Round Rock Hospital
- ☐ Baylor Scott & White Taylor Hospital
- ☐ Baylor Scott & White Temple Continuing Care Hospital
- Baylor Scott & White Temple Hospital

2) Select your profession:

- ☐ Advanced Practice Staff (i.e. Physician Assistant, Nurse Practitioner, CRNA)
- ☐ Allied Health Staff (i.e. PT, OT, SLP, Respiratory, Technician, Technologist)
- ☐ Administrative Support Staff (i.e. Administrative Assistants, Receptionists, Case Management Assistants)
- ☐ Case Management Staff (i.e. Nurse Case Manager, Social Worker)
- ☐ Clinical Support Staff (i.e. CNA, HUC)
- ☐ HIM/Coding Staff (i.e. Claim Adjustment Coordinator, Coding Specialist)
- ☐ IT Staff (i.e. Application Analyst, Server Engineer)
- ☐ Nursing Staff (i.e. LVN, RN)
- ☐ Pharmacist
- ☐ Physicians (Resident)
- ☐ Physicians (Fellow)
- ☐ Physicians (Less than 3 years post-residency)
- ☐ Physicians (Greater than 3 years post-residency)
- ☐ Other

3) If job title not provided in previous question, please provide: _____

4) Select your age range:

- ☐ 25 or younger
- ☐ 26 to 35
- ☐ 36 to 45
- ☐ 46 to 55
- ☐ 56 to 65
- ☐ 66 or older

5) How would you rate your computer proficiency?

- ☐ None
- ☐ Basic
- ☐ Average
- ☐ Advanced
- ☐ Expert

6) Have you had prior experience outside of your facility with any electronic medical record system?

- ☐ Yes
- ☐ No

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7) If answer to previous question is "Yes", how many years experience do you have working with an electronic medical record system?

- ☐ Less than 2 years
- ☐ 2-5 years
- ☐ More than 5 years

8) How long have you been using the current Baylor Scott & White Epic system?

- ☐ Less than a month
- ☐ 1-3 months
- ☐ 4-6 months
- ☐ 7-11 months
- ☐ 1-2 years

EPIC SYSTEM QUALITY - Please read each statement and indicate the response that is closest to your belief.

	Strongly Agree	Moderately Agree	Mildly Agree	Mildly Disagree	Moderately Disagree	Strongly Disagree	Not Sure
9) The system is easy to use.	☐	☐	☐	☐	☐	☐	☐
10) The system is reliable in its performance.	☐	☐	☐	☐	☐	☐	☐
11) The system is consistently available.	☐	☐	☐	☐	☐	☐	☐
12) The system's response time is acceptable.	☐	☐	☐	☐	☐	☐	☐
13) The system supports effective communication between team members.	☐	☐	☐	☐	☐	☐	☐
14) The system's ability to exchange patient information with other systems is acceptable.	☐	☐	☐	☐	☐	☐	☐
15) The system has been integrated appropriately with my previous workflows.	☐	☐	☐	☐	☐	☐	☐
16) The system features enable me to perform my work well.	☐	☐	☐	☐	☐	☐	☐
17) The system security is acceptable.	☐	☐	☐	☐	☐	☐	☐

18) Based on your experiences to date with the Epic system, how acceptable is the quality of the system itself as described by the specific characteristics listed above?

- ☐ Highly Acceptable
- ☐ Moderately Acceptable
- ☐ Neither Acceptable nor Unacceptable
- ☐ Moderately Unacceptable
- ☐ Not at all Acceptable

19) Comments related to Epic's System Quality
(If possible, please provide which question number the comment is related to.)

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EPIC INFORMATION QUALITY - Please read each statement and indicate the response that is closest to your belief.

	Strongly Agree	Moderately Agree	Mildly Agree	Mildly Disagree	Moderately Disagree	Strongly Disagree	Not Sure
20) The information provided is relevant.	☐	☐	☐	☐	☐	☐	☐
21) The information provided is accurate.	☐	☐	☐	☐	☐	☐	☐
22) The information is complete.	☐	☐	☐	☐	☐	☐	☐
23) The format and layout of the information is acceptable.	☐	☐	☐	☐	☐	☐	☐
24) The information is available when I need it.	☐	☐	☐	☐	☐	☐	☐

25) When thinking about the quality of the information provided by Epic in general, how do you find the quality of the information to be?

- ☐ Highly Acceptable
- ☐ Moderately Acceptable
- ☐ Neither Acceptable nor Unacceptable
- ☐ Moderately Unacceptable
- ☐ Not at all Acceptable

26) Comments related to Epic's Information Quality
(If possible, please provide which question number the comment is related to.)

EPIC SERVICE QUALITY - Please read each statement and indicate the response that is closest to your belief.

	Strongly Agree	Moderately Agree	Mildly Agree	Mildly Disagree	Moderately Disagree	Strongly Disagree	Not Sure
27) The implementation process at my facility was acceptable.	☐	☐	☐	☐	☐	☐	☐
28) The current level of training at my facility is acceptable.	☐	☐	☐	☐	☐	☐	☐
29) The level of on-going support provided at my facility is acceptable.	☐	☐	☐	☐	☐	☐	☐

30) When thinking about the quality of the services (i.e. technical support and training services) provided for Epic in general, how do you find the quality of these services to be?

- ☐ Highly Acceptable
- ☐ Moderately Acceptable
- ☐ Neither Acceptable nor Unacceptable
- ☐ Moderately Unacceptable
- ☐ Not at all Acceptable

31) Comments related to Epic's Service Quality
(If possible, please provide which question number the comment is related to.)

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EPIC CLIINICAL QUALITY - Please read each statement and indicate the response that is closest to your belief.

	Strongly Agree	Moderately Agree	Mildly Agree	Mildly Disagree	Moderately Disagree	Strongly Disagree	Not Sure
32) The system contributes to improved patient outcomes.	☐	☐	☐	☐	☐	☐	☐
33) The system contributes to the safety of the patients.	☐	☐	☐	☐	☐	☐	☐
34) The system contributes to the patient's knowledge of their health condition.	☐	☐	☐	☐	☐	☐	☐
35) The patients are satisfied with the clinicians using the system.	☐	☐	☐	☐	☐	☐	☐
36) The patients have concerns about the system's security and confidentiality.	☐	☐	☐	☐	☐	☐	☐
37) The patient care data being recorded is accurate and valid.	☐	☐	☐	☐	☐	☐	☐
38) The patient care services are able to be provided in a more timely manner.	☐	☐	☐	☐	☐	☐	☐
39) The selection of patient care orders in system is appropriate.	☐	☐	☐	☐	☐	☐	☐
40) The system contributes to improved clinical documentation.	☐	☐	☐	☐	☐	☐	☐

41) Based on your experiences to date with the Epic system, how acceptable is the clinical data of the system itself as described by the specific characteristics listed above?

- ☐ Highly Acceptable
- ☐ Moderately Acceptable
- ☐ Neither Acceptable nor Unacceptable
- ☐ Moderately Unacceptable
- ☐ Not at all Acceptable

42) Comments related to Epic's Clinical Quality
(If possible, please provide which question number the comment is related to.)

GENERAL COMMENTS

43) What specific features of Epic are especially appreciated?

44) What specific aspects of Epic could be improved on by the vendor?

45) Do you have any lessons learned since the Epic system implementation?

46) Do you have additional goals related to Epic that you or your department have not yet completed?

47) Have there been any unexpected benefits gained for your department or the organization since implementing Epic?

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c) *Data Analysis*

Statistical software, SPSS,was utilizedto create various types of statistical analyses, including descriptive statistics such as the standard deviation to responses. Furthermore, descriptive analysis was used to examine characteristics of survey responses (IBM SPSS Statistics, 2013).

IV. Results

The following results describe the response rate and break down the demographics of the respondents.

a) *Response Rate of Population*

The response rate was determined to be 37.78%. One hundred seven possible respondents were emailed a cover letter and link to the autonomous website. Again, one week later the same cover letter and link were emailed to the same one hundred and seven staff members. The link was terminated one week later. In total, thirty-four valid surveys were completed.

b) *Representativeness of Population*

The staff ranged in age from younger than twenty-five to greater than sixty-six. The largest number of respondents was present in the fifty-six to sixty-five year age range (32.4%). The majority stated their computer proficiency as average (61.8%) and had prior EMR experience (55.9%). (Figure 5, 6 & 7; Table 3).

Figure 5 : Pie Chart of Age Range

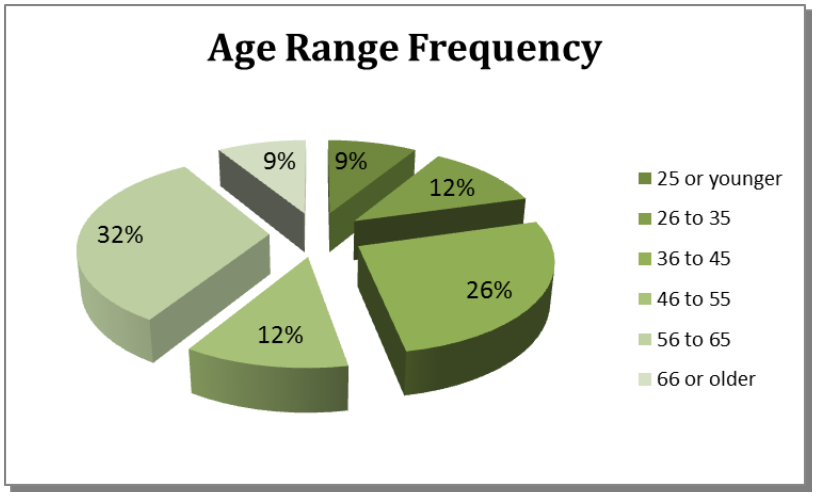
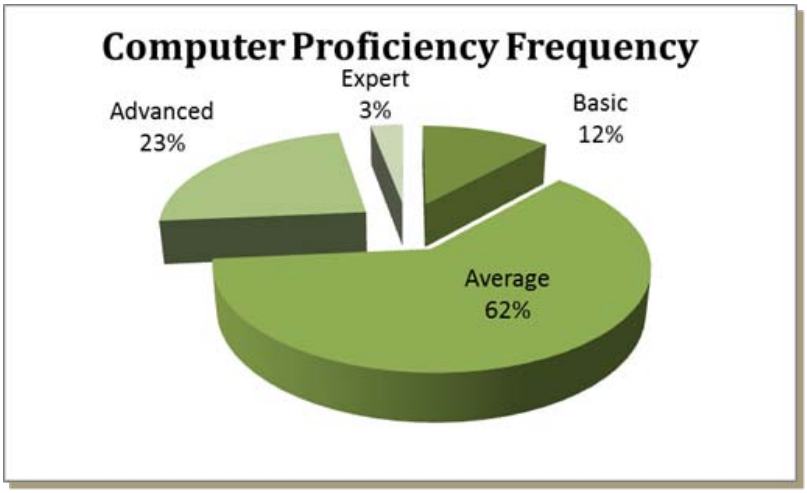


Figure 6 : Computer Proficiency Frequency



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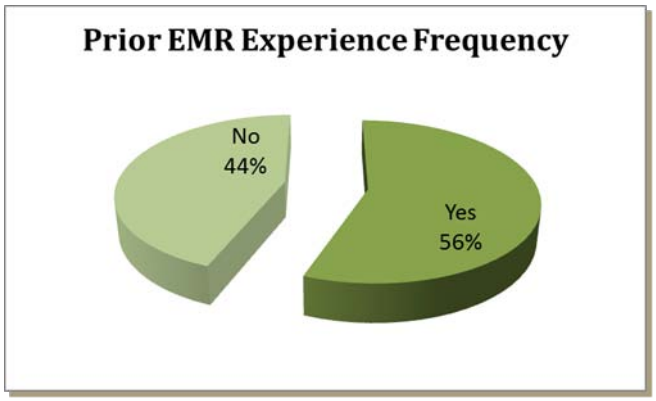


Figure 7 : Prior EMR Experience Frequency

Table 3 : Staff Demographics

Profession

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Administrative Support Staff	2	5.9	5.9	5.9
	Case Management Staff	29	85.3	85.3	91.2
	Other	3	8.8	8.8	100.0
	Total	34	100.0	100.0	

Age Range

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25 or younger	3	8.8	8.8	8.8
	26 to 35	4	11.8	11.8	20.6
	36 to 45	9	26.5	26.5	47.1
	46 to 55	4	11.8	11.8	58.8
	56 to 65	11	32.4	32.4	91.2
	66 or older	3	8.8	8.8	100.0
	Total	34	100.0	100.0	

Computer Proficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Basic	4	11.8	11.8	11.8
	Average	21	61.8	61.8	73.5
	Advanced	8	23.5	23.5	97.1
	Expert	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

Prior EMR Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	19	55.9	55.9	55.9
	No	15	44.1	44.1	100.0
	Total	34	100.0	100.0	

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Years w/ EMR Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 2 years	5	14.7	23.8	23.8
	2-5 years	7	20.6	33.3	57.1
	More than 5 years	9	26.5	42.9	100.0
	Total	21	61.8	100.0	
Missing	System	13	38.2		
	Total	34	100.0		

Current Baylor Scott & White Epic Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than a month	1	2.9	2.9	2.9
	1-3 months	1	2.9	2.9	5.9
	4-6 months	1	2.9	2.9	8.8
	7-11 months	26	76.5	76.5	85.3
	1-2 years	5	14.7	14.7	100.0
	Total	34	100.0	100.0	

c) Research Questions

In developing an understanding of the attitude of the staff, the quality of the system, its information and the service provided regarding the HIT system were measured. Additionally, the particular aspects of the clinical data were analyzed. A five-level Likert scale was utilized to measure the employee'sstance on the quality of the HIT system, the information within the HIT system, the service provided to support the HIT system and particular aspects related to the clinical information of the HIT system.

In regard to the quality of the system, a majority of the staff strongly agree that the system is consistently available (47.1%) and has acceptable security (50%). As for the system appropriatelyintegrating with previous workflows, the employees were mostly divided between mildly agree (26.5%), moderately agree (29.4%) and strongly agree (29.4%). None of workers disagreed in a majority to any of the aspects measured related the quality of the system. The remainder moderately agreed that the system was easy to use (70%), its performance was reliable (44.1%), had acceptable response time (47.1%), provided effective communication between team members (41.2%), had acceptable exchange of information with other systems (38.2%) and enabled staff to perform work well (38.2%). (Figure 8; Table 3)

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Figure 8

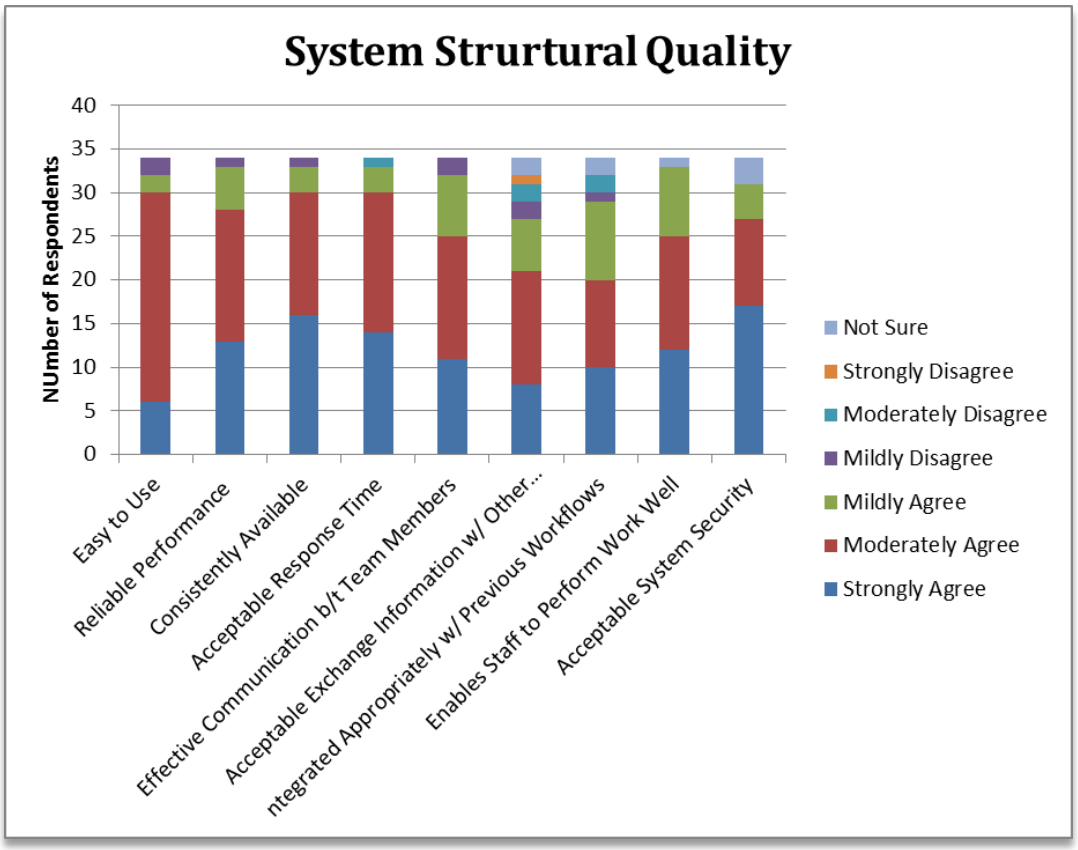


Table 4 : Epic System Quality

System - Easy to Use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	6	17.6	17.6	17.6
	Moderately Agree	24	70.6	70.6	88.2
	Mildly Agree	2	5.9	5.9	94.1
	Mildly Disagree	2	5.9	5.9	100.0
	Total	34	100.0	100.0	

System - Reliable Performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	13	38.2	38.2	38.2
	Moderately Agree	15	44.1	44.1	82.4
	Mildly Agree	5	14.7	14.7	97.1
	Mildly Disagree	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

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System - Consistently Available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	16	47.1	47.1	47.1
	Moderately Agree	14	41.2	41.2	88.2
	Mildly Agree	3	8.8	8.8	97.1
	Mildly Disagree	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

System - Acceptable Response Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	14	41.2	41.2	41.2
	Moderately Agree	16	47.1	47.1	88.2
	Mildly Agree	3	8.8	8.8	97.1
	Moderately Disagree	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

System - Effective Communication b/t Team Members

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	11	32.4	32.4	32.4
	Moderately Agree	14	41.2	41.2	73.5
	Mildly Agree	7	20.6	20.6	94.1
	Mildly Disagree	2	5.9	5.9	100.0
	Total	34	100.0	100.0	

System - Acceptable Exchange Information w/ Other Systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	8	23.5	23.5	23.5
	Moderately Agree	13	38.2	38.2	61.8
	Mildly Agree	6	17.6	17.6	79.4
	Mildly Disagree	2	5.9	5.9	85.3
	Moderately Disagree	2	5.9	5.9	91.2
	Strongly Disagree	1	2.9	2.9	94.1
	Not Sure	2	5.9	5.9	100.0
	Total	34	100.0	100.0	

System - Integrated Appropriately w/ Previous Workflows

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	10	29.4	29.4	29.4
	Moderately Agree	10	29.4	29.4	58.8
	Mildly Agree	9	26.5	26.5	85.3
	Mildly Disagree	1	2.9	2.9	88.2
	Moderately Disagree	2	5.9	5.9	94.1
	Not Sure	2	5.9	5.9	100.0
	Total	34	100.0	100.0	

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System - Enables Staff to Perform Work Well

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	12	35.3	35.3	35.3
	Moderately Agree	13	38.2	38.2	73.5
	Mildly Agree	8	23.5	23.5	97.1
	Not Sure	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

System - Acceptable System Security

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	17	50.0	50.0	50.0
	Moderately Agree	10	29.4	29.4	79.4
	Mildly Agree	4	11.8	11.8	91.2
	Not Sure	3	8.8	8.8	100.0
	Total	34	100.0	100.0	

The criteria measured related to the system's information was mostly seen as moderately agreeable. A majority of the staff moderately agree that the information is accurate (52.9%), relevant (47.1%), complete (47.1%) and has an acceptable layout (41.2%). An even number moderately agrees (41.2%) as strongly agree (41.2%) that the information is available when needed. (Figure 9;Table4)

Figure 9

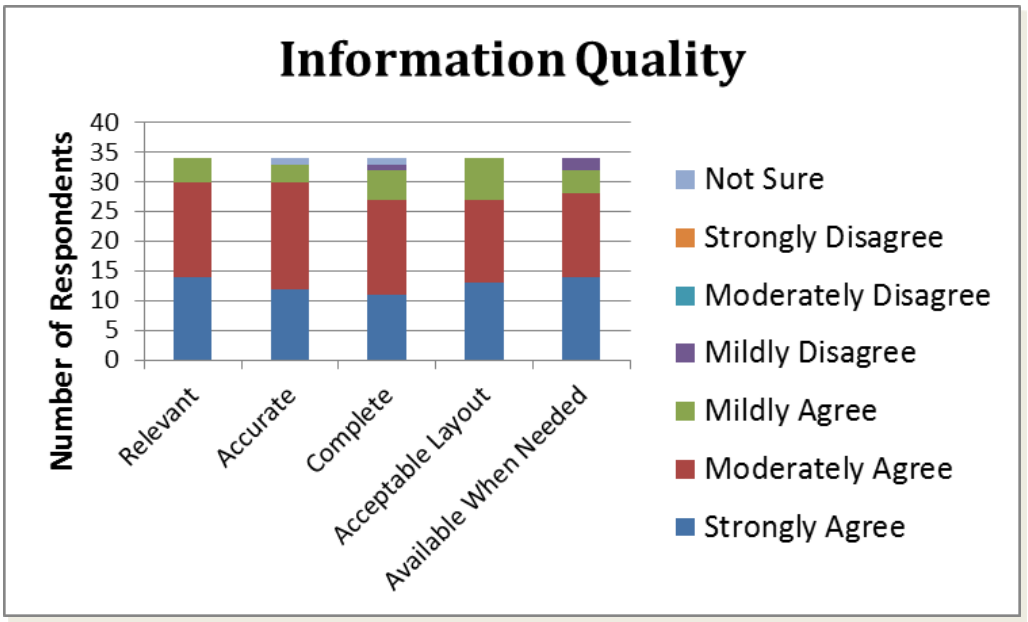


Table 4 : Epic Information Quality

Information - Relevant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	14	41.2	41.2	41.2
	Moderately Agree	16	47.1	47.1	88.2
	Mildly Agree	4	11.8	11.8	100.0
	Total	34	100.0	100.0	

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Information - Accurate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	12	35.3	35.3	35.3
	Moderately Agree	18	52.9	52.9	88.2
	Mildly Agree	3	8.8	8.8	97.1
	Not Sure	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

Information - Complete

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	11	32.4	32.4	32.4
	Moderately Agree	16	47.1	47.1	79.4
	Mildly Agree	5	14.7	14.7	94.1
	Mildly Disagree	1	2.9	2.9	97.1
	Not Sure	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

Information - Acceptable Layout

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	13	38.2	38.2	38.2
	Moderately Agree	14	41.2	41.2	79.4
	Mildly Agree	7	20.6	20.6	100.0
	Total	34	100.0	100.0	

Information - Available When Needed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	14	41.2	41.2	41.2
	Moderately Agree	14	41.2	41.2	82.4
	Mildly Agree	4	11.8	11.8	94.1
	Mildly Disagree	2	5.9	5.9	100.0
	Total	34	100.0	100.0	

In the three characteristics of service measured, a majority of staff moderately agreed that the implementation process (55.9%), level of training (47.1%) and on-going support (47.1%) is acceptable. (Figure 10; Table 5)

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Figure 10

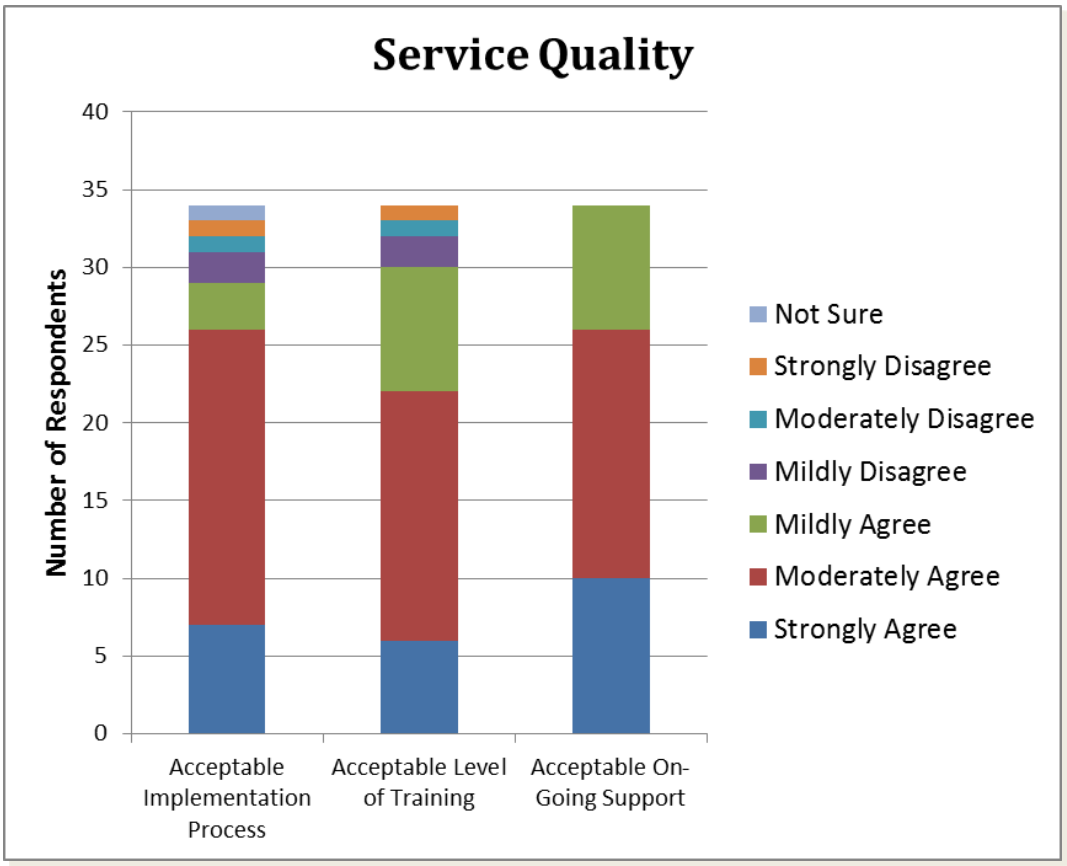


Table 5 : Epic Service Quality

Service - Acceptable Implementation Process

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	20.6	20.6	20.6
	Moderately Agree	19	55.9	55.9	76.5
	Mildly Agree	3	8.8	8.8	85.3
	Mildly Disagree	2	5.9	5.9	91.2
	Moderately Disagree	1	2.9	2.9	94.1
	Strongly Disagree	1	2.9	2.9	97.1
	Not Sure	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

Service - Acceptable Level of Training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	6	17.6	17.6	17.6
	Moderately Agree	16	47.1	47.1	64.7
	Mildly Agree	8	23.5	23.5	88.2
	Mildly Disagree	2	5.9	5.9	94.1
	Moderately Disagree	1	2.9	2.9	97.1
	Strongly Disagree	1	2.9	2.9	100.0
	Total	34	100.0	100.0	

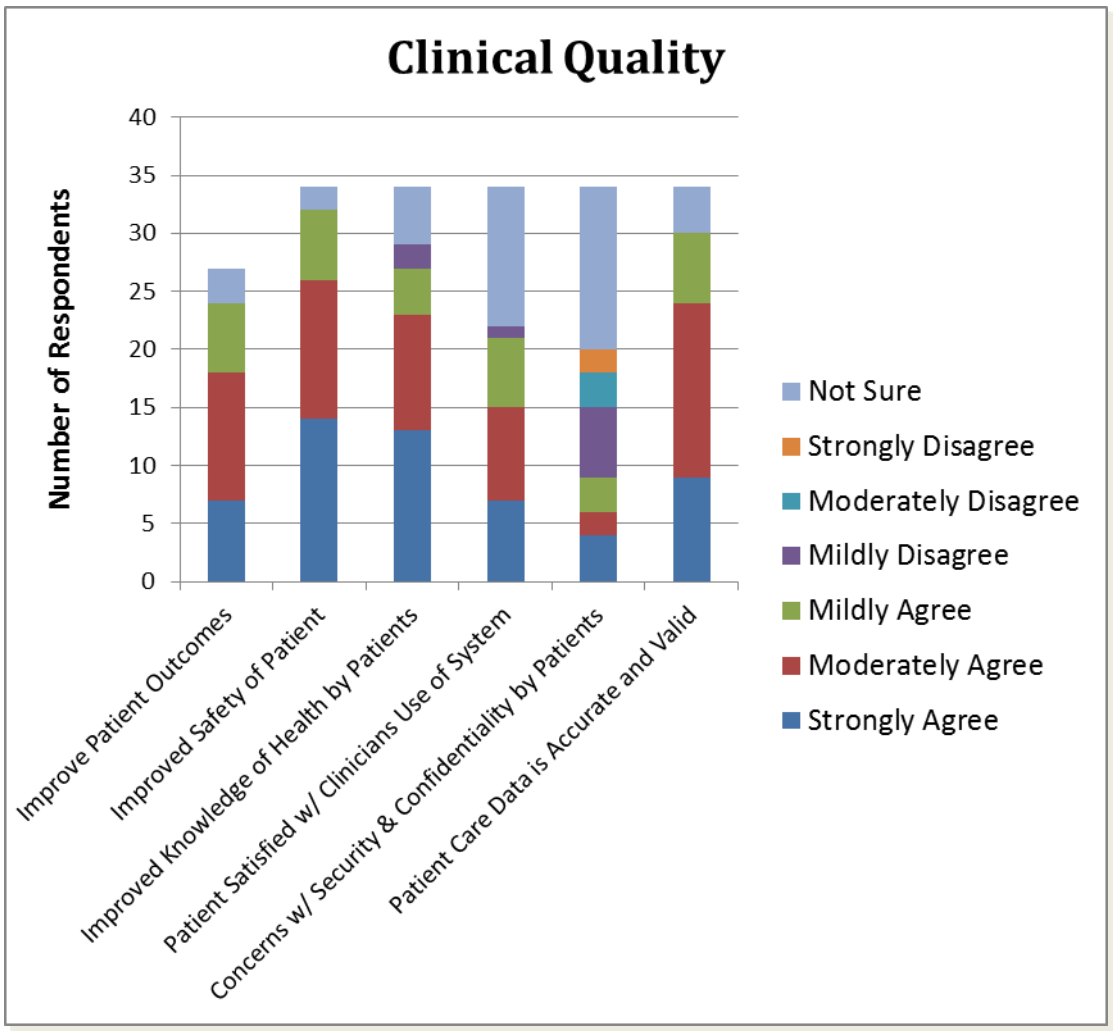
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Service - Acceptable On-Going Support

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	10	29.4	29.4	29.4
	Moderately Agree	16	47.1	47.1	76.5
	Mildly Agree	8	23.5	23.5	100.0
	Total	34	100.0	100.0	

Because most of the respondents do not work directly with the patients, the majority answered that they were not sure of the patient's satisfaction with clinicians' use of system (35.3%) or patient's concerns with system security and confidentiality (41.2%). A majority strongly believe that the clinical data has improved patient outcomes (41.2%), improved patient safety (41.2%), improved patient's knowledge of their health (38.2%) and improved clinical documentation (38.2%). A majority moderately believe the clinical data of the patient is accurate and valid (44.1%), the timely manner of the patient care services has increased (35.3%) and that there is an appropriate selection of patient care orders (35.3%). (Figure 11; Table 6)

Figure 11



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Table 6 : Epic Clinical Quality

Improved Patient Outcomes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	14	41.2	41.2	41.2
	Moderately Agree	11	32.4	32.4	73.5
	Mildly Agree	6	17.6	17.6	91.2
	Not Sure	3	8.8	8.8	100.0
	Total	34	100.0	100.0	

Improved Safety of Patient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	14	41.2	41.2	41.2
	Moderately Agree	12	35.3	35.3	76.5
	Mildly Agree	6	17.6	17.6	94.1
	Not Sure	2	5.9	5.9	100.0
	Total	34	100.0	100.0	

Improved Knowledge of Health by Patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	13	38.2	38.2	38.2
	Moderately Agree	10	29.4	29.4	67.6
	Mildly Agree	4	11.8	11.8	79.4
	Mildly Disagree	2	5.9	5.9	85.3
	Not Sure	5	14.7	14.7	100.0
	Total	34	100.0	100.0	

Patient Satisfied w/ Clinicians Use of System

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	20.6	20.6	20.6
	Moderately Agree	8	23.5	23.5	44.1
	Mildly Agree	6	17.6	17.6	61.8
	Mildly Disagree	1	2.9	2.9	64.7
	Not Sure	12	35.3	35.3	100.0
	Total	34	100.0	100.0	

Concerns w/ Security & Confidentiality by Patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	4	11.8	11.8	11.8
	Moderately Agree	2	5.9	5.9	17.6
	Mildly Agree	3	8.8	8.8	26.5
	Mildly Disagree	6	17.6	17.6	44.1
	Moderately Disagree	3	8.8	8.8	52.9
	Strongly Disagree	2	5.9	5.9	58.8
	Not Sure	14	41.2	41.2	100.0
	Total	34	100.0	100.0	

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Patient Care Data is Accurate and Valid

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	9	26.5	26.5	26.5
	Moderately Agree	15	44.1	44.1	70.6
	Mildly Agree	6	17.6	17.6	88.2
	Not Sure	4	11.8	11.8	100.0
	Total	34	100.0	100.0	

Timely Manner of Patient Care Services Increased

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	9	26.5	26.5	26.5
	Moderately Agree	12	35.3	35.3	61.8
	Mildly Agree	5	14.7	14.7	76.5
	Mildly Disagree	1	2.9	2.9	79.4
	Not Sure	7	20.6	20.6	100.0
	Total	34	100.0	100.0	

Appropriate Selection of Patient Care Orders

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	9	26.5	26.5	26.5
	Moderately Agree	12	35.3	35.3	61.8
	Mildly Agree	7	20.6	20.6	82.4
	Not Sure	6	17.6	17.6	100.0
	Total	34	100.0	100.0	

Improved Clinical Documentation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	13	38.2	38.2	38.2
	Moderately Agree	12	35.3	35.3	73.5
	Mildly Agree	4	11.8	11.8	85.3
	Mildly Disagree	1	2.9	2.9	88.2
	Not Sure	4	11.8	11.8	100.0
	Total	34	100.0	100.0	

The standard deviation of the criteria within the four quality themes were calculated and presented within Table 7. Within Table 8, cross tabulations are provided based on prior EMR experience vs. each of the acceptability of quality of the system, information, service and clinical data. The number of staff with prior EMR experience (N=19) slightly outnumbered the staff with no prior experience (N=15). Having experience with an EMR system or having no experience did not appear to affect the acceptability. In the four measures, the respondents in both groups found the quality of the system, its information, its service and specifically the clinical area all moderately acceptable.

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Table 7 : Mean & Standard Deviations of System, Information, Service and Clinical Quality Measurements

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
System - Easy to Use	34	1	4	2.00	.696
System - Reliable Performance	34	1	4	1.82	.797
System - Consistently Available	34	1	4	1.68	.768
System - Acceptable Response Time	34	1	5	1.76	.855
System - Effective Communication b/t Team Members	34	1	4	2.00	.888
System - Acceptable Exchange Information w/ Other Systems	34	1	7	2.65	1.668
System - Integrated Appropriately w/ Previous Workflows	34	1	7	2.50	1.581
System - Enables Staff to Perform Work Well	34	1	7	2.03	1.167
System - Acceptable System Security	34	1	7	2.06	1.705
Information - Relevant	34	1	3	1.71	.676
Information - Accurate	34	1	7	1.88	1.094
Information - Complete	34	1	7	2.03	1.167
Information - Acceptable Layout	34	1	3	1.82	.758
Information - Available When Needed	34	1	4	1.82	.869
Service - Acceptable Implementation Process	34	1	7	2.35	1.390
Service - Acceptable Level of Training	34	1	6	2.38	1.129
Service - Acceptable On-Going Support	34	1	3	1.94	.736

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Clinical - Improved Knowledge of Health by Patients	34	1	7	2.59	2.047
Clinical - Patient Satisfied w/ Clinicians Use of System	34	1	7	3.79	2.508
Clinical - Concerns w/ Security & Confidentiality by Patients	34	1	7	4.88	2.185
Clinical - Patient Care Date is Accurate and Valids	34	1	7	2.50	1.796
Clinical - Timely Manner of Patient Care Services Increased	34	1	7	2.97	2.209
Clinical - Appropriate Selection of Patient Care Orders	34	1	7	2.82	2.081
Clinical - Improved Clinical Documentation	34	1	7	2.38	1.875
Valid N (listwise)	34				

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Table 8 : Cross Tabulations

*Acceptability of the Quality of the Epic System * Prior EMR Experience*

Count

		Prior EMR Experience		Total
		Yes	No	
Acceptability of the Quality of the Epic System	Highly Acceptable	7	7	14
	Moderately Acceptable	9	7	16
	Neither Acceptable nor Unacceptable	2	1	3
	Moderately Unacceptable	1	0	1
Total		19	15	34

*Acceptability of the Quality of the Information Provided in Epic * Prior EMR Experience*

Count

		Prior EMR Experience		Total
		Yes	No	
Acceptability of the Quality of the Information Provided in Epic	Highly Acceptable	8	8	16
	Moderately Acceptable	10	6	16
	Neither Acceptable nor Unacceptable	1	1	2
Total		19	15	34

*Acceptability of the Quality of the Services Provided for Epic * Prior EMR Experience*

Count

		Prior EMR Experience		Total
		Yes	No	
Acceptability of the Quality of the Services Provided for Epic	Highly Acceptable	7	4	11
	Moderately Acceptable	7	7	14
	Neither Acceptable nor Unacceptable	3	2	5
	Moderately Unacceptable	2	2	4
Total		19	15	34

*Acceptability of the Clinical Data within Epic * Prior EMR Experience*

Count

		Prior EMR Experience		Total
		Yes	No	
Acceptability of the Clinical Data within Epic	Highly Acceptable	7	5	12
	Moderately Acceptable	8	8	16
	Neither Acceptable nor Unacceptable	4	2	6
Total		19	15	34

From the four core categories, each quality set's comment section was reviewed for common themes applicable to productive transition of HIT systems. Within the system qualityfocus, interoperability between modules within the system and to other systems is a noted concern of staff. As one respondent stated, "communication in the system is available but isn't utilized as well as possible." Another staffer mentions that the system "doesn't consistently interface properly with Midas." (Figure 12)For the information quality, an issue raised was the inability to access information. The view of a Case Manager is different than that of a nurse which brings concern that information is not being interpreted in the same manner (Figure 13).

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Figure 12

Comments related to Epic System Quality

- Signed and held orders for patient status are being released by physician and nursing personnel changing the patient status to an incorrect status.
- Doesn't consistently interface properly with Midas. 2. Communication in the system is available but isn't utilized as well as possible. 3. The finance billing system is flawed. It can't register the payroll deduction payment plan that is in effect. The billing also can't automatically roll different cases charges into the main guarantor account so the accounts can register as payment in progress.
- Would like a better way to print out MAR without explanation of how to administer meds. Would like a more compact MAR. Would like a better way to print several days' worth of vital signs. Under CM snapshot- adult vitals last day is perfect except that it only shows the last day instead of several days.
- I sit at a desk in front of the computer all day long in a key code locked office so there's no traffic. No patients that come through or anything. It would be nice if a warning box popped up that was big and clear that Epic was going to shut down in 60 seconds so that I could click on it and keep it open. It is frustrating to be working on a case in Midas and have Epic go down all the time and have to keep logging in when I've been sitting in front of the computer the whole time. The other thing is that it's not very clear what dates you're looking at for labs under the overview tab. You really have to concentrate where you're at for the dates. It puts it in a 24 hour period but having the lab values put in rows under a particular date would be more helpful.
- The EPIC system has streamlined our work time and has been very easy to use.

Figure 13

Comments related to Epic Information Quality

- The medical record is compartmentalized and groups of people have access to limited information. This can be a communication issue between units such as Case Management or UR and the RCO for billing purposes or the communication between Nursing and Case Management in the discharge process.
- This is largely dependent upon the quality of documentation by health care providers-not an EPIC issue per se.
- Some information not reflected at times- delayed.

The largest numbers of concern are in relation to the service quality. One of the concerns is the training was not specific enough for particular job titles. An example given was a class attended by a Case Manager but included staff from the Admissions department. The class was taught using a task list for the Admissions department which was a "different view and way to enter" thesystem's authorization module. The Case Management felt the "class was not tailored enough" for their department. The same concern was noted by a staff member who not employed during the implementation but came after. She felt the training was inappropriate for her job description. Along the lines of training, it was mentioned for "more training services on over all process of Epic flow of documentation of a patient." (Figure 14) The staff seems to be unsure of how the system's modules are interconnected. Lastly, concerns were stated in regard to the timeliness of resolving issues. "IT is slow to respond and resolve issues when they arise" was the comment of one employee. For the final quality measure, the statements

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indicated that the staff was unsure because they did not deal with patients directly (Figure 15).

Figure 14

Comments related to Epic Service Quality

- Now that Central TX Region is all on EPIC I anticipate the quality of service will increase and be timelier.
- Need classes addressing case management and utilization process. Need more training services on over all process of Epic flow of documentation of a patient. I did have a tech come over and he was very helpful. Many classes were set up for certain departments. While other departments did not have but very little training or understanding of how to work in Epic. The Tip sheets were very helpful and the one on one tech support was very supportive.
- When first taking EPIC training, it did not relate to what we do here. Many questions and frustrations expressed in classes and for a few months after. Today it seems to run ok
- IT is slow to respond and resolve issues when they arise.
- The training received was too general. Multiple job titles in the same class and we all have a different view of EPIC. For example, the class I attended on authorization/pre-certification included admissions department. They have a different view and way to enter the auth/cert screen than I do but the class was taught using their worklist. UR does not use that worklist; therefore, the class was not tailored enough for us.
- I wasn't here for the implementation of Epic. The training for me was for what a case manager or social worker does. It didn't apply to my job whatsoever. Not even a little bit. Everything I learned for Epic is what my co-workers taught me. And all the computer help I get is mainly from one nurse in my office who helps us -- she's very bright and can navigate very well around the Epic system.

Figure 15

Comments related to Epic Clinical Quality

- I work in an office. I don't work with patients anymore so I am not able to contribute to these questions.
- I don't know how the patient's feel about the EPIC system
- Not all patients have access or knowledge to access EPIC in the home environment. Appointments without f/u telephone calls or written notice are frequently missed.

The survey concluded with more general questions related to the implementation process. The topics mentioned by the staff tended to reflect the appropriate training of staff with statements such as “training should have been more specific to my job” and “educate staff thoroughly to obtain the best results. Benefits stated my respondents were more in relation to the system such as “work flow is improved” and “f aster easier access to information.” (Figure 16)

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Figure 16

Survey General Comments

What specific features of Epic are especially appreciated?

- Able to complete documentation more efficiently. Documentation is readily available to be viewed by all disciplines. Finding physician orders, labs, demographic information, medical notes, etc. is much easier to access.
- The fact that you can review clinic notes and in-hospital notes to follow a patient.
- Everything is in one system. No longer do I have to go into various systems to find notes from various professionals.
- Electronic is great
- Clinical documentation is all inclusive within the Epic system.
- Timeliness of reports being available
- if notes are in the computer- they are available and do not have to hunt chart Labs and imaging results are faster to view
- icons that populate the patient list to indicate orders, consults , etc.
- all data and patient stays in one location - ability to use filters to only see what I need
- easy to chart and read documents
- Documentation of all areas in one place. Easy access to previous admissions.
- Scheduling
- Note Documents MAR manage orders

What specific aspects of Epic could be improved by the vendor?

- The access to all clinical notes in the same place.
- The work queues require more adequate routing rules or setting the rules correctly
- when need to print MARS or vitals- would be helpful to have a more concise form to print
- make faxing to skilled nursing facilities available through the system
- better way to print MAR and Vitals
- Bringing in notes from previous EMR
- It would be helpful to have the capability of keeping EPIC up for longer periods of time for those of us working 12 hour shifts in front of a computer. When it times out every ten minutes or so-it creates a significant waste of time from a manpower perspective.
- Have a warning box pop up in the middle of the screen that gives you 60 seconds before shutting down. Have the labs in one date order at a time under the overview tab-not a 24 hour block of time from yesterday at 0700 to today.
- Sticky Notes
- How can user identify salient points related to the work concentration to use effectively in her work on her day of review? I.e. not accomplished and needs to be done.

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Do you have any lessons learned since the Epic system implementation?

- Educate staff thoroughly to obtain the best results.
- More hands-on training and less classroom lectures would be helpful. I really did not learn much until I actually began charting in the system.
- training should have been more specific to my job
- Before EPIC teaches classes-- they need to be prepared for Q&A; who do go to and f/u person for us to contact or that email will be sent out
- Yes! Auto search is not always the most helpful when scheduling appointments
- Learned to Navigate thru the system effectively

Do you have additional goals related to Epic that you or your department have not yet completed?

- I am still working on report writing to establish departmental metrics for CM, UR and ACS/ER.
- to better navigate the pre hospital encounters
- Still working with EPIC staff to optimize usage.
- Identify patients on Facesheet that patient needs items completed

Have there been any unexpected benefits gained for your department of the organization since implementing Epic?

- Increased documentation and more thorough information documented.
- My supervisor is able to track the number of consults put into epic.
- From a financial standpoint able to follow the billing process more adequately.
- finding info quicker and can view from anywhere-- not just where the chart had been located < or Not>
- Being able to have an discharge assistants consults queue
- Work flow is improved.
- Faster easier access to information

V. Discussion

The significance of the results continues to help develop critical elements necessary for a successful transition to a new comprehensive system. The study focused on the end users' beliefs regarding the quality of the system and particularly, its information and service. Areas of enhancement were revealed included improving training specific to job roles and supplying more fitting integration of processes and workflows. Likewise, confirmatory aspects of current procedures were observed throughout the study. After the implementation, a greater part of the respondents appreciated many of the aspects of having the new technology such as the ease of use, the ability to access to documents within one system and timeliness of information.

Key limitations of the study should to beunderscored. The study was conducted at two associated healthcare facilities located in one city in central Texas. Moreover, the questionnaire was limited to responses from same type of department within the two hospitals. The responses were limited to staff that do not have access to patient care as a routine part of their job responsibilities. Lastly, the fear of participating in survey may have limited the response. Disbelief in true anonymity may have limited or swayed respondents in their scoring or comments.

The resulting recommendations are focused on fostering staff engagement Taking guidance from a lecture presented by Rod Brace (2014), "The Science of Engagement", engagement is correlated to making progress. As part of progress, there needs to be clarity of goals, a feasible challenge and feedback on actions. But

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to make progress, staff will need motivation. Motivation is provided by allowing choices, knowledge and connection to the progress.

As an illustration, the barrier of providing job-specific training could be tackled. Addressing the goal of job-specific training would acknowledge the staff concerns. Providing acknowledgement and recognizing the concerns will engage the personnel. Respond quickly with a plan of action will continue the commitment. Finally, provided feedback will continue the support of a positive transition.

In close, understand the critical elements to support positive HIT transitions are essential but the continued engagement of end users is also vital. Before, during and after implementation, healthcare personnel need to feel competent and related to the transition. Two future studies are recommended. First, a study could be developed to correlate staff engagement to positive HIT changeovers. The second would still be covering the gap in present research which continues to be the need for greater variety of positions giving feedback.

VI. Conclusions

The subsequent conclusions and recommendations will provide a summary of findings. Along with the findings, conclusions related to the implications to a positive implementation process related to the study and previous studiesare provided.

The participants were employed within the Continuum of Care departments of two acute care inpatient facilities. The majority of respondents declared themselves to be Case Management staff. This group includes RN Case Managers and Social Workers. The remaining staff was administrative support staff or management staff of the Continuum of Care departments.

The quality of the four areas of focus all was seen in a largely positive light. Over eighty percent of the respondents moderately or strongly agreed that the system was easy to use, had reliable performance, was consistently available and had an acceptable response time. While acceptable response time did have a ninety-seven percent positive response, one staffer did moderately disagree. Two other areas did contain responses that ranged from strongly agree to moderately or strongly disagree which were the acceptability of information exchange with other systems and the appropriate integration of previous workflows.

As the system information as a whole and the clinical information surveyed individually, the workers replied a mostly affirmative response or stated that they were unsure. Most felt the information was relevant, accurate and had an acceptable layout. A small minority mildly disagreed the information was complete (2.9%) or available when needed (6.9%). Within the clinical quality survey questions, the response of "Not Sure" was selected than any of the four quality specific areas. From the comments given by the respondents, this was due to the staff not working directly with the patients. Still, a majority strongly believed that the system had provided improved patient outcomes, patient safety, patient knowledge of their health and improved clinical documentation.

While the quality of service still received mostly agreeable responses, it provided the large number of comments of concern by the respondents. Although the majority of survey takers moderately agree the implementation process, level of training and on-going supports were acceptable, the three questions also had responses that included mild, moderate and strong disagreement. The primary issue noted appeared to be centered on job-specific training. Whereas the remarks did convey a desire to better understand the overall process of Epic, the many staff members mentioned the need for training related to "addressing case management." One employee mentioned that there were "many questions and frustrations expressed in classes and for a few months after" because "when (the staff) first took Epic training, it did not relate to what they did." (Figures 5 and 6).

Similar to previous studies, some of the same topics were observed in this study. As with other studies, the implementation process appeared to provide a mostly encouraging transition witha small number of components noted of concern to the staff. Similar to the study in "Transitioning from a computerized provider order entry and paper documentation system to an electronic health record: Expectations and experiences of hospital staff", positive characteristics observed included the quality and safety of patient care. Readily available all-inclusive clinical documentation and the ability to locate patient demographic information quickly were additional benefits of transitioning.

Moreover, conceivable enhancements for future implementations were illustrated with the recent study. One feature of greater apprehension was highlighted by staff with two other concerns of smaller notation. As mentioned in the article "Learning from Within to Ensure a Successful Implementation of an Electronic Health Record", the few of the staff within the current studyexpressed the similar need for further attention to processes and workflows within the new HIT system. Another minor concern was improving the exchange of information with other systems. More than an ability that can be imparted to the staff during the transition process, the implementation of this the element may be a requirement on the quality of the system itself. The

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greatest concern appears to be appropriate staff training. While an understanding of the overall structure of Epic is wanted, a focus on more job-specific training was repeatedly articulated. In summary, the critical elements essential for a successful transitionemerging from the study appear to include appropriate training, attention to incorporating processes and workflows, swift feedback to questions and concerns and attention to the staff impression and opinion regarding the HIT system and its implementation.

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Polycythemia with Cerebellar Hemangioblastoma

By Elizabeth JeyaVardhini Samuel, Nagarajan Natarajan, Ramesh & Latha M

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Abstract- 56 year old male presented with one month history of vomiting with abdominal pain; hemogram suggested polycythemia with hemoglobin of 16.5-18.1gm%, gastroscopy showed pan gastritis, bone marrow smear, biopsy showed erythroid, megakaryocytic hyperplasia;ultra sonogram abdomen, pelvis did not show any significant abnormality; patient improved with parenteral hydration, proton pump inhibitors; after ~7 months he returned with weakness, weight loss; hemoglobin alone had increased to 19 to 20gm%, with a hematocrit of 56.1%, other cell lines were not involved, suggesting secondary polycythemia; CT scan brain revealed Cerebellar Hemangioblastoma with obstructive hydrocephalus; emergency ventriculo peritoneal shunt was performed, followed by excision of the tumor; patient recovered and hemoglobin normalized.

Keywords: *polycythemia, cerebellar hemangioblastoma.*

GJMR-K Classification: *NLMC Code: WL 320*



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Polycythemia with Cerebellar Hemangioblastoma

Elizabeth JeyaVardhini Samuel [α], Nagarajan Natarajan [σ], Ramesh [ρ] & Latha M [ω]

Abstract- 56 year old male presented with one month history of vomiting with abdominal pain; hemogram suggested polycythemia with hemoglobin of 16.5-18.1gm%, gastroscopy showed pan gastritis, bone marrow smear, biopsy showed erythroid, megakaryocytic hyperplasia;ultra sonogram abdomen, pelvis did not show any significant abnormality; patient improved with parenteral hydration, proton pump inhibitors; after ~7 months he returned with weakness, weight loss; hemoglobin alone had increased to 19 to 20gm%, with a hematocrit of 56.1%, other cell lines were not involved, suggesting secondary polycythemia; CT scan brain revealed Cerebellar Hemangioblastoma with obstructive hydrocephalus; emergency ventriculo peritoneal shunt was performed, followed by excision of the tumor; patient recovered and hemoglobin normalized.

Keywords: polycythemia, cerebellar hemangioblastoma.

I. Case Details

56 year old male presented with vomiting, upper abdominal pain of ~30 days duration, associated with mild weight loss; he was a known hypertensive on irregular treatment but not a diabetic; he was a non smoker, non ethanol consumer, he used snuff, his wife had undergone permanent sterilization. General examination showed medium built middle aged male, with moderate dehydration, but no pallor, icterus, lymphadenopathy or pedal edema; his blood pressure measured 150/100 mm Hg; cardiovascular system, respiratory systems showed no abnormality; he was conscious oriented, with no neurological deficit; epigastrium showed tenderness, without guarding or rigidity; there was no hepatosplenomegaly.

His initial hemoglobin was 18gm%, with hydration the hemoglobin reduced to 16.5 to 17 gm%; liver function tests showed mild elevation of transaminase to 42 mg/dl, renal parameters were normal; peripheral smear showed reactive lymphocytosis, normochromic, normocytic red blood cells, with normal white blood cells, adequate platelets. Ultra sonogram of the abdomen showed simple renal cortical cysts, fatty change liver. Oesphago gastro duodenoscopy showed pan gastritis; bone marrow biopsy done to evaluate for reactive lymphocytosis, with suspicious borderline polycythemia, showed hyper cellular marrow with erythroid, megakaryocytic hyperplasia.

He received treatment with proton pump inhibitors, parenteral hydration; patient`s vomiting stopped, his abdominal pain improved and he requested discharge due to personal reasons.

6-7 months later patient returned with weakness, debility, for the past >30 days duration with obvious weight loss; examination suggested subtle Cerebellar signs, with suspicious, mild nystagmus on looking to the left side, suspicious impairment of tandem walking, there was no other neurological deficit; investigations revealed hemoglobin of 19.5 to 20 gm%, hematocrit of 56.1%, other cell lines were normal; the weight loss was very significant ~ 50%; since true secondary polycythemia was suggested by pure erythrocytosis without involving the other cell lines, ultra sonogram abdomen was normal, with significant weight loss, computerized axial tomography scan of brain was planned, to assess for Cerebellar Hemangioblastoma, probably having resulted in secondary polycythemia.

Computerized axial Tomography scan of the brain showed a 3.5cm × 3.8 cm mass lesion, with cystic areas, suggesting a possibility of Hemangioblastoma, with complete effacement of 4th ventricle, seen to cause obstructive hydrocephalus of the 3rd and both lateral ventricles; retinal examination showed papilloedema, but no hemangiomas; Magnetic resonance imaging of the brain showed solid, cystic mass in vermis, left Cerebellar hemisphere, to cause obstructive hydrocephalus Figure 1.

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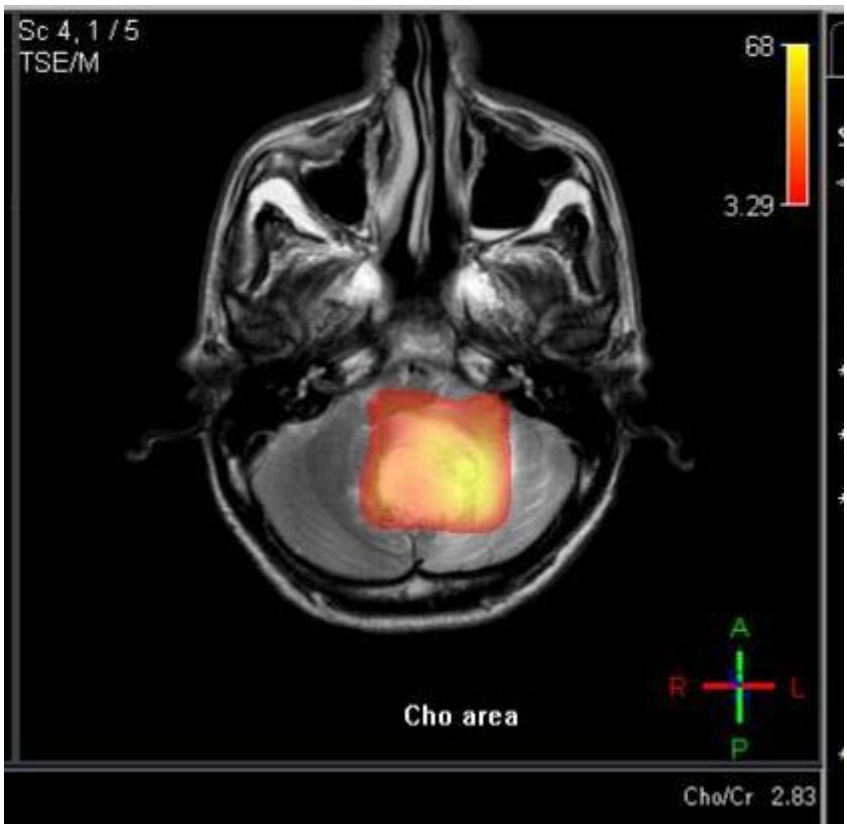


Figure 1: *Tumor in cerebellum*

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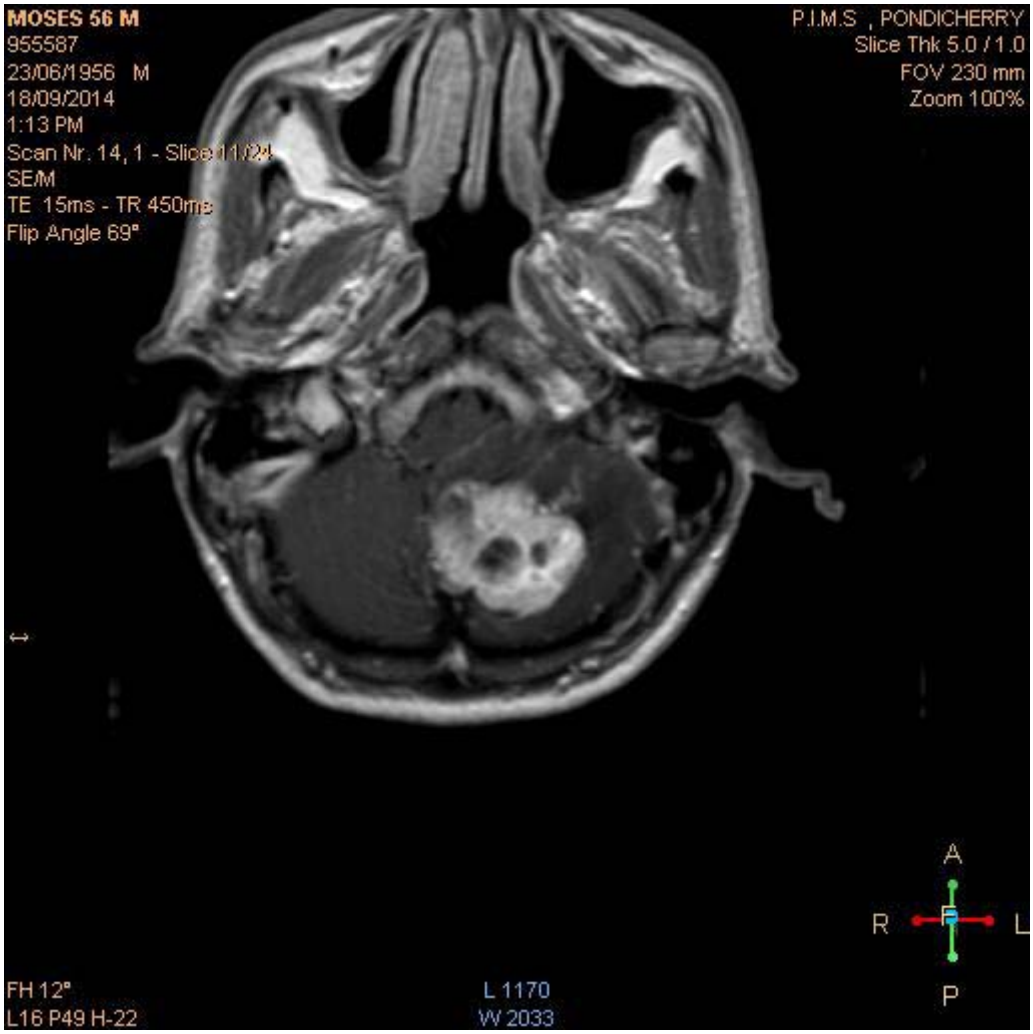


Figure 1: *Tumor in cerebellum*

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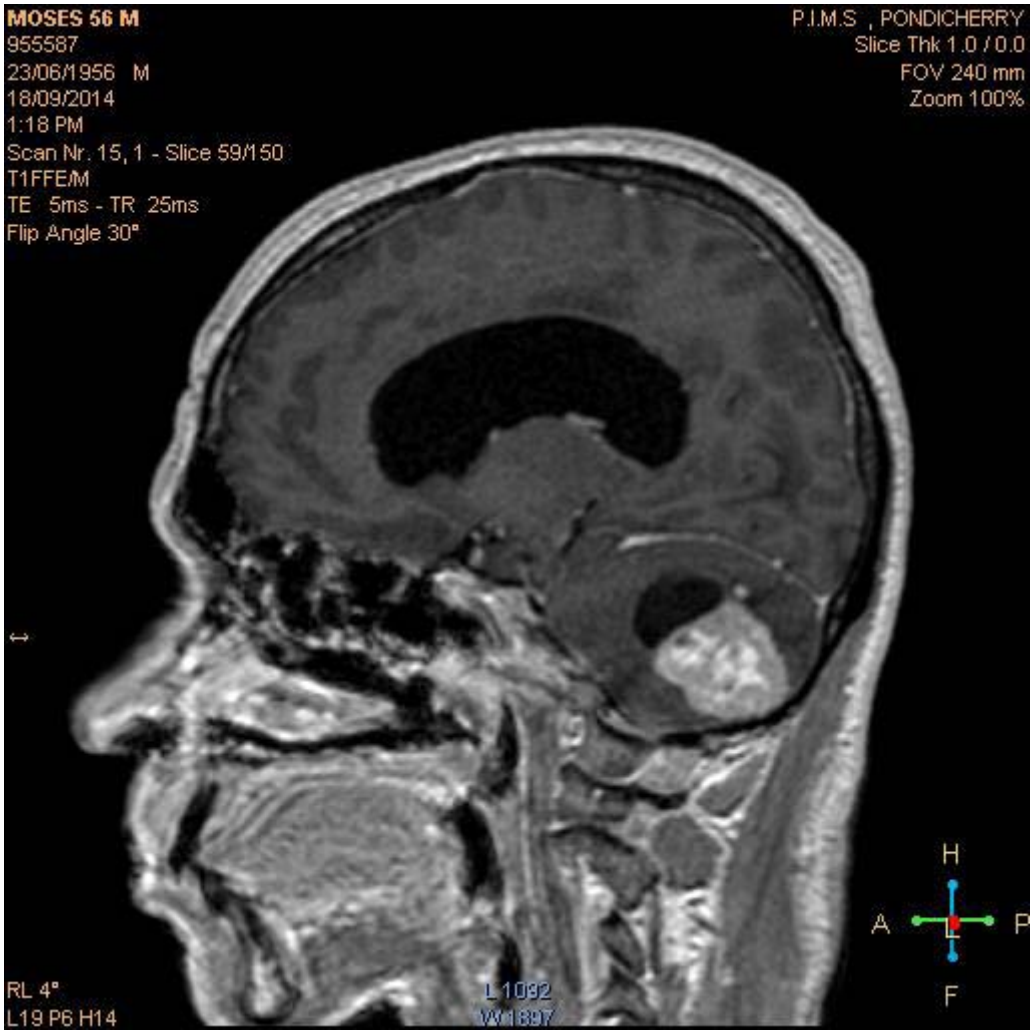


Figure 1 : Obstructive hydrocephalus caused by the tumor.

Emergency ventriculo peritoneal shunt was done followed by tumor excision by sub occipital craniectomy; post operative period was uneventful;

Histopathological examination of the excised tumor showed two components of the tumor-vascular and stromal; vascular component is in the form of network of capillaries and large thin walled vascular spaces; stromal component showed vacuolated large stromal cells with round to oval bland nuclei; occasional enlarged nuclei were seen; sparse mitoses were seen; foci of hyalinized vascular stroma were noted; tumor parenchyma interface was discrete in many foci, while creeping tumor was seen in occasional foci; capillary Hemangioblastoma-WHO grade 1 was reported Figure 2.

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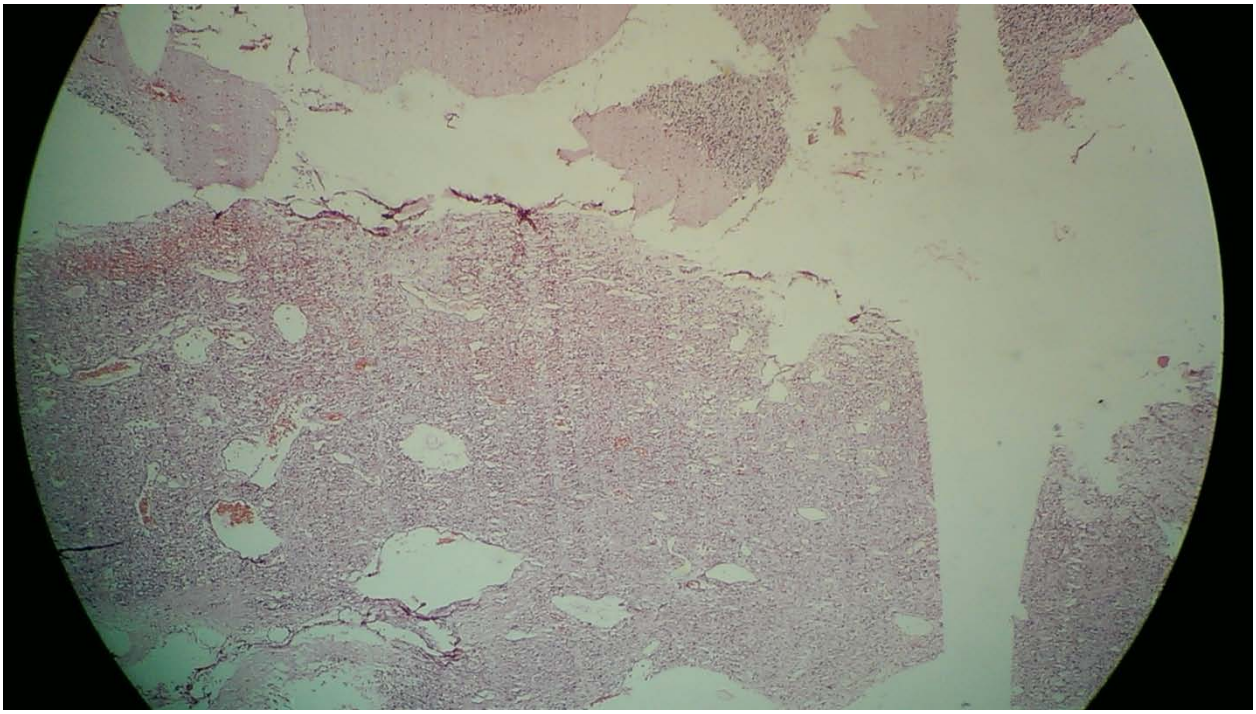


Figure 2 : HPE-Cerebellar Hemangioblastoma

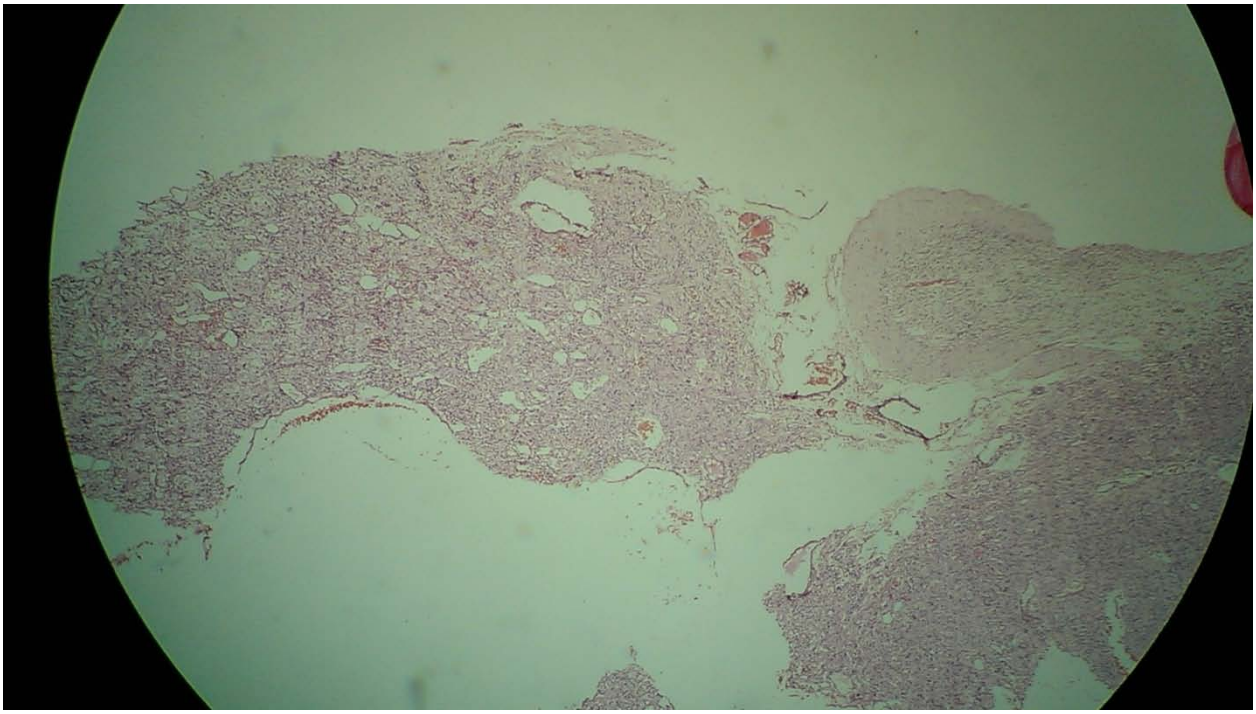


Figure 2 : HPE- Cerebellar Hemangioblastoma

Post operatively hemoglobin returned to 15gm%, patient was discharged with anti epileptics to review in 3 months.

II. Discussion

Polycythemia refers to high hemoglobin greater than upper limit of normal, in adult females >16.5gm% or hematocrit >0.48, in adult males hemoglobin of 18.8gm% or hematocrit >0.52 due to increase number of red blood cells [true polycythemia] or reduction in blood volume [apparent, relative polycythemia].

Causes of true polycythemia are [1]primary polycythemia–a myeloproliferative disorder e.g. Polycythemia Rubra Vera; secondary true polycythemia due to increased secretion of erythropoietin secondary to tissue hypoxia as in high altitude, lung disease,

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cyanotic heart disease, high affinity hemoglobin, or secondary polycythemia due to inappropriately increased erythropoietin secretion by renal diseases such as hydronephrosis, cysts, carcinoma, other tumors like bronchogenic carcinoma, uterine fibroids, hepatoma, pheochromocytoma,Cerebellar Hemangioblastoma.

Polycythemia Rubra Vera is a [2] clonal disorder involving a multipotent hematopoietic progenitor cell in which phenotypically normal red blood cells, granulocytes and platelets accumulate in the absence of a recognizable stimulus.

Since the patient had significant weight loss with true polycythemia in the second visit, not involving the other cells of granulocytes, and platelets, secondary polycythemia was considered; since ultra sonogram of the abdomen did not show any abnormality, search for tumors including Cerebellar Hemangioblastoma was undertaken.

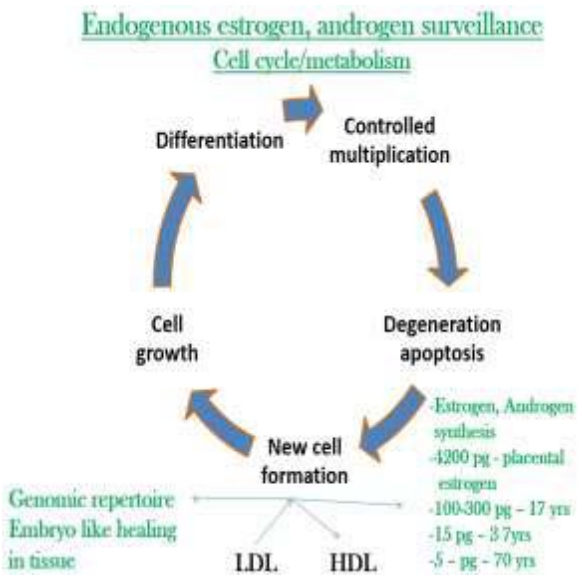
Hemangioblastoma are rare benign tumors that occupy central [3] nervous system and other regions like kidney, liver, pancreas; the incidence among posterior fossa tumors averages 11%; highest incidence is in 3rd to 6th decades of life; family history is significant with autosomal dominant inheritance, related to deletion of tumor suppressor gene, on the short arm of chromosome 3.

Hemangioblastoma are benign vascular tumors that arise from embryonic remnants of mesoderm origin, trapped in nervous system, during first trimester [4] of life Cerebellar Hemangioblastoma a rare cause of [5] erythrocytosis, consequent to ectopic production of erythropoietin by the tumor cells.

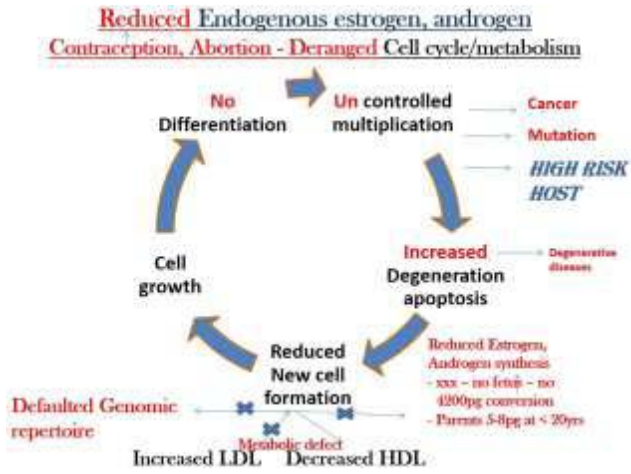
2 cases of Hemangioblastoma followed up long term showed malignant [6]behavior of transition to renal cell carcinoma from renal cysts

Hemangioblastoma is a tumor of the central nervous system, arising from vascular system, and can be present in retina [7 8 9 10] and spinal cord; can be associated with polycythemia, pancreatic cysts and Von Hippel Lindau syndrome.

As per the corresponding Authors earlier publications, couples observing contraception have 4-7 fold [11]increase in tumors, cancers, among 35- >50years of age, by fragmentation of the germ cells with associated decreased surveillance by estrogen, androgen [12]resulting in uncontrolled proliferation of any cell, preceded by no differentiation, resulting in neoplasms. If only the wife`s permanent sterilization can be reversed by tubal recanalization by awareness, financial aid, surgical expertise, the germ cells destruction will stop and the androgen, estrogen [13] will return to 79.9% of age normal, restoring genomic repertoire, cell cycle of differentiation, followed by controlled multiplication, so that recurrence and malignant transformation of the tumor will be curtailed.



Reference 12-Figure (a)



Reference 12-Figure (b)

III. Conclusion

56 year old male presented with spurious or relative polycythemia suspect, later on progressed to true secondary polycythemia with significant weight loss, prompting a search for neoplasms; clinically he had subtle Cerebellar signs and imaging confirmed the diagnosis of Cerebellar Hemangioblastoma, with associated obstructive hydrocephalus; emergency ventriculo peritoneal shunt followed by excision of the tumor was performed and the histopathological evaluation confirmed WHO grade 1 Cerebellar Hemangioblastoma; hemoglobin normalized with excision of the tumor.

IV. Acknowledgements

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My Pain is 10 out of 10. Patients Vs. Actors in Clinical Settings

By Mariyah Hussain, MD, Saeed Ahmed, MD, Hena Jawaid, MBBS, Mustafa Qureshi, MD, Hooria Manzoor, MD, Tazeen Azfar, MD, Swati Sood, MD, Rizwan Ahmed, MBBS & Safiullah, MD

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Abstract- Over the past two decades, opioid medication abuse among the U.S. population has expanded to a scourge extent. While the U.S. only accommodates 4% of the world's population, Americans consume 86% of the world's opioids, 99% of the worldwide hydrocodone supply, and 66% of the world's illegal drugs. Prescription opioids, which are currently the second most misused class of medication following cannabis. Results of the 2010 National Survey on Drug Use and Health (NSDUH) showed that a predicted 22.6 million people aged 12 or olderwere current or past month illicit drug users. Nearly 7 million individuals among these used marijuana and 5.1 million used painkillers. Only 17.3% of users of non-therapeutic opioids indicated that they received the drugs through a prescription from a physician. The widely growing use of therapeutic opioids shows hydrocodone topping all prescriptions with 136.7 million prescriptions in 2011.with all narcotic analgesics reaching more than 238 million prescriptions. Opioid analgesics are now accountable for a higher mortality rate than suicide and motor vehicle accidents. The majority deaths (60%) occur in patients who received prescriptions based on prescribing guidelines by medical boards, irrespective of the doses. In comparison, 40% of deaths occur in individuals abusing the drugs obtained through illegal means.

Keywords: *drug seeking behaviors, opioid legitimate use, misuse, abuse and pain.*

GJMR-K Classification: *NLMC Code: WL 704*



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My Pain is 10 Out of 10. Patients Vs. Actors in a Clinical Setting

Mariyah Hussain, MD [α], Saeed Ahmed, MD [σ], Hena Jawaid, MBBS [ρ], Mustafa Qureshi, MD [ω], Hooria Manzoor, MD [¥], Tazeen Azfar, MD [§], Swati Sood, MD [χ], Rizwan Ahmed, MBBS [ν] & Safiullah, MD [θ]

Abstract- Over the past two decades, opioid medication abuse among the U.S. population has expanded to a scourge extent. While the U.S. only accommodates 4% of the world's population, Americans consume 86% of the world's opioids, 99% of the worldwide hydrocodone supply, and 66% of the world's illegal drugs. Prescription opioids are currently the second most misused class of medication following cannabis. Results of the 2010 National Survey on Drug Use and Health (NSDUH) showed that a predicted 22.6 million people aged 12 or older were current or past month illicit drug users. Nearly 7 million individuals among these used marijuana and 5.1 million used painkillers. Only 17.3% of the users of non-therapeutic opioids indicated that they received the drugs through a prescription from a physician. The widely growing use of therapeutic opioids shows hydrocodone topping all prescriptions with 136.7 million prescriptions in 2011, with all narcotic analgesics reaching more than 238 million prescriptions. Opioid analgesics are now accountable for a higher mortality rate than suicide and motor vehicle accidents. The majority deaths (60%) occur in patients who received prescriptions based on prescribing guidelines by medical boards, irrespective of the doses. In comparison, 40% of deaths occur in individuals abusing the drugs obtained through illegal means. The objective of this article is to review the available evidence concerning misuse and differentiate a legitimate user from a drug-seeking addict. We would also discuss various aspects of drug abuse in clinical practice, mainly dealing with these patients in Emergency and Psychiatric settings.

Keywords: drug seeking behaviors, opioid legitimate use, misuse, abuse and pain.

I. Introduction

Sensory perception and its ability to bring external stimuli into awareness or consciousness have a significant role in the life of a human being. Pain is the major and most discussed, explored, and investigated part of a sensory system. Its severity correlates with the measure of touch, pressure, and vibration senses.

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Author θ: Chandka Medical College, Pakistan.

The concept of pain has received significant focus because of its intensity and the motivation, which provokes one to seek a remedy through pharmacological, psychological, or social outlets. Regulation of pain-induced-behavior operates on the basis of two approaches: pain avoidance through anticipation or pleasure approach (1).

We try to understand most of the concepts in the domain of a Bio-Psycho -Social model. Another (evolving) extension of this evaluation model is spiritual. This area, however, is undergoing current studies that might give us further insight in the future.

II. Biology of Pain

The biological underpinnings of pain deal with endorphins, encephalin, and substance P(2-4). The saturation of GABA, cannabinoids, and nicotinic receptors underlie the maladaptive human behaviors to obtain pleasure. In other words, it is done to suppress nociception to the point of euphoria. The thalamus is a relay station for all sensory information that tries to correspond by activating response team for an action. The two ramifications of information processes go to the cerebral cortex (rational response) and the amygdala (emotional response), respectively. The final decision depends on connectivity and better transmission. Better the integration of synaptic connectivity and dendritic branching of an area, better or dominant will be the response.

III. Psychosocial Aspects of Pain

Most of the unrelenting and excruciating nature of pain does not respond to medical measures despite optimum dosages. This behavior reflects the associated parameters of pain. Mostly, this involves the emotional factor. Associated emotional memory enhances the consequential effect of pain despite adequate pain reduction. Emotional pain does not respond to pharmacological measures and the patient continues to stay in pain whilst showing persistent drug utilization behavior. It is an unfulfilled emotional need that shapes up drug seeking attitudes and establishes dependency.

In psychology, conversion is a known defense mechanism described by Freud in 1895. It is a conversion of psychological distress into a physical symptom. The measure of conflict reflects pain intensity,

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severity, and nature. As soon as it gets resolved, the pain subsides on its own. It is an unconscious attention-seeking attitude which invites people for an attempt towards conflict resolution, the wish that cannot be verbalized otherwise.

The structure of personality, temperament, childhood experiences, history of environmental stimuli, parenting, interaction, life events, loss and social resources - all these factors determine our coping strategies and adaptation skills. The environmental stimuli can be good (authoritative parenting, supportive structure, academic achievements, ample resources, proper attachment, and encouragement) and can be bad (physical, emotional, sexual abuse, neglect, malnutrition, parental conflicts or separation weak attachment, authoritarian parenting, bullying, discouragement, and poor academic scores). Early experiences set up the basis of survival rules for children. These rules are an arbitrary reflection of their imagination regarding the world and defining their perception (5-7). The fearful personality architecture would have greater pain anticipation, which can stimulate early drug-seeking behavior (8).

The patients with a traumatic onset, injurious account are five times more at risk of obtaining opioid as a pain relieving strategy as compared to others who suffered the same extent of injuries giving non-traumatic perspective (2). The presence of self-efficacy belief is a belief in one's ability to succeed in a specific situation. If a person thinks, "symptom cannot be reduced, no matter whatever he does", then it is likely that symptoms may not be diminished by adequate measures. However, more optimistic expectation influences pain sensation (9).

The somatosensory amplification can be a communication mode for expressing distress (mainly psychological in nature). It depicts reduced threshold of tolerance, inculcates fear avoidance (10), and retrieval of (associated negative) episodic memory or pain related emotion (anxiety) (10, 11). This example can be understood by the presence of chronic pelvic pain sufferers with a history of sexual abuse. It has been demonstrated in many observational studies, maximum saturation does not heal one from pain neither does it reduce demands of pharmacological supplements. This behavior has invoked an idea to reflect the processing of pain in human brain with its associated emotional, memory, and temporal aspects.

IV. Legitimate Patient vs a Drug Abuser

Medical user and non-medical drug users can be differentiated on the basis of symptom explanations and premorbid adjustment. With a history of poor work record, occupational and social changes, suspicion of non-medical drug use should be raised. The state of premorbid and comorbid substance use is crucial (12). Over the past two decades, opioid drug therapy has soared up for non-cancer pain and hence opioid misuse has skyrocketed too (13). The United States Substance Abuse and Mental Health Services Administration defines the non-medical use of prescription opioids as a prevailing issue, which is increasing rather rapidly. According to their sources in 2002 and 2005; this point was further elaborated as taking someone else's medication or taking drugs only for the mere purpose of experiencing its effects (14, 15). Prescription drug abuse can additionally entail taking more than the optimum dosage, increasing frequency of drug administration, or even altering the drug formulation (eg. crushing) - all for the purpose of obtaining higher amount of the desired medication. In 2008, 73.8% of the prescription drug overdose deaths were a result of an overdose due to opioid pain relievers , thus highlighting its significant impact on mortality (16).

A study by Cicero TJ et al. showed the initial (genuine) prescription of opioid drug therapy in 79% of males and 85% of females on basis of pain led to 60-70% of them to misuse it in order to get "high" (17). According to Passik et al., the growing problem of the non-medical use of opioids requires mores refinement in order to be cured. Hence, consultations with specialists in mental health and other related fields should be encouraged (18).

V. Suspicious Behavior to Investigate

Better screening and validated tools can help in making the process of selection more objective and authentic. The assessing instruments should be able to identify problems, predict risk for diversion, and choice for treatment (13). The consideration should be given to three componential categories 1) genetics 2) environmental influence 3) drug-related elements (19). That said, these factors do not affect independently but the effect is dimensional. Without the presence of psychosocial effects and family history, the potential of dependence reduces significantly despite drug-related factors like frequency, dose, etc.

Risk factor stratification should be done to help determine the intensity and frequency of monitoring the patients based on their risk of drug abuse. However, we should not use it to deny pain management in patients with high risk of abuse. All patients should be monitored to a minimal extent, which could then be more detailed based on the category in which they fit (low, medium or high-risk group) (13). A patient with a high risk of misuse tends to exaggerate in order to amplify the consequential effect of pain on a daily life routine, as compared to the user (20). Low pain tolerance is another hallmark for misuse (21). Younger individuals and a history of psychiatric illness are both predisposing factors for abusing prescribed drugs (22). According to a result of a multivariable analysis, there is

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a significant association linked with past year non-medical use of prescription opioids with younger age (especially 18-21), Hispanic ethnicity, unemployment status, anxiety problems (panic, depression, agoraphobic, social phobic symptoms), history of alcohol dependence, cigarette smoking, history of other prescription drug misuse, other illicit substance use, and young age of initiating substance use (23). Based on previous studies, Conway and Dowling have found a correlation existing between anxiety and non-medical drug use, abuse, and dependence (24-29). This correlation raises the possibility that some opioid misuse could be better recognized and understood as self-medication. As in 1999, Fishman has devised excellent measures to deal with these stressful situations where differentiation is difficult to investigate (30):

A. One pharmacy /one doctor visit
B. If prescription is lost or prescription is utilized earlier, then it cannot be replaced
C. Serials of urine drug screening tests.

VI. Does the Physical Evidence Fit the Story?

Vissers et al, describes in his management approach that a drug-seeking patient may be referred as one "who is determined at all and any costs to support their narcotic dependency" (31). If a patient presents with an unreasonable and disproportionate focus on obtaining a desired specific pharmaceutical agent, without understanding its more appropriate other medical uses; he can be distinguished as a prototypical patient (32).

Signs of drug seeking should be differentiated from signs of addiction. An initial prescription to a medical user can merit subsequent dependence on prolonged use and can cause drug-seeking behavior. The strategy should be aimed to substitute stronger depending agent slowly with one of the weaker affinity drugs (33). Another angle of assessing addiction or getting clue of it is by 1) frequently "missing" prescription slips 2) "lost medications" 3) frequent narration of unpredictable circumstances leading towards more injuries (requiring more medicines) (34). Females are prone to more substance misuse due to affective instability and emotional problems while males' inclination is mostly due to legal purposes (35).

Table 1: Prototypical Drug Seeking Behavior (Vukmir et al., 2004)

1. Multiple visits for same complaint
2. Unable to focus on anything other than the medicine
3. Lost prescription
4. Doctor unavailability
5. Allergic to new narcotic alternatives
6. Desire narcotics
a. Oral-codeine, oxycodone
b. IV-Demerol, morphine
7. Substitute benzodiazepines
8. Typical conditions that cannot be measured:
a. Headache
b. Urethral Colic
c. Toothache
d. Abdominal pain
9. Unbearable pains
10. Overly creative requests
11. Appearance change or alias

VII. Do's and Don't when a Suspected Drug Abuser Confronts You

a) DO'S

1. According to Health Insurance Portability and Accountability Act (HIPAA), for the purpose of treatment it is legal to share information with other healthcare professionals without the patients consent. Therefore, data should be obtained regarding health care (outpatient) visits.
2. Frequency of prescription utilization and checks on early use behavior.
3. One pharmacy/one doctor rule should be implemented in case of suspicion.
4. Enumerate other medicine's name of the same class to the patient without using medical jargon.
5. Evaluate and confirm suspicious historical and exam findings (36).
6. Other illicit drug usages should be screened out.
7. Patient-provider relationship should be maintained in a practical manner.
8. Patient's autonomy should be maintained within legal boundaries.

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b) DON'T

1. Patients should not be forced to reveal their identities and show diagnosis to pharmacists.
2. The possibility of under treatment should be examined (e.g. under-treating a patient with genuine health care needs).
3. Do not show discriminatory behavior towards potential drug user. *The practice should be discouraged not the person.*

VIII. How do I Identify a Drug Impaired Co-Worker?

There are some explicit signs which can be readily picked up in recent drug users. Frequent Monday absenteeism, progressive impaired concentration, wearing long sleeves when inappropriate, unreliability in keeping appointments and meeting deadlines, increasing personal and professional isolation, change in attitude and behavior with colleagues, insistence on personal administration of narcotic injections to patients, deteriorating functionality, and diminished physical health can serve as helpful indicators. Frequent drug testing cannot be the absolute answer (37). Some psychological responses can point out dependent behavior. The associated behaviors can be exaggerated pain avoidance, anger, depression, fear, mood swings, irritability, and the cognitive pattern of catastrophization (38, 39). The effect can be appreciated on the social role, coping strategies, physical and health-related behavior (40-42).

IX. Our Responsibilities as a Physician

With the great deal of impact prescription drug use is having on mortality, it becomes essential for physicians to accept responsibility and adopt practices which will help them identify potential drug addicts. Clinicians need to be well informed that acute pain responds well to opioids but not all pain is responsive to this class of drugs. Clinicians have become hesitant to prescribe opioids due to the fear of abuse. On the other hand, they might also underestimate risk of abuse among their patients. Therefore, it is vital to educate clinicians about the 4-As of opioid treatment - providing sufficient Analgesia to patients so that they may be able to engage in Activities of daily living while avoiding any Adverse effects and Aberrant medication-related behaviors (43). It is also highly important to initiate opioid therapy with addressing expectations of the patient regarding the treatment. Clinicians need to be open about benefits and risks of prescription opioids and should ensure that the patient has realistic expectations about the therapy.

External information outlets should be utilized properly such as drug screening tests, spouse interviews, interviews from a close relative or friend, premorbid occupational record or functioning should be inspected. Treatment agreements should be made with patients. These agreements can require more detailed and periodic surveillance. Regular monitoring must require assessment and proper documentation of pain severity, functional competence, psychological health, and advancement toward obtaining treatment goals, treatment compliance, and presence of adverse effects, strange drug-related behaviors, and substance use. The other supporting instruction from external sources such as testing of biologic screening (e.g., urine), interviews with family or caregivers, review of medical records, payer opioid prescription data keeper or input from prescription monitoring programs can be helpful and should be utilized as required (13).

Models for risk stratification can be developed to keep a checklist on early refills, increasing quantity, frequent outpatient visits, and deteriorating social and personal aspects of life. Prescription monitoring programs should be held in different states and physician practices should be assessed on the basis of evidence-based guidelines and current recommend-dations should be used to supplement the information to caretakers and families (44). The educating physician can help them improve patient assessment and management too.

The safety principles for pharmaco-vigilance must be implemented to supervise the wider effects of drugs after its marketing (Post-market surveillance). Drug categories should be identified which contain addiction potential. As the reward circuitry is present in the brain (mesolimbic pathway), thus most of the drugs crossing the blood-brain barrier hold a dependency potential, mainly stimulants, sedative-hypnotics, relaxants, opioid analgesics, anesthetic agents, and anticonvulsants. Regulatory measures should include advertisement of disadvantages associated with abuse, misuse, and addiction. Behavioral strategies should be shaped up to deal addiction and dependence (45). The practitioner must be vigilant in prescribing opioids and should be able to enhance his own endeavors to halt substance abuse, but at the same time caution should be exercised not to jeopardize pain management in patients who are likely to benefit from it.

X. Discussion

There is still little known about how many people take opioid for a legitimate medical condition before they later transition into the phase of non-medical opioid usage. There is also insufficient data describing the illicit market for prescription opioid (46, 47). Therefore, Zacny et al, suggest that there is a need for active monitoring in these areas as non-medical drug use is emerging as a growing public health problem at a rapid pace. Likewise Vukmir et al believe the key to treating this problem is to target the psychic, physical, and functional components individually. (32).

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The retrospective analysis is not the only medium of understanding the persistent pain phenomenon, but the prospective examination can also help in revealing the maladaptive behavioral mechanisms. The potential of abuse is increasing due to poor adherence of healthcare professionals with prescription guidelines, impaired checkpoints in primary, secondary and tertiary healthcare systems and low-quality post-market surveillance of drugs. We need to be aware that the best and most effective strategies to prevent and treat the non-medical use of prescription opioids remain undiscovered. According to Vukmir et al, the case has been simplified since we have no disputes regarding the pain treatment in cancer patients and patients with acute pain syndromes. The debate emerges when we deal with patients who present with a "25 out of 10" pain and specifically seek narcotic regimes (32). Furthermore, there is a critical need to introduce awareness campaigns, select clinical criteria and develop weighted scores for identifying aberrant behavior, incorporate prescription drug monitoring programs, and implement health-promoting strategies that will contribute to reducing drug-seeking behaviors. Clinicians need to be reminded that when people do not receive adequate pain control, it makes them desperate. It is imperative that clinicians address these concerns in a nonjudgmental manner, such that does not negatively affect the therapeutic alliance. Therefore, physicians should be educated to consider multiple etiologies for atypical behavior while being compassionate in responding well to the patients' complaints of pain (18). It is quite evident that there is still not enough empirical data available to clinicians in this expertise. Hence, a need to conduct more trials with a formalized and accurate diagnostic criterion will enable clinicians to differentiate adequately between legitimate drug users and drug addicts.

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Community Acquired Urinary Tract Infection Prevalence in a Tertiary Institution Based in Evbuobanosa, Edo State, Nigeria

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Abstract- The prevalence rate of asymptomatic UTI among students of a community tertiary institution based in Evbuobanosa near Benin City, Nigeria was the focus of this work. A total of 390 freshly voided midstream urine samples collected into sterile plastic screw capped universal containers containing boric acid as preservative from students aged between 15 – 30 years were used for the study. Samples were screened for significant bacteriuria and puscells (neutrophil) counts. All positive samples with pyuria were aseptically cultured by standard methods on sterile Cystine Lactose Electrolyte Deficient (CLED) agar, MacConkey agar and Sabouraud Dextrose agar plates and incubated appropriately. Antibiotic susceptibility testing was done on isolated and identified uropathogens by Kirby – Bauer agar diffusion disc method. While 231(59.2%) samples yielded bacterial growth, 159(40.8%) yielded no growth.

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Abstract- The prevalence rate of asymptomatic UTI among students of a community tertiary institution based in Evbuobanosa near Benin City, Nigeria was the focus of this work. A total of 390 freshly voided midstream urine samples collected into sterile plastic screw capped universal containers containing boric acid as preservative from students aged between 15 – 30 years were used for the study. Samples were screened for significant bacteriuria and puscells (neutrophil) counts. All positive samples with pyuria were aseptically cultured by standard methods on sterile Cystine Lactose Electrolyte Deficient (CLED) agar, MacConkey agar and Sabouraud Dextrose agar plates and incubated appropriately. Antibiotic susceptibility testing was done on isolated and identified uropathogens by Kirby – Bauer agar diffusion disc method. While 231(59.2%) samples yielded bacterial growth, 159(40.8%) yielded no growth. The uropathogens isolated included *Staphylococcus aureus* (33.1%), *Escherichia coli* (20.8%), coagulase negative Staphylococci (15.6%), *Klebsiella aerogenes* (7.9%), *Coliform* organisms (7.9%), *Candida albicans* (7.9%) and *Proteus* spp (6.8%) of which gram negative bacilli and gram positive bacteria accounted for 43.4% and 48.7% respectively. *Candida albicans*, a fungal uropathogen accounted for 7.9%. Occurrence of UTI in male and female students was 57.1% and 42.9% respectively of which UTI occurred highest in the 21 – 25 age group. More than 50% of isolated bacterial strains were sensitive to gentamicin only with more than 90% resistant to augmentin and nalidixic acid. *Staph aureus, Kleb aerogenes, Coliform* organisms and *Proteus* spp were multidrug resistant as they resisted 4, 7, 5 and 7 drugs respectively. Findings emphasize the need for regular and routine isolation of uropathogens in health institutions and subjection of same to invitro antibiotic sensitivity testing in order to obtain updated antibiograms of UTI pathogens. This will address the emergence of resistance genes and reduce healthcare cost and long stay in hospitals.

I. Introduction

Urinary tract infection(UTI) is the most common infection experienced by humans after respiratory and gastro-intestinal infections and also the most common cause of both community-acquired and hospital acquired (nosocomial) infections for patients admitted to the hospitals (Najar*et al*.,2009). UTI can be asymptomatic or symptomatic characterized by a wide range of symptoms from mild voiding irritation to bacteraemia, sepsis or even death (Ranjbar *et al*., 2009).

Infection of the urinary tract could manifest differently depending on the site of the infection and length of time involved (Takhar, 2011). Those that affect the lower urinary tract are called cystitis(i.e. involving the bladder alone with symptoms including painful urination, burning sensation, frequent urination or urge to urinate or both while those that affect upper urinary tract are referred to as pyelonephritis(i.e. involve the kidneys and other organs (Sarah,2010). The symptoms of the upper urinary tract infection include fever and flank pain during urination in addition to those of the lower urinary tract (Sarah 2010).

Urinary tract infection occurs more frequently in females than males due to the shortness and width of the female urethra to the vagina which makes it liable to trauma during sexual intercourse as well as bacteria being passed from the urethra into the bladder during pregnancy (Ebie *et al*., 2001). The moist environment of the female's perineum favours microbial growth and predisposes the female bladder to bacterial contamination (Ebie *et al*., 2001). In addition, urine of females was found to have more suitable pH and osmotic pressure for the growth of *Escherichia coli* than urine from males (Obiogbolu *et al.,* 2004).

Most UTIs are caused by gram negative bacteria like *Escherichia coli* and *Klebsiella*spp (Omonigho*et al*., 2001; Ebie *et al.,*2001). Other bacterial pathogens frequently isolated include gram positive bacteria such as *Staph. aureus*, *Staph. epidermidis* and *Enterococcus*spp formerly called *Strept. faecalis* (Kashef*et al*., 2010; Theodros, 2010;Mulugeta and Bayeh,2014) as well as*Proteus mirabilis*, *Pseudomonas aeruginosa*, coagulase negative staphylococci, *Acinectobacter*spp and *Serratia*spp (Shankel,2007).

Drug resistance among bacteria causing UTI has increased since the introduction of UTI chemotherapy (Nerurkar *et al*.,2012; Sood and Gupta,2012; Bahadin *et al*.,2011; Haider*et al*.,2010). The aetiological agents and their susceptibility patterns vary in various regions and geographical locations (Mulugeta and Bayeh, 2014). Knowledge of the local bacterial aetiology and susceptibility pattern is required to trace any change that might have occurred with time so that

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updatedrecommendation for optimal empirical therapy of UTI can be made (Leegard*et al*., 2000).

A number of studies have been done on the prevalence and antimicrobial resistance patterns of UTIs (Onh*et al*., 2006;Mbata,2007;Okonko *et al.*,2009). Be that as it may, there is no documented UTI study that has been carried out in Ewobanosa community. Ewobanosa community is a bini speaking community situated about 20km from Benin City, Edo State of Nigeria. The community has a privately owned polytechnic situated tangentially on the express road that connects Benin City to Asaba (in Delta State of Nigeria). It was therefore to extend the frontiers of knowledge of UTI that this work aimed at studying community acquired urinary tract infection prevalence among students in a tertiary educational institution in Evbuobanosa, Nigeria was carried out with the following objectives:

- Determine the frequency distribution of microbial uropathogens in urine samples obtained from the students.
- Determine the sex distribution of uropathogens isolated.
- Determine the age distribution of the uropathogens isolated.
- Determine the antibiotic susceptibility profiles of isolated uropathogens.

II. Materials And Methods

a) Sampling

A total number of the three hundred and ninety (390) midstream urine samples were collected from students (both residential and non-residential) of Lighthouse Polytechnic situated in Evbuobanosa, a community in Orhionwon local government area of Edo State of Nigeria. Samples (which were freshly voided), were collected into sterile screw capped plastic universal containers containing a few crystals of boric acid as preservative. Recruited students were instructed on how to collect the samples. All samples were appropriately labeled and processed immediately in the Microbiology laboratory of Western Delta University, Oghara,Delta State. Students recruited were grouped into 15-20, 21-25 and 26-30 age brackets. The study designed was a descriptive cross sectional study. Samples were collected in March, 2014.

b) Ethnical Clearance

Ethnical clearance was sought and granted by the ethnical committee of the Polytechnic. In addition, the recruited students gave their verbal informed consent after thorough explanation of the rational for the study.

c) Processing of Samples

Samples were tested for significant bacteriuria by use of a modified semi quantitative technique described by Mbata (2007). A standard bacteriological loopful of each urine sample (0.01ml) was spread over the surface of sterile Cystine Lactose Electrolyte Deficient (CLEDI) agar plates (LabM, UK). After inoculation, the plates were inverted and incubated at 37^{o}C for 18-24 hrs. The number of bacterial colonies was counted and multiplied by 100 to give an estimate of the number of bacterial organisms per millilitre of urine. A significant bacterial count was taken as any count equal to or in excess of 10^5per millilitre.

d) Confirmation of Significant Bacterial Count by Microscopy

All samples that recorded significant bacterial counts were subjected to urine microscopy test to detect presence of five pus cells per high power focus (5PC/HPF) or 10 white blood cells (pus cells) /mm^3 in urine sediments or deposits (Smith, 2004) using x40 objective microscopically. All samples that were positive for significant bacterial count and also recorded 5PC/HPF or 10PC/mm^3 or more were cultured on suitable laboratory media.

e) Cultural Studies

Urine sample that recorded 5PC/HPF or 10PC/mm^3 and were positive for significant bacteriuria test were cultured aseptically on sterile CLED agar (Lab M, UK), MacConkey agar (Lab M, UK) and Saboraud Dextrose agar (Lab M, UK)plates according to standard methods. All inoculated plates were incubated at 37^{o}C for 24hrs. Pure isolates were then obtained and identified according to schemes provided by Cowan and Steel (1993)and Alexopoulos (1996). All identified isolates were subjected to antibiotic sensitivity testing. Fungal isolates were excluded from antibiotic sensitivity testing. All urine samples that yielded no bacterial growth were noted.

f) Antibiotic Sensitivity Testing

Antibiotic susceptibility testing was carried out on confirmed uropathogens according to the agar diffusion disc technique described by Bauer *et al*. (1966). A colony of each pure (axenic) isolate was streaked on sterile Mueller Hinton agar plates aseptically using sterile inoculating wire loop. The relevant multidiscs containing their respective minimum inhibitory concentrations (MICs) were used and included erythromycin (5ug), cefuroxime (30ug), gentamicin (10ug), nalidixic acid (30ug), cefixime (5ug), ceftazidime (30ug), ofloxacin (10ug), augmentin (30ug), nitrofurantoin (200ug), ciprofloxacin (10ug), streptomycin (10ug) chloramphenicol (30ug), tetracycline (10ug) and cotrimoxazole (25ug). Discs were aseptically placed (impregnated) firmly onto the surface of the dried plates using sterile forceps. The plates were left at room temperature for one hour to allow diffusion of the different antibiotics from the disc into the medium (Mbata, 2007).

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The plates were then incubated at 37^{0}C for 18hrs. Interpretation of results was done using the length of diameter of zone of inhibition (NCCLS, 2000). Zones of inhibition greater than 10mm were considered sensitive, 5-10mm moderate sensitive and no zone of inhibition, resistant.

g) Statistical Analysis

Simple percentages were used throughout.

III. Results

Table 1 shows the isolated identified uropathogens from the samples that yielded growth after 24hrs incubation period. A total of 390 midstream urine samples were processed of which 159 (40.8%) yielded no growth at the end of 48hrs incubation at 37^{0}C. A total of 231 (59.2%) samples yielded growth of seven microbial uropathogens were identified as follows: Bacterial colonies that were in clusters, gram positive, catalase positive, coagulase positive, DNAase negative, phosphatase positive, mannitol fermenting, raised, round and smooth colonies were identified as *Staphylococcus aureus*. All gram negative raised entire, circular, motile, lactose, glucose fermenting, indole positive, methylred positive, voges praskauer negative, citrate negative and urease negative bacilli strains were identified as *Escherichia coli.*

Bacterial colonies that were positive for all the characteristics of *Staph aureus* colonies but were negative for slide and tube coagulase tests were identified as coagulase negative staphylococci. Gram negative mucoid non-motile, lactose, adonitol, inositol, glucose fermenting, voges praskauer positive, urease positive, citrate positive and indole negative bacilli strains were identified as *Klebsiella aerogenes*.Coliform organisms were mixed cultures made of *Escherichia coli,Enterococcus faecalis* and *Clostridium perfringens*. Gram positive yeast cells, pseudohyphae positive, chlamydospores positive, germtube positive, glucose, maltose galactose and sucrose assimilation positive strains were identified as *Candida albicans*.Gram negative, swarming, fish odour colonies on sodium chloride containing media, indole negative and urease positive strains were identified as *Proteus* spp. The frequency occurrence of the isolates and their strains therefore were as follows: *Staphylococcus aureus* (33.1%) *Escherichia coli* (20.8%), coagulase negative Staphylococci (15.6%), *klebsiella aerogenes* (7.9%), Coliform organism (7.9%),*Candida albicans* (7.9%) and *Proteus* app (6.8%). On the whole, total gram negative and gram positive bacilli isolated represented 43.4% and 48.7% respectively of which 43.4% and 56.6% belonged to enterobacteraceae and non enterobacteraceae respectively.

Table 1 : Frequency of distribution of microbial uropathogens isolated from Samples

Isolated Uropathogens	No of Strains	Frequency of Strains
Staphylococcus aureus	75	33.1%
Escherichia coli	48	20.8%
Coagulase negative Staph	36	15.6%
Klebsiella aerogenes	18	7.9%
Coliform organisms	18	7.9%
Candida albicans	18	7.9%
Proteus spp	15	6.8%
Total n=7	**231**	**100.0%**

Gram negative bacteria: 43.4%
Gram positive bacteria: 48.7%
Enterobacteriaceae: 43.4%
Non-Enterobacteriaceae: 56.6%

Table 2 shows the sex distribution of the microbial strains isolated. Out of the total 231 strains isolated, 132 (57.1%) and 99 (42.9%) were obtained from male and female students respectively. In a deceasing order, the highest occurring uropathogens in male students were *Staph aureus* (34.1%), *Escherichia coli* (22.7%), coagulase negative staphylococci (18.2%), Coliform organisms (9.1%),*Klebsiella aerogenes* (6.8%),

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Candida albicans (4.6%) and *Proteus* spp (4.6%). Similarly *Staph aureus* (30.3%), *Escherichia coli* (18.2%),coagulase negative staphylococci (12.1%), *Candida albicans* (12.1%),*klebsiella aerogenes* (9.1%), *Proteus* spp (9.1%) and Coliform organisms (6.1%) uropathogens were isolated from female students.

Table 2 : Sex Distribution of uropathogens Isolated from Processed Samples

Isolated Uropathogens	No of Strains males (%)	No of Strains females (%)	Total %
Staphylococcus aureus	45 (34.1)	30 (30.3)	75(32.5)
Escherichia coli	30 (22.7)	18 (18.2)	48 (20.8)
Coag. Neg. Staph	24 (18.2)	12 (12.1)	36 (15.6)
Klebsiella aerogenes	09(6.8)	09 (9.1)	18 (7.8)
Coliform organisms	12 (9.1)	06 (6.1)	18 (7.8)
Candida albicans	06 (4.6)	12 (12.1)	18 (7.8)
Proteus spp	06 (4.6)	09 (9.1)	15 (6.5)
Total n=7	M 132 (57.1%)	F 99(42.9%)	231(100.0%)

The age distribution of the entire 231 uropathogen strains isolated is shown in Table 3.Recruited students were grouped into 15-20, 21-25 and 26-30 age brackets. Hence, 102 (44.2%), 87 (37.7%) and 42 (18.2%) of the sampled students belonged to 21-25, 15-20 and 26-30 age groups respectively. Seventy two (70.6%), 45(51.7%) and 15(35.7%) students of 21-25, 15-20 and 26-30 age group respectively were males while 30 (29.4%), 42(48.3%) and 27(64.3%) students of the same age groups were females. Consequently, the highest number of uropathogen strains of 72(70.6%) was isolated from male students belonging to 21-25 age group. Fifteen (35.7%) uropathogen strains were the least isolated from male students who occurred in the 26-30 age bracket. The highest and lowest uropathogen strains of 42 (48.3%) and 27 (64.3%) respectively were isolated from female students of 15-20 and 26-30 age group respectively.

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Table 3 : Age Distribution of uropathogens Isolated

Uropathogens Isolated	15 -20		21 -25		26 – 30	
	M	F	M	F	M	F
Staph aureus	18 (40.0)	12 (28.6)	21 (29.2)	09 (30.0)	06 (40.0)	09 (33.3)
Escherichia coli	09 (20.0)	12 (28.6)	18 (25.0)	06 (20.0)	03 (20.0)	0 (0.0)
Coag. neg Staph	09 (20.0)	03 (7.2)	12 (16.7)	03 (10.0)	03 (20.0)	06 (22.2)
Klebsiella aerogenes	06 (13.3)	03 (7.2)	03 (4.2)	03 (10.0)	0 (0.0)	03 (11.1)
Coliform organisms	0 (0.0)	06 (14.3)	09 (12.5)	0 (0.0)	0 (0.0)	0 (0.0)
Candida albicans	0 (0.0)	03 (7.2)	03 (4.2)	06 (20.0)	03 (20.0	06 (22.2)
Proteus spp	0 (0.0)	03 (7.2)	06 (8.3)	03 (10.0)	0 (0.0)	03 (11.1)

In Table 4, the antibiotic susceptibility patterns of all isolated uropathogens (with exception of *Candida albicans* and coagulase negative staphylococci) to some selected antibiotics are shown. The antibiotic sensitivity profiles of the 231 uropathogen strains to ciprofloxacin, cefuroxime, gentamicin, cefixime, ceftazidime, ofloxacin, streptomycin, erythromycin, tetracycline, cotrimoxazole, augmentin, nalidixic acid, nitrofurantoin, chloramphenicol are shown. Twenty four (32.0%), 11 (22.9%), 06 (33.4%) 09(50.0%) and 06(40.0%) strains of *Staphylococcus aureus,Escherichia coli*,*Klebsiella aerogenes*, Coliform organisms, and *Proteus* spp respectively were sensitive to all the 14 (fourteen) antibiotics used.

With respect to *Staph aureus,*12 antibiotics used were twelve because nalidixic acid and nitrofurantoin were not tested on it and whereas erythromycin and streptomycin were used for *Staphaureus*, they were not used for the other uropathogens. On the average, a higher percentage of pathogens resisted all fourteen antibiotics compared to those that were sensitive.

In terms of effectiveness of each of the antibiotics used, 108(62.1%), 60(34.5%), 48(27.6%), 45(25.9%), 39 (22.4%), 24(13.8%), 24 (13.8%), 21 (12.1%), 15(8.6%), 15(8.6%), 12(6.9%), 12(6.9%), 06(3.5%) and 03(1.7%) strains of all isolated pathogens were sensitive to gentamicin, ofloxacin, streptomycin, nitrofurantoin, ciprofloxacin, tetracycline, cotrimoxazole, chloramphenicol, ceftazidime, cefixime, erythromycin, cefuroxime, augmentin and nalidixic acid in that decreasing order. The two most sensitive drugs in this study were therefore gentamicin and ofloxacin whereas augmentin and nalidixic acid were the least sensitive. Hence, augmentin and nalidixic acid were the most resisted antibiotics with ofloxacin and gentamicin as the least resisted.

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Table 4 : Susceptibility Profiles of Isolated Uropathogens to Selected Antibiotics after 24hrs Incubation at 37°C

Isolated uropathogens	SELECTED ANTIBIOTICS USED (%)														
	ERY	CRX	GEN	NAL	CXM	CAZ	OFL	AUG	NIT	CPR	STR	CHL	TET	COT	MEAN (%)
Staph aureus *n= 75*	12 (16.0)	0 (0.0)	66 (88.0)	NA	0 (0.0)	0 (0.0)	12 (16.0)	0 (0.0)	NA	06 (8.0)	48 (64.0)	18 (24.0)	12 (16.0)	18 (24.0)	24 (32.0)
Escherichia coli *n= 48*	NA	06 (12.5)	24 (50.0)	03 (6.3)	09 (18.8)	03 (6.3)	30 (62.5)	06 (12.5)	27 (56.3)	12 (25.0)	NA	03 (6.3)	06 (12.5)	03 (3.3)	11 (22.9)
Klebsiella aerogenes *n = 18*	NA	0 (0.0)	06 (33.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	06 (33.4)	06 (33.4)	NA	0 (0.0)	06 (33.4)	03 (16.7)	06 (33.4)
Coliform organisms *n = 18*	NA	06 (33.4)	12 (66.7)	0 (0.0)	06 (33.4)	12 (66.7)	12 (66.7)	0 (0.0)	06 (33.3)	09 (50.0)	NA	0 (0.0)	0 (0.0)	0 (0.0)	09 (50.0)
Proteus spp n = 15	NA	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	06 (40.0)	0 (0.0)	06 (40)	06 (40)	NA	0 (0.0)	0 (0.0)	0 (0.0)	06 (40.0)
Total n= 174	**12 (6.9)**	**12 (6.9)**	**108 (62.1)**	**03 (1.7)**	**15 (8.6)**	**15 (8.6)**	**60 (34.5)**	**06 (3.5)**	**45 (25.9)**	**39 (22.4)**	**48 (27.6)**	**21 (12.1)**	**24 (13.8)**	**24 (13.8)**	

Table 5 shows the frequency occurrence of multidrug resistance among the isolated bacterial uropathogens. All the bacterial uropathogens apart from *Escherichia coli* were resistant to more than three antibiotics at a time. For clarity and for the purpose of this study, a pathogen is described as multidrug resistant to any of the selected antibiotics if more than 50% of its strains are resistant to it and hence, a pathogen is multidrug resistant if it resists up to three drugs at a time. Therefore, only four out of the five bacterial uropathogens isolated were multidrug resistant. None was resistant to 3 drugs. *Staph aureus* strains were resistant to 4 drugs while *Coliform* organisms were resistant to 5 drugs. *Klebsiella aerogenes* and *Proteus* spp strains were resistant to 6 drugs each.

Table 5 : Occurrence of Multidrug Resistance among bacterial Uropathogens Isolated

Bacterial Uropathogens	Resistance to				
	3 drugs	4 drugs	5 drugs	6 drugs	>6 drugs
Staph aureus n = 75	-	+	-	-	-
Escherichia coli n = 48	-	-	-	-	-
Coliform orgs n = 18	-	-	+	-	-
*Proteus*spp	-	-	-	-	+

IV. Discussion

In this study, out of 390 urine sample processed, 159(40.8%) samples yielded no growth and no significant microbial growth combined. Hence, 231(59.2%) samples yielded growth and significant growth all together. The absence of bacterial growth in 40.8% of processed samples was established as such when microscopically, a non-significant pus cell count (less than 5) was observed (Otajevwo, 2014). That 231 (59.2%) processedsamples yielded significant microbial growth suggested a UTI prevalence rate of 59.2% in this study. This finding is consistent with 55%, 54,58%,60% and 66% prevalence rates reported by earlier authors (Onuoha and Fatokun, 2014;Tolkoff and Rubin, 1986; Naylor, 1984; Warren, 1987; Kunin 1985) and inconsistent with higher prevalence rates of 77.3% 71.3%, 71.6%, 77.9%, and 86.0% as reported by some authors (Otajevwo, 2014; Jellheden and Norrby, 1996; Mbata 2007; Alabi *et al*., 2014). It is on record that lower rates of 30.0%, 35.5%, 38.5%, 38.6%, 39.0%, 39.0% and 39.7% have been reported by some authors (Anochie *etal*., 2001; Ebie *etal*., 2001; Anigilaje and Bitto 2013; Akinyemi *et al*., 2000; Ogomaka *etal*., 2014; Otajevwo 2013 and Oladeinde *etal*., 2011). Other previous authors recorded much lower UTI prevalence rates of 11.9% 26.7, 28.2% and 28.9% (Aiyegoro*etal.,* 2007; Sobazak 2010;Harvna*etal*., 2014; Okon *etal*., 2014). The high or low incidence rates may be attributed to poor environmental conditions where the subjects reside in terms of lack of proper personal and environmental hygiene, low socio – economic status, sexual intercourse or sexual promiscuity, pregnancy e.t.c among Nigerian men and women (Akinyemi *et al*., 2000; Kolawole *et al*., 2009; Andriole, 1985).

Seven uropathogens were isolated in this study (Table 1) of which gram negative bacilli constituted 43.4% while gram positive bacteria accounted for 48.7%. Isolates that belonged to enterobacteriaceae and non–enterobacteriacease families were 43.4% and 56.6% respectively (Table1). Whereas *Staphylococcus aureus* and coagulase negative staphylococci were the only gram positive bacteria, *Candida albicans* represented the only member of the non–enterobacteriacease. Finding is consistent with the report of a previous author who isolated 86.1% gram negative bacilli and 13.9% gram positive bacteria of which enterobactereaceae accounted for 49.9% (Otajevwo, 2013). The report of this study does not agree with a report of Oluremi *et al*. (2011) which stated 85.0% gram negative bacilli and 15.0% gram negative of which enterobactereaceae organisms constituted

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66.7%. The report of Otajevwo (2014) stating 65.2% and 34.8% gram negative and gram positive bacteria respectively as well as 55.7% and 44.3% enterobactereaceae and non – enterobactereaceae respectively as isolates is also not consistent with the findings in this study.

In this study, the most and second most occurring uropathogens were *Staphylococcus aureus* (33.1%) and *Escherichia coli* (20.8%). Other uropathogens isolated were coagulase negative staphylococcus (15.6%), *Klebsiella aerogenes* (7.9%), *Coliform* organisms (7.9%), *Candida albicans* (7.9%) and *Proteus* spp. This result suggests that the two least isolated uropathogens in the study area are *Candia albicans*and *Proteus* spp. The occurrence of *Staphaureus* and *E.coli* as the most commonly occurring uropathogens is consistent with the report of a previous study (Otajevwo, 2014) as well as with reports (though in reverse order) of some earlier authors which stated *E.coli* and *Staphaureus* as the most and second most implicated organisms in UTI (Onuoha and Fatokun, 2014; Okon *et al*., 2014; Akobi *et al*., 2014; Ogomaka *et al*., 2014, Okonko *et al.,* 2010; Nwanze *et al*., 2007).

The present report however, does not agree with results of other studies (Omigie *et al*., 2009; Abubakar, 2009; Otajevwo, 2013; Oluremi *et al*., 2011; Daza *et al*., 2001; Dimitrov *et al*., 2004; Inabo and Obanibi, 2006; Dash *et al*., 2008; Nwadioha *et al.,* 2010). Report in this study does not also agree with some other previous reports which stated *Klebsiella* spp and *Proteus* spp (Alabi *et al*., 2014), *E.coli* and *Streptococcus faecalis* (Anigilaje and Bitto, 2014), *E.coli* and *Proteus* spp (Haruna *et al*., 2014),*E.coli* and *Pseudomonas aeruginosa* (Habibu, 2014) as the most and second most occurring uropathogens in UTI. In this study, *Proteus* spp, *Klebsiella* spp and *Staph aureus* were isolated and these organisms have been incriminated in hospital acquired infections often following catherization or gynaecological surgery (Cheesbrough 2000; Tapsak *et al*., 1995). Proteus infection is also associated with renal stones (Cheesbrough, 2000). In this study and previous similar studies, it is yet again confirmed the prominent involvement of *Staphaureus* and *E.coli* in UTI cases (Logoria and Gonzalez, 1987; Obiogbolu *et al.*, 2009; Otajevwo and Eriagbor, 2014; Okon *et al*., 2014; Onuoha and Fatokun, 2014; Ogomaka *et al*., 2014; Akobi *et al*., 2014).

Overall, UTI prevalence rate was higher in males (57.1%) than in the female students (42.9%) of which*Staphaureus, E.coli* and *Coliform* organisms occurred more in the male students than in the female students (Table 2). The earlier report of Otajevwo (2014) which recorded higher UTI prevalence rate does not agree with the finding of this report. The reason for a higher UTI prevalence rate in males than females in this study though not clear, may be due to lack of circumcision, receptive anal intercourse (as in homosexuals) and HIV infection(Orret and Davis, 2006) Also in this study, *Candida albicans* occurrence was higher in female students compared to the males. According to Ochei and Kolhatkar (2008), yeast cells appear in urine as a result of contamination from women with vaginal candidiasis (occasionally seen in the urine of men) or may be seen in the urine of diabetic patients due to presence of sugar in the urine. Yeasts may also cause recurrent infections in debilitated and immune–compromised patients (Cheesbrough, 2000; Ochei and Kolhatkar, 2008). The occurrence of *Coliform* organisms is crucial in pregnant women although its occurrence in females is lower compared to males. The isolation of *Candida albicans* and *Coliform* organisms in this study is consistent with the report of a previous work (Otajevwo and Eriagbor, 2014). It has been documented that Coliforms and *Enterococcus* spp can cause UTI when present in high numbers on the perineum (Behzardi and Behzardi, 2010; Moore *et al*., 2002).

This study, strangely, did not confirm reports of other studies which stated that UTI occurs more in females than in males except at the extremes of life (Ebie *et al.,* 2001; Kolawole *et al*., 2009). In terms of age bracket, UTI occurred highest (44.2%) in the 21–25 age group followed by 37.7% occurrence rate of students in the 15 – 20 age bracket. This finding does not agree with the reports of some previous authors which stated that UTI is more frequent in females than in males (Mbata, 2007; Ibeawuchi and Mbata, 2002; Asinobi, 2002; Olaita, 2006). Findings in this work however, agree with the reports of these same authors which stated that UTI is most prevalent during youth and adulthood as indicated by the 21 – 25 age group occurring as the most implicated in UTI in this study. This age group as well as the 15 – 20 group consist of teenagers, adolescents and young people who are characteristically vulnerable to increased sexual activities that predispose them to UTI (Oladeinde *et al*., 201, Oluremi *et al*., 2011).

There is considerable evidence of practice variation in the use of diagnostic tests, interpretation of signs or symptoms and initiation of antibiotic treatment such as drug selection, dose, duration and route of administration (Jamieson, 2006). For patients with symptoms of UTI and bacteriuria, the main aim of treatment is to get rid of bacteria causing the symptoms. Besides, there is need to obtain sensitivity reports before the start of antibiotic treatment to checkmate emergence of resistance strains and thus help in proper patient management. The decision to use a particular antibiotic however depends on its toxicity, cost and attainable level (Ibeawuchi and Mbata, 2002).

Therefore, antibiotic sensitivity testing was done on all seven isolates (minus *Candida albicans* – a fungal uropathogen in this study) and the resulting sensitivity

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profile (antibiogram) showed susceptibility reactions of 108 (62.1%), 60(34.5%, 48(27.6%), 45(25.9%), 39(22.4%), 24(13.8%), 24(13.8%), 21(12.1%), 15(8.6%), 12(6.9%), 06(3.5%) and 03(1.7%) for gentamicin, ofloxacin, streptomycin, nitrofurantoin, ciprofloxacin, tetracycline, cotrimoxazole, chloramphenicol, cefixime, ceftazidime, erythromycin, cefuroxime, augmentin and nalidixic acid respectively. This suggests that more than 50% of the bacterial uropathogens implicated in UTI in this study were sensitive to gentamicin only. This finding with respect to gentamicin is consistent with the reports of some previous studies (Okon *et al*., 2014; Akobi *et al*., 2014; Onuoha and Fatokun, 2014; Otajevwo and Eriagbor, 2014). Less than 50% of the isolated uropathogens were sensitive to ofloxacin and streptomycin

It is cheering and surprising that gentamicin recorded more than 50% sensitivity. Cheering because, it is cheap and readily available and hence, patients who go down with UTI can afford it if prescribed. The use and administration of gentamycin however, should be closely monitored in order to avoid any possible abuse owing to its accessibility, availability and cheapness. It is surprising because, gentamicin ought to be prone to abuse (due to its cheapness) with the attendant development of resistance genes by pathogens to it. It can be reasoned however that gentamycin though cheap, is not easily accessible for abuse because it is available in injection form only. The fluoroquinolone–ofloxacin recorded below moderate sensitivity (i.e. 27.6%). Although this finding agrees with that of a previous study which recorded 30.2% (Otajevwo and Eriagbor, 2014), it is quite low when compared with 100% ofloxacin sensitivity recorded by Anigilaje and Bitto (2014) and more than 50% ofloxacin sensitivity reported by Okon *et al*. (2014). Sensitivity of streptomycin which was less than 30% was also very low when compared to 100% streptomycin sensitivity reported recently by an author (Habibu, 2014). Nitrofurantoin (22.4%) and ciprofloxacin (13.8%) sensitivities were quite low. The low sensitivities recorded for the fluoroquinolones (ofloxacin and ciprofloxacin) in this study was worrisome because these drugs are expensive and therefore are not readily accessible for abuse. In a similar study, Nakhjavani *et al*. (2007) reported that the widespread use of fluoroquinolones in medical centres is a possible cause of high level resistance to fluoroquinolones in UTI patients. Nwadioha *et al*. (2010) surprisingly, recorded a high sensitivity (80.0%) and above of UTI bacterial agents with ciprofloxacin. This is however open to re–evaluation through further studies by other workers.

The low sensitivity recorded for nitrofurantoin in this study is at variance with 100%, 97.6% and more than 50% sensitivities recorded by previous authors (Oluremi *et al*., 2011; Haruna *et al*., 2014; Alabi *et al.,* 2014). The least sensitive antibiotics were augmentin and nalidixic acid. The low sensitivity of nalidixic acid is surprising because it is a drug that is not commonly and routinely used in medical practice. The less than 4% sensitivity of augmentin is very low and disturbing in view of its usefulness in the treatment of UTI's and other diseases. The almost total resistance of augmentin is alarming as it may have lost its value in the treatment of UTI (Oluremi *et al*., 2011).

Four out of the seven isolated uropathogens were resistant to more than three drugs and hence they were all multi–drug resistant (MDR). In this study, *Staph aureus,kleb.aerogenes*, *Coliform* organisms and *Proteus* spp were resistant to four drugs, seven drugs, five drugs and seven drugs respectively (Table 5). Multi drug resistance of *Staph aureus* may be due to beta–lactamase (penicillinase) encoding genes it carries on its plasmids as well as other extracellular and intracellular factors the organism elaborates. Besides, multi–drug resistant *Staph aureus* strains have been widely reported in some studies (Abubakar, 2009; Aiyegoro *et al*., 2007; Gales *et al*., 2000). Multi–drug resistance of *Kleb. aerogenes* and *Proteus* spp are documented. The prevalence of multiple antibiotic resistant strains in this study is a possible indication that very large population of bacterial isolates has been exposed to several antibiotics (Oluremi *et al*., 2011).

V. Conclusion

A prevalence UTI rate of 59.2% in this study (though not very high), indicates that UTI may be a health problem among students (who are mainly residential) of Lighthouse Polytechnic, Evbuobanosa, near Benin City. The findings suggest that most (if not all) the uropathogens isolated in this study are excretable through urine to the environment of the study area, Ewobanosa and its environs. Besides, the students should be advised to step up their personal hygiene in their hostels and immediate environment. Where signs and symptoms of UTI are noticed notwithstanding the above, healthcare providers of the Polytechnic may administer doses of gentamicin only or ofloxacin or perhaps streptomycin for therapy. A prompt therapeutic intervention in this regard, will prevent asymptomatic UTI cases becoming symptomatic with the accompanying renal damage.

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Maternal Health Care Utilization in the Eastern Cape, South Africa: A Qualitative Investigation

By Mr. Mluleki Tsawe & A. Sathiya Susuman
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Abstract- *Background:* This study presents qualitative investigations showed in Mdantsane a township in the Eastern Cape Province of South Africa. The aim of the study is to examine the socio-demographic determinants of maternal health care utilization in this province.

Conclusion: The study has indicated that most health professionals and patients (women) are not aware of the available maternal health services, and this lack of awareness leads to a minimal utilization of such services.

Methods The qualitative investigation revealed some information with regard to the determinants of maternal health care utilization in the study area. Results: The investigation suggests that lack of awareness about the maternal health services offered within the public health system is an important determinant of the frequency in which maternal health services are used.

Keywords: *utilization; antenatal care; postnatal care; public health; maternal health; private health; primary health care; millennium development goals.*

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Mr. Mluleki Tsawe[α] & A. Sathiya Susuman[σ]

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I. Background

South Africa is working very hard to reduce maternal mortality. The South African Department of Health has adopted several initiatives to reduce the maternal mortality rate, and thus move closer to the 2015 Millennium Development Goal Five (of reducing maternal mortality by at least 75%). One such strategy is the adoption of the UNFPA's Campaign for Accelerated Reduction of Maternal Mortality in Africa (CARMMA) by the Department of Health. The department of health plans to usethis campaign to fast-track the reduction of the maternal mortality rate, which is estimated at 300 maternal deaths per 100 000 live births, in order to meet the 2015 targets1. Another strategy that the department of health has adopted is the Strategic Plan for Maternal, New-born, Child and Women's Health (MNCWH). The objective of the MNCWH is to reduce maternal mortalityrates by at least 10% by 2016, and to ensure that all women have access to reproductive health services 1.

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In South Africa, Primary Health Care (PHC) is an initiative implemented by the government to provide basic health care within the public health sector. Primary health care has also been initiatedin many other developing countries to deliver health care needs for their populations. This health care system is aimed at providing health care services to many people who cannot afford them fromthe private health sector [2, 3, 4]. Within South Africa, this system faces many challenges, including management, health coverage, access to health care and health care utilization 3, 4, 5. Moreover, some health care facilities are not adequately equipped to handle the needs of the population (especially in rural areas), and some of these facilities do not provide the health services that are required of them [6, 7]. Most of the challenges are attributed to the apartheid regime, which is argued to have laid the backdrop for the "failing" and "inadequate" primary health care system 8. The primary health care sector is often surrounded by much controversy when it comes to the availability of resources, especially in rural areas. Health resources are unequally "distributed among rural and urban areas," including the unequal distribution of health facilities9. This uneven distribution presents problems when it comes to health care use in both rural and urban areas. The availability and accessibility of health care facilities are some of the determinants of health care use in South Africa, but are even more so for most of the rural areas therein [10, 11, 12] .Maternal mortality is defined as the death of women during pregnancy, childbirth, or within 42 daysafter delivery [13, 14]. Throughout the world, women's health is a priority for many countries, especially those with high mortality rates [15]. Another author argues that maternal mortality is higher for women living in rural areas and those living in poorer communities [16]. The current maternal mortality rate for South Africa is estimated at 300 maternal deaths per 100 000 live births; this is a considerable decrease (at 73%) when compared to the 2008 estimates of 410 maternal deaths per 100 000 live births [14, 17]. But still MMR is quite high in South Africa. Nevertheless, South Africa has high maternal mortality rates, which are rising and this presents major challenges in terms of the country's prospects of achieving the Millennium development Goals 15. There are less than two years left to achieve the targets set under Millennium

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Development Goal 5, and it seems that South Africa is not anywhere near to reaching these Millennium Development targets set by the United Nations. Reducing the current maternal mortality rate by 75% would mean that South Africa's target for 2015 would be 225 maternal deaths per 100 000 live births, which is still quite high. According to the 2010 estimates of the World Health Organization, the maternal mortality rate in developing countries (of 240 maternal deaths per 100 000 live births) is 15 times higher than that of developed countries 14. It seems that many developing countries will not be able to reach, by 2015, maternal mortality statistics similar to those of developed countries. Therefore, given the current maternal mortality statistics, the prospects of South Africa achieving the Millennium Development Goals relating to maternal mortality seem very unlikely 4,18. Moreover, South Africa's estimated average annual percentage change in the maternalmortality rate between 1990 and 2010 is 0.9%, which shows that the country is not making progresswith regards to improving maternal health by 2015 14. Therefore, improving the country's currentapproaches to health care and specifically, implementing new directions in maternal health carecould improve the country's health and thus ensure that, over time, the Millennium DevelopmentGoals are met19. In planning for the reduction of maternal mortality, attention should be given to the socioeconomic-demographic determinants of health, as this will improve maternal health20. A number of strategies could be implemented in this area, in order to try and reduce the high maternal mortalityrates within developing countries. These strategies would play a big role in campaigning for betterimplementation and use of maternal health services. These could include (a) the inclusion of themedia, (b) educational programmes aimed at enhancing the literacy skills of women (especially inrural areas), (c) implementing better policies that are aimed at shaping or focusing on the livelihoodsof women, and (d) implementing better maternal health care delivery 11, 21. It is important thatdeveloping countries implement strategies that will improve the socio-economic status of women, inorder to accelerate health care use and thus enhance the utilization of maternal health care services22.

a) Aim of study

The aim of this study is to examine the determinants of the use of maternal health careservices in the Eastern Cape of South Africa. Moreover, the study aims to examine the kind ofbarriers that contribute to the lack of (or minimal) use of maternal health care services.

b) Research questions

The research questions for the qualitative study are as follows

1. What determines maternal health care use in the Eastern Cape?
2. What can be done to improve maternal health use in the province?
3. What challenges or problems do mothers experience while attending maternal healthservices?

II. Methods

The qualitative investigation used, which were obtained from a study that made use of both quantitative as well as qualitative methods to collect data. Researcher very much interested to emphasis on qualitative issue here. This study makes use of mixed methods to study the determinants of health care utilization among women from the Eastern Cape province of South Africa. A qualitative investigation was obtained from health care professionals, using one-on-one interviews as the data collection method. A range of questions were asked to gain the health professionals' views on certain maternal health care problems or challenges, as well as some of the barriers that hinder women from utilizing such services.

a) Qualitative Investigation

In this section makes use of transcriptions from health care professionals in the Eastern Cape. The instrument used was an individual interview, wherein a range of questions were asked from the respondents (health care professionals) with regards to their views on certain health matters involving women and their reproductive health. For the analysis and interpretation, responses from two health professionals from each of the different professions, i.e., two doctors, two nurses, and two maternal health care specialists) were selected. This made it possible for rich qualitative data to be extracted from these health professionals, thus ensuring that there was variety in terms of views expressed.

III. Results

a) Qualitative Results: Determinants of maternal health care use

Staff shortages became a major theme in the investigation when it came to trying to understand the challenges faced by health professionals while working within the antenatal care unit. Shortages of health care staff can have serious implications for the utilization of maternal health services, and it serves as a barrier that hinders the use of maternal health services.

b) One nurse stated that

"The waiting time is long"

A study finding argues that shortages in health professionals and longer waiting times reduce patients' satisfaction with the health-related services they receive22. Moreover, this then leads to a decline in the utilization of health services. For instance, this can influence patients not seeing the need to seek maternal

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health care services, whereby they will argue, "Why go to the hospital if I will not receive the adequate care that I need?'

Additionally, one health professional argued that mothers who attend antenatal care services face a number of challenges, including having to travel long distances, financial problems, and the attitudes of health professionals. Having no money and having to travel (often by walking) long distances to get to a hospital plays a role in the delayed use of antenatal service.

c) *One nurse stated that*

"[Most mothers and those who are expecting face] financial problems, [whereby] they won't come on time here when referred and they will tell us that they didn't have money to come here."

Digressing from time-sensitive appointments and not seeking the available help can also be viewed in relation to the attitudes of health professionals.

d) *One doctor observed that:*

"Sometimes the attitude from the health care workers [hinders the satisfaction and use of maternal health services]."

One could argue that, due to the shortage of health professionals, there is a burden placed on the available staff to attend to a large number of women seeking maternal health services. This then has a repercussion on the type and quality of service offered, whereby some staff members will often take their frustrations out on the patients. Moreover, the attitudes of health professionals towards their patients are often driven by stigmas surrounding some health problems and certain social circumstances. For instance, with regards to teenage pregnancy and HIV, there seems to be a general stigma among health professionals. The doctors interviewed noted that teenage pregnancy and HIV were among the challenges they faced while working within the antenatal care unit. With regards to the treatment received by pregnant and HIV-positive teenagers,

e) *One doctor observed the following*

"The clinic [staff], they just chase them away and send them without helping them, which is really a problem. And the other clinics the still chas[ing] them for being HIV positive to the hospital which … is not a good thing because we've to treat people the same."

The way in which patients are treated in most public hospitals—or rather, the way in which health care professionals behave in such settings—can be seen as a barrier that hinders the use of maternal health services. For instance, teenage girls are often treated differently for seeking health care when pregnant, as compared to adults. This leads to many cases of young girls not seeking medical care in time, due to being ashamed of what the nurses will think or say about them. In most instances, the hospital that one uses is the same hospital in which friends, family, or acquaintances work. This creates a barrier to use, in the sense that a pregnant teenager might decide not to go to a hospital where there is someone who knows her, and would rather stay at home until there are too many complications.

The health professionals noted a number of other reasons why most women are not utilizing maternal health services available at the hospital. They cited a lack of knowledge as one of the factors that contribute to women not using maternal health services. Most women are not even aware that they should be going for antenatal care when they are pregnant.

f) *One maternal health care specialist argued that*

"Lack of knowledge [is the leading contributing factor to the less-frequent use of maternal health services]. They are not aware that they should be coming to maternal health care [sessions] when they are pregnant; they don't even know what maternal health care is."

Besides not being aware of maternal health services offered at the hospital, most women "are not being referred" to antenatal care by their nurses and doctors.

g) *One maternal health care specialist stated that pregnant women are:*

"Only referred for maternal health care services when there is a problem" or complication, and these problems could be prevented if referrals could be done at initial contact.

Common risk-factors during pregnancy and the role that maternal health care specialists can play.

Apart from HIV, women who seek medical attention at the hospital present with a number of other pregnancy-related complications. The health professionals noted the following list of the most common pregnancy-related complications that women who seek medical attention present with: hypertension (high blood pressure); TB due to HIV; intra-uterine growth restriction (properly diagnosed and sometimes not diagnosed); and gestational proteinuria hypertension. All of these complications are serious risk factors that can alter a woman's pregnancy experience. Doctors and nurses in the study argued that maternal health care specialists can assist them in ensuring that the above-mentioned pregnancy-related complications are prevented. Both the nurses and doctors also said that exercises are a good starting point in ensuring that pregnant women become active, in terms of strengthening their bodies during pregnancy, thus preparing their bodies for delivery.

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IV. Discussions

The qualitative results suggest that there are several determinants of maternal health care utilization in the province. These determinants have an influence on the frequency with which women use the available maternal health services. Women who have had bad experiences tend to not utilize maternal health services as frequently as those who have had good experiences. For instance, a woman who must wait for a long time before being attended (perhaps even going home unattended) might see no need to return to the clinic, unlike the one that received attention within a reasonable amount of time. Moreover, if a patient receives poor treatment, then that patient will view the health system in a different light. In some cases, she might even choose to seek medical attention from privately paid doctors, as opposed to waiting for hours on end at public hospitals or clinics.

Financial problems were also noted as one of the most significant factors that influence the use of maternal health services. One health professional noted: "Most of the women who go to seek maternal health services have to travel long distances, since most of them stay in rural areas, and sometimes they do not have enough money to get to the clinics or hospitals."

The quantitative analysis shows that more than 40% of the women reported that they do not have a source of employment. In such situations, financial problems become a barrier to the frequency with which these women seek medical attention.

Besides financial problems, lack of information also poses a serious hindrance to the utilization of maternal health services. The study has indicated that most health professionals and patients are not aware of available maternal health services, and this lack of awareness leads to a minimal utilization of such services. Health professionals do not refer pregnant women for antenatal services, and when those women have delivered, they are not referred for postnatal care, which then contributes to less frequent use of maternal health services. Sometimes, women do not go back to clinics for check-ups after they have delivered; they see no need to do so, unless certain complications arise. This then contributes to the low numbers of those seeking postnatal care.

Cultural factors are an important variable when it comes to understanding the factors that influence the use of maternal health care services. In South Africa, culture is an important concept that influences the way people live, as well as their belief systems. For instance, there are women that believe in utilizing traditional birth attendants, rather than seeking professional health care, due to their cultural beliefs; these women tend to opt for home-based deliveries, assisted by traditional birth attendants, rather than going to a hospital or clinic. The independent variable Do you have access to medical aid? has an influence on whether or not people have access to maternal health services. One could deduce a number of reasons for this relationship. Generally, people who have access to medical aid tend to use private doctors rather than public hospitals (or clinics). This is due to a number of reasons, some of which will be further explained in the qualitative phase of the discussion. One such reason is the kind of treatment people generally receive in public hospitals; for instance, public hospitals are short-staffed and as such, adequate care of patients is often overlooked.

V. Conclusion

A lot can be done to improve the delivery and utilization of maternal health services. One such improvement would be to ensure that information relating to the importance (and utilization) of maternal health services is properly disseminated, so that more people can have knowledge of such services. There also needs to be something done with regards to how information is distributed to the relevant stakeholders. Policy makers should extend their efforts and work within the objectives of campaigns such as CARMMA (adopted by the department of health) and other organisations, in trying to reduce the state of maternal mortality in the country. The health sector also needs to inspect the way in which public health care professionals conduct themselves. If one could change the attitudes of nurses, then utilization of maternal health services (especially among pregnant youths, and those who get stigmatised for being HIV positive) might increase and thus lead to a decrease in maternal mortality. Therefore, from an observational and evaluative point of view, South Africa needs more initiatives that will strengthen its objectives of reducing the country's maternal mortality before the target year of 2015. Such initiatives must speak and add on to what programmes such as CARMMA has already achieved. Currently, the maternal mortality rate is at a level where it seems unlikely that the country will achieve its Millennium development Goal of reducing maternal mortality rate by 75% by 2015. This means that there is a lot that needs to be done in terms of coming up with initiatives that will reduce this rate, and thus save many lives. Moreover, a number of strategies could play a significant role in campaigning for better use of maternal health services, especially in rural areas. These campaigns could include (a) the inclusion of the media, in terms of broadcasting information relating to maternal health services and the importance of such services, (b) educational programmes aimed at enhancing the literacy skills of women (especially in rural areas), (c) implementing better policies that shape or focus on the livelihoods of women, and (d) implementing better maternal health care delivery. The qualitative results showcase the status of the South African public health

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system. The responses from the health professionals point to the fact that the public health system is not properly functioning. Many hospitals, especially those in townships and rural areas, tend to be neglected and usually do not have the adequate staff to render health services to scores of people who seek them. It should also be noted that health care use is determined by the way which health professionals treat patients. There are still stigmas associated with certain health conditions and social situations. For example, there are still health professionals who refuse to assist, or may even maltreat, young girls who fall pregnant in their teenage years; these professionals even go so far as to mistreat pregnant women who are HIV positive. These girls and women do not adequately receive the care they would otherwise receive if their status were different.

Authors' contribution

Mr. M Tsawe is a post graduate student. Professor A Sathiya Susuman is a thesis supervisor. MT and AS worked together, contributed equally.

a) Ethical considerations

Ethical issues such as plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc., have been completely observed by the authors.

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VIII. Competing interest

None declared.

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A Case of a Non-Verbal Child with Autism Gaining Faculty of Speech with Applied Energy Medicine

By Rajalakshmi Kandaswamy

Abstract- A 9 year old child diagnosed as a case of Nonverbal Autism and Attention Deficit Hyperactivity Disorder (ADHD) at 2 years of age started speaking normally and coherently for the first time in his life with 20 Remote Healing sessions using the method of Applied Energy Medicine with Intent Healing(TM).

Keywords: *autism, non-verbal autism, energy medicine, intent healing (tm), remote healing.*

GJMR-K Classification: *NLMC Code: WS 350.8.A8*



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A Case of a Non-Verbal Child with Autism Gaining Faculty of Speech with Applied Energy Medicine

Rajalakshmi Kandaswamy

Abstract- A 9 year old child diagnosed as a case of Nonverbal Autism and Attention Deficit Hyperactivity Disorder (ADHD) at 2 years of age started speaking normally and coherently for the first time in his life with 20 Remote Healing sessions using the method of Applied Energy Medicine with Intent Healing(TM).

Keywords: *autism, non-verbal autism, energy medicine, intent healing (tm), remote healing.*

I. Introduction

The incidence of Non-Verbal Autism is on the increase with apparently no effective known scientific cure for the same. I present a case here in which a child with a diagnosis of Non-verbal Autism and Attention Deficit Hyperactivity Disorder ,who had never spoken in his life was healed by me operating in the newly emerging scientific discipline of Applied Energy Medicine, using the Intent Healing (TM) Remote Healing method, following which he started speaking for the first time in his life. The child lived in California, U.S and I did the Remote Healing sessions from Chennai, INDIA.

II. Case

A 9 year old boy who was diagnosed as a case of Non-verbal Autism and Attention Deficit Hyperactivity Disorder at the age of two years presented with the complaints of never having spoken a single word in his life in spite of his hearing and all other faculties being examined by doctors and reported as normal. Other complaints were hyperactivity, not making eye-contact, not studying on his own or going to school (every school the parents took him to refused admission as he was too hyperactive, disruptive in class and would wander away), not communicating or socializing, clenching his teeth repeatedly, making repetitive noises and pinching things with his fingers.

III. Materials

Energy Medicine is the art and science of restoring a being/system to its natural state of well-being and wholeness by augmenting the innate ability of the being/system to heal itself on all levels by bringing about shifts in the energy fields in the being/system to resonate with its natural frequency of alignment, balance and harmony. Intent Healing(TM) is healing using the power of Intention, accessing energies prior to consciousness that is free from all limiting conditioning and which brings about the realignment in the energy fields of beings/systems by rewiring the neural network in the brain and gut, reprogramming the DNA and erasing faulty cellular memories. To understand the newly emerging scientific field of Applied Energy Medicine and the Intent Healing(TM) method further, it is recommended to peruse the editorials given under the references in this report. They may be downloaded from www.intenthealing.com/blog

IV. Methods

Energy based assessments and reports were given to each parent individually after the observation of their energies over two days and nights. Similar energy assessment was done for the child as well and the report of the child's energy pattern was shared with both parents. The specific and individual energy disturbances seen in each of them and the reasons for the same was explained in detail in the report. Remote Healing sessions with Intent Healing(TM) was done. The healing sessions were of two types - Timed remote healing sessions and healing sessions over Skype . The sessions over Skype was done with the parents and the sessions for the child was done as Timed remote healing sessions when the child was lying in bed at night. The total number of healing sessions was 20 of which 5 sessions were done with each parent (biological mother and father) and 10 sessions for the child. The sessions were spread over a period of one month. The energy disturbances in each parent and the child was corrected and their energies re-aligned in the healing sessions over Skype and in the Timed remote healing sessions. Regular feedback about the shifts seen in the energy fields of each parent and in the child was given to the parents after each healing session done with them and the child.

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V. Results

The child started singing first and then speaking by the end of 15 healing sessions (5 with each parent and 5 for the child). All the other symptoms improved right from the first healing session done with each parent and teeth clenching, making repetitive noises and pinching things with his fingers disappeared completely. There was dramatic improvement in the remaining symptoms ; he started making good eye-contact, started studying on his own using the laptop and started initiating friendship with other children his age in his apartment block at home. The hyperactivity reduced by 80 percent. The energy disturbances in each parent and the child was corrected and their energies re-aligned in the healing sessions over Skype and in the Timed remote healing sessions. All the symptoms of illnesses that were present in each parent, relating to the digestive system in the mother and the low back pain and fatigue that was present in the father also completely disappeared in their individual healing sessions. All of them reported a definite and tangible improvements in energy levels and mood right from the first session.

VI. Discussion

The basis of using the approach of Applied Energy Medicine in autism using the method of Intent Healing(TM) lies in the scientific fact that everything in the Universe is ultimately made of Energy and everything is connected to everything else at the quantum level with this common Energy Field. Latest discoveries in science has confirmed the existence of Dark Energy and Dark Matter that makes up 96 percent of the Universe. It is possible to access and connect with individual energy fields in order to assess the energy patterns and correct the disturbances and restore the energy fields into Alignment using the power of Intention and the tool of Remote Intent Healing. The symptoms that are seen in autism are due to disturbances in the energy fields of the child. This disturbance is caused mainly by the disturbances in the energy field of the parents and care givers of the child and also the surrounding environment. Once the energy disturbances are corrected in the parents first and then in the child, and each of them experience the aligned energy state individually, the limiting symptoms disappear in the child with Autism and ADHD. Not only that, with the realignment of energies in each parent to their natural, harmonious and balanced energy states, the symptoms of disease in the parents too disappears. This points to the fact that the root cause of other medical symptoms too has an underlying energy basis that can be corrected with Applied Energy Medicine with Remote Intent Healing.

VII. Conclusions

Applied Energy Medicine using Intent Healing method can heal the limiting symptoms in autism including making children with Non-Verbal Autism gain their faculty of speech and start talking normally and coherently. It would be worthwhile to bring this quote by Tesla to our consciousness " The day science begins to study non-physical phenomena, it will make more progress in one decade than in all the previous centuries of its existence." – Nikola Tesla

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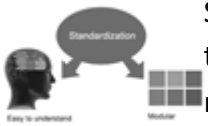


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(d) An Introduction, giving necessary background excluding subheadings; objectives must be clearly declared.

(e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.

(f) Results should be presented concisely, by well-designed tables and/or figures; the same data may not be used in both; suitable statistical data should be given. All data must be obtained with attention to numerical detail in the planning stage. As reproduced design has been recognized to be important to experiments for a considerable time, the Editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned un-refereed;

(g) Discussion should cover the implications and consequences, not just recapitulating the results; conclusions should be summarizing.

(h) Brief Acknowledgements.

(i) References in the proper form.

Authors should very cautiously consider the preparation of papers to ensure that they communicate efficiently. Papers are much more likely to be accepted, if they are cautiously designed and laid out, contain few or no errors, are summarizing, and be conventional to the approach and instructions. They will in addition, be published with much less delays than those that require much technical and editorial correction.

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Format

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Standard Usage, Abbreviations, and Units: Spelling and hyphenation should be conventional to The Concise Oxford English Dictionary. Statistics and measurements should at all times be given in figures, e.g. 16 min, except for when the number begins a sentence. When the number does not refer to a unit of measurement it should be spelt in full unless, it is 160 or greater.

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- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

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References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

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28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

29. Think technically: Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

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33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

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Key points to remember:

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· Present your points in sound order

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- Significant conclusions or questions that track from the research(es)

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The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



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Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
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Approach

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- Give details all of your remarks as much as possible, focus on mechanisms.
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- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
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Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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