EVALUATION OF TURNAROUND TIME OF BIOPSY AND SURGICAL SPECIMENS IN MOI TEACHING AND REFERRAL HOSPITAL, ELDORET KENYA

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ABSTRACT

Problem statement: There has been a great concern of delayed patients care due to protracted turnaround time. This may translate into delayed decision making, long hospital stay and unnecessary expenses. Turnaround time (TAT) is an integral component of quality assurance and one of the key indicators of laboratory performance. With histopathology laboratory having most process being manual, consistently achieving shorter turnaround times is difficult. Therefore, there is need to assess the intra-laboratory TAT in the histopathology laboratory and to compare this with what is outlined in the patient service charter.

Setting: Moi Teaching and Referral Hospital Histopathology Laboratory.

Study population: The sample constituted all surgical/biopsy pathology specimens that were received and accessioned at the MTRH histopathology laboratory in 2009. Data was collected by three pathologists from the laboratory registers and copies of final signed reports.

Objectives: To determine the time taken between receiving the surgical/biopsy pathology specimen and the time the final report is dispatched to the ordering physician, respective clinic or ward in the hospital.

Methodology: A retrospective descriptive cross- sectional study. Data for all the 2333 surgical/biopsy pathology specimens processed in 2009 was analysed for different intra-laboratory Turnaround Times using Epi info data analysis software.

Results: Of the 2333 surgical specimens received during the year, only 1892 had complete data to allow assessment of turnaround time. The mean turnaround time, accessioning to transmittal to the ordering physician for the 1892 specimens analysed was

16.2 ±10.2 days (range 3-59 days), from accessioning to trimming was 2.2±1.5 days (range 1-59) while reporting to dispatch of signed report was 2.5±3.2 days (range 1-44).

Conclusion: The mean intra-laboratory turnaround time in the histopathology laboratory was sixteen days way above the seven days allowed in the service charter in the hospital and two days advocated by professional bodies.

Key words: Turn Around Time, Histopathology, trimming, sectioning, accessioning, quality assurance.

INTRODUCTION

One of the fundamental objectives of quality assurance programs in anatomic pathology is to provide the referring physician with an accurate, timely, and clinically relevant diagnostic report based on the interpretation of optimal technical preparations (Rickert, 1990). Quality assurance experts are in agreement that turnaround time (TAT) is one of the indicators of laboratory quality (Zarbo et al. 1996, Scott et al. 1991) and is one of the most noticeable signs of laboratory service and often used as a key performance indicator of quality assurance in the laboratory. Over the years, there has been tremendous growth in the pursuit to shorter turnaround times despite the challenges of extra cost to patients and a variety of other interferences (Steindel, 1995).

We present our turnaround times for surgical pathology reports, as measured in days from the time the specimen is accessioned in the laboratory to the time the final report is collected by the client, or sent to the respective clinic or ward. The aim of this study was to identify the circulation time of specimens after accessioning within the laboratory and to determine the time taken for each individual component of the process. This would offer an insight on the areas that will need to be improved in terms of turnaround times for the different intra-laboratory components as well as form a baseline for future studies

MATERIALS AND METHODS

Study Design

A descriptive cross-sectional study on existing records data.

Site

The Moi Teaching and Referral Hospital, an 800 bed capacity health facility situated in the cosmopolitan town of Eldoret, Kenya and serving the western part of country.

Sample size

All the two thousand, three hundred and thirty three (2333) biopsy and surgical specimens received at the histopathology laboratory of the Moi Teaching and Referral Hospital between January and December 2009 were included in the study.

Inclusion and exclusion criteria

All biopsy and surgical specimens received at the histopathology laboratory in the year 2009 were included in the study. Any specimen that did not bear either the date of accession, grossing, reporting or dispatch was omitted.

Data collection

Data was collected from the histopathology record books and copies of the final signed pathology reports. Information regarding the dates of accessioning, trimming/grossing, reporting and dispatch was entered into a standard data sheet developed before the study. Any specimen that did not bear either of this information was omitted. This was then entered into data collection tool before analysis.

Data analysis

Data was recorded in excel sheet and then exported to Epi Info 2000 for analysis.

Ethical consideration

The proposal for this study was submitted for scientific and ethical review to the Institutional Research and Ethics Committee (IREC) of the school of Medicine-Moi University and Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya. IREC clearance certificate was obtained before carrying out this study.

RESULTS

Of the total 2333 biopsy and surgical specimens processed in the year 2009, 385 did not bear either the dispatch or the reporting date and therefore excluded from the analysis. Fifty six of them had an intra-laboratory turnaround times of more than two months hence considered as outliers. It was not possible to determine the reason for the prolonged TAT for the fifty six cases. However, most of them were bone tissues which required decalcification before processing.

All samples in the laboratory during the study period were fixed in 10% formalin, embedded in paraffin, and stained with Haematoxylin and Eosin. Information on other

special staining methods, such as histochemical stains were difficult to get from the records..

The mean intra-laboratory turnaround time in days (including holidays) is as shown in Table 1.

Table1: Mean intra-laboratory turnaround time for 1892 specimens

	Mean	SD	Range
Accession / trimming	2.21	1.51	1-11
Reporting / Dispatch	2.45	3.23	1-44
Accession / Dispatch	16.16	10.21	3-59

There was a mean intra-laboratory turnaround time of 16.2 days from the time of accession to dispatch with a range of 3-59 days. A total of 1065 (56.3%) of the reports had been dispatched by fourteen days while 1726 (91.2%) of them were dispatched by thirty days.

In this study the mean turnaround time from accession to trimming was 2.2 days whereas reporting to dispatch was 2.5 days which though including holidays and weekends was higher. The specimens took more than a day to be grossed after accession.

DISCUSSION

Quality control measures have been established not only in the clinical laboratory operations but also in other areas of the health facilities. Recently there has been focus on the diagnostic performance in the anatomical pathology related to proficiency testing programs (Thunnissen and Tilanus, 2004). There has also been a push towards accreditation and recognition by professional organisations, third party players and health consumers.

Specific indicators in surgical pathology and cytopathology focus on timeliness of reports, diagnostic accuracy, relevance of information in reports to the care of patients and proficiency testing (Royal College of Pathologists, 1999). Timeliness is therefore an important determinant of the usefulness of pathology reports and perhaps the most obvious parameter to the healthcare provider in judging how well the pathology services

are run (Steindel, 1995, Rainey, 1996). For the Laboratory Accreditation Program of College of American Pathology this is pegged on two working days for surgical pathology reports. Some complex specimens that may require additional processing or consultation will take longer (Zarbo et al. 1996). In our setup at public hospitals, shortage of reagents or breakdown of equipments and at times low staffing could prolong the Turnaround time.

This study was conducted with the aim of providing a baseline data for comparative analysis in later studies. The mean intra-laboratory turnaround time (accession/dispatch) in this study was 16.2 days

It has been shown that turnaround times vary depending on a number of factors (Rosa, 1996) such as the volume and type of case material, number of pathologists, representation of subspecialty interests, availability of adjunctive diagnostic services, and existence of undergraduate and/or postgraduate teaching responsibilities. There is no clear cut formula of determining an optimal staffing ratio in a laboratory. Each histopathological specimen requires a medical opinion. A figure of 2000 surgical cases per consultant per annum has been suggested by the Royal College of Pathologist (1996). With this recommendation, it can be concluded that four pathologists were adequate to cover the laboratory.

Further, large specimens require more time for adequate fixation before embedding in paraffin. These may be accompanied by calcified tissuse which should require decalcification thereby making the process cumbersome and time consuming (Zarbo et al. 1996). In addition, specimens requiring special immuno-histochemical stains take much longer. In such cases, verbal communication to the clinician is important. In some cases where the request forms lack adequate information concerning the required tests necessary to make a diagnosis more time will be required seeking information from the clinician or the patient's hospital records. The factors that account for the long turnaround time in this case include the need for additional recuts, reviewing and reprocessing of previous results.

The mean turnaround time from accession to trimming was 2.2 days with 82.6 % surgical specimens being trimmed within three days of reception. The few specimens that took more than a week to trim were either accessioned just before Easter or Christmas

holidays when the laboratory operated on minimal staff. Calcified specimens took longer to be trimmed.

Mean turnaround time for results reporting/results transmittal to the respective clinics or wards was 2 days with a range of 1 - 44 days. This was explained by the fact that some clients who brought specimens to the laboratory come from distant healthcare facilities and took long to come and collect their results..

The analysis of intra-laboratory Turnaround time provided an insight into the efficiency of the laboratory (Cree et al. 1993). Review of previous material and routine cytopathological and histopathological diagnostic comparison are considered measures of quality control in anatomic pathology (Travers, 1990,) and have been used for comparative purposes in the chronologic evaluation of particular processes. This presents a challenge on the laboratory to improve on the TAT time which is key indicator of quality assurance.

CONCLUSION

The intra-laboratory turnaround time of sixteen days is far above the recommended time of two days by professional bodies and the seven days provided in the hospital service charter.

This has identified a weak link in the process of delivering quality health care and is here recommended to institute a strict operation system to mitigate for delay in releasing laboratory reports for use by the clinicians in good time.

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