

# Pattern of Pathology Report Retrieval

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## **Abstract**

**Background:** Inefficient laboratory utilization occurs when requests are made and reports are not retrieved. This study aims to determine the pattern of report retrieval in pathology laboratories in Nigeria and ways to improve current practice.

**Materials and Method:** All un-retrieved histopathology and cytopathology reports in histopathology laboratories of Aminu Kano Teaching Hospital, Kano and University of Port Harcourt Teaching Hospital, Port Harcourt between January, 2009 and December, 2009 were retrieved from archives. From these, final diagnosis and turn around times were determined. Questionnaires were also distributed to determine reasons for failure to retrieve pathology reports.

**Results:** A total of 1,096 (22%) histology reports and 319 (12%) cytology reports were not retrieved in AKTH while 4% of histology and 20% of cytology reports were not collected in UPTH. The uncollected reports exhibited malignancy or positive resection margins in 14% and 18% of histology reports in AKTH and UPTH respectively and 16% and 18% of cytology reports in AKTH and UPTH respectively. The turnaround time (TAT) for the histology and cytology cases in AKTH were approximately 4 days and 36 hours respectively, and in UPTH 5 days and 3 days respectively in about 80% of cases. Questionnaire respondents (57%), felt histology was associated with long TATs while 51% disagreed that cytology had long TATs. Reasons for failure to collect reports were long TAT (46%); poor awareness by patients (36%) and patient death (28%). Respondents felt the best methods of report dissemination were by laboratory dispatcher (57%) and intranet (31%).

**Conclusion:** This study concludes that optimal pathology laboratory utilization requires constant communication between clinicians and pathologists and shows the need for specific hospital-tailored framework for pathology report retrieval and dissemination.

**Keywords:** Pathology; Laboratory; Utilization; Report; Retrieval

## **Introduction**

Efficient utilization of scarce laboratory resources requires that clinicians make requests for investigations only when such would be of value in managing patients. Though the decision to take a tissue biopsy is solely made by the clinician, it however, often involves

several other members of the healthcare team. These may include surgeons, anaesthetists, theatre nurses, messengers and laboratory staff among others. The decision also means the patient has to apportion fractions of his/ her scarce resources to paying for the investigation.

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In the laboratory, every departmental staff, from the receptionist to the consultant, is committed to ensuring a reliable report is issued for the specimen received. Thus when such requests are made and the ensuing reports are not retrieved this results in wastage of valuable resources such as money, time, energy and manpower.

The report itself is the result of multidisciplinary collaboration by different members of the healthcare ecosystem and the final statement transcends the diagnosis rendered as the bottom line. The report contains data that may be useful not only to the requesting clinician but also to other healthcare providers. It may determine type of adjuvant therapy given, inclusion in clinical trials and for Cancer Registry purposes among others. A report that is not retrieved can obviously not serve any of these purposes.

Worldwide one of the most contentious issues regarding laboratory practice is that of Turnaround Time (TAT). Turnaround Time in laboratory parlance is defined as the time from specimen reception to availability of report.<sup>1</sup> In surgical pathology in particular, TAT may be influenced by pre-analytical, analytical and post-analytical variables.<sup>2</sup> These may include clinician-related factors, specimen type and laboratory variables.<sup>3</sup> One of the most important clinician related factors is failure to provide adequate clinical information on request forms as this may be important in determining diagnosis.<sup>4</sup> This factor's contribution to long TAT has also been identified in other studies on this theme.<sup>5</sup> In terms of specimen-related variables, smaller specimens take relatively less time to process than larger ones. This stems from the need to ensure proper tissue fixation in the laboratory, a factor of importance not only for histology but for immunohistochemistry as well.<sup>6</sup> In the laboratory, apart from human factors, availability of power to run equipment is the most onerous.

Research<sup>7</sup> has shown that the greatest proportion of contribution to long TAT occurs in the post-analytical phase and mostly has to do with report dissemination. This study

therefore aims to determine the pattern of pathology report retrieval, a component of the post-analytical phase, and ways to overcome identified shortcomings in the present system.

### **Materials and Methods**

All un-retrieved histopathology and cytopathology reports in Pathology laboratories of Aminu Kano Teaching Hospital (AKTH), Kano in the Northern part of Nigeria, between January, 2009 and December, 2009 were retrieved from archives. From these, cases with malignancy and positive resection margins (benign or malignant) and their turn around times were determined. These were then compared with those from University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt in the southern part of Nigeria. Questionnaires (appendix 1) were also distributed to clinicians to determine perception of respondents to performance of the pathology laboratories, reasons for failure to retrieve pathology reports, and ways to improve dissemination of reports.

Samples for which reports were not generated were excluded from this study. These included samples which were autolysed or unsuitable for processing, or which met with some laboratory mishandling for which a repeat specimen had to be submitted.

### **Results**

In the year reviewed, in AKTH, 5,089 and 2,608 histology and cytology specimens respectively were processed while in UPTH 3,435 histology and 1,344 cytology specimens were received. As shown in table 1, a total of 1,096 (22%) histology reports and 319 (12%) cytology reports were not retrieved in AKTH while 138 (4.0%) of histology and 263 (20%) of cytology reports were not collected in UPTH. The uncollected reports exhibited malignancy or positive resection margins in 14% and 18% of histology reports from AKTH and UPTH respectively and 16% and 18% of cytology reports in AKTH and UPTH respectively. The turnaround time (TAT), in about 80% of cases, for histology and cytology reports in AKTH

**Table 1**

Shows the overall pattern of histology and cytology report retrieval in Aminu Kano Teaching Hospital (AKTH) and University of Port Harcourt Teaching Hospital (UPTH) with positive cases and turnaround time (TAT).

	HISTOLOGY		CYTOLOGY	
	AKTH	UPTH	AKTH	UPTH
<b>Total number processed</b>	5089	3435	2608	1344
<b>No. not retrieved (%)</b>	1096 (22%)	138(4%)	319(12%)	263(20%)
<b>No. not retrieved with diagnosis of malignancy</b>	141(13%)	21(15%)	51(16%)	48 (18%)
<b>No. with positive resection margins</b>	12(1%)	4 (3%)		
<b>Average Turn Around Time</b>	4 days	5 days	1.5days	3 days

**Table 2.**

Shows distribution of the un-retrieved reports by department and diagnosis in AKTH.

AKTH	Cytological Benign	Diagnosis Malignant	Histological Benign	Diagnosis Malignant	Total
General Surgery	43	19	411	61	534 (37.7%)
Gynaecology	103	7	207	16	333 (23.5%)
Medicine	49	2	28	3	82 (5.8%)
Paediatrics	12	14	13	2	41 (2.9%)
Surgical Subspecialties	20	3	5	-	28 (2.0%)
Other Hospitals	41	6	279	71	397 (28.1%)
<b>Total</b>	<b>268</b>	<b>51</b>	<b>943</b>	<b>153</b>	<b>1415 (100%)</b>

**Table 3.**

Shows distribution of the un-retrieved reports by department and diagnosis in UPTH.

UPTH	Cytological Benign	Diagnosis Malignant	Histological Benign	Diagnosis Malignant	Total
General Surgery	21	7	28	11	67(16.7%)
Gynaecology	125	6	52	2	185(46.1%)
Medicine	27	14	7	1	49(12.3%)
Paediatrics	8	3	6	-	17(4.3%)
Surgical Subspecialties	24	13	20	11	68(16.9%)
Other Hospitals	10	5	-	-	15(3.7%)
<b>Total</b>	<b>210</b>	<b>53</b>	<b>113</b>	<b>25</b>	<b>401(100%)</b>

**Table 4.**

Shows a summary of the questions, possible options, responses and frequency of responses

Questions	Options	Respondentsn=81
<b>Histology:</b>	Reports usually not ready on time	46 (57%)
	Usually does not contain adequate information	27 (33%)
<b>Cytology</b>	Reports usually not ready on time	37 (46%)
	Usually does not contains adequate information	25 (31%)
<b>Who to retrieve reports</b>	Ward or clinic messenger	29 (36%)
	House Officer	24 (30%)
<b>Reasons for failure to retrieve reports</b>	Reports not ready on time	37 (46%)
	Lack of awareness by patients	29 (36%)
	Patient death	23 (28%)
<b>How reports should be disseminated</b>	Pathology laboratory dispatcher	46 (57%)
	Intranet	25 (31%)

were approximately 4 days and 36 hours respectively, while in UPTH it was 5 days and 3days respectively.

In descending order, as shown in table 2, General surgery, Gynaecology, Medicine, Paediatrics and Surgical subspecialty departments of AKTH accounted for 37.7%, 23.5%, 5.8%, 2.9% and 2.0% of non-retrieved reports respectively. The remaining 28% of un-retrieved reports belonged collectively to specimens that emanated from outside AKTH. Table 3 shows that in UPTH, in descending order recorded Gynaecology, Surgical subspecialties, General surgery, Medicine, Paediatrics and others. These respectively accounted for 46.1%, 16.9%, 16.7%, 12.3%, 4.3% and 3.7% of un-retrieved reports.

The three most frequently abandoned reports in AKTH and UPTH were for pap smears, appendectomies, and lymph node aspirates. Eighty one doctors (80%) responded to the questionnaire (appendix 1) and these comprised of 11 House Officers, 42 Registrars, 17 Senior Registrars and 11 consultants. Twenty five were from General surgery, 11 from Gynaecology, 16 from Paediatrics and, 12 from surgical subspecialties and 17 from Medicine and General Outpatient's departments. Their responses, as summarized in table 3, shows that

57% were of the opinion that histology was associated with long TATs while 46% agreed and 51% disagreed that cytology had long TATs. Only 33% and 31% of doctors agreed that information contained in the pathology and cytology reports respectively were insufficient for adequate patient management. Thirty percent and 36% of respondents felt House Officers and Ward/ clinic messengers respectively were the most appropriate for pathology report retrieval. The three most frequently noted reasons for failure to collect reports were long TAT (46%); poor awareness of importance of the report by patients (36%) and patient death (28%). Respondents felt the best methods of report dissemination were by laboratory dispatcher (57%) and intranet (31%).

**Discussion**

This study has shown that reasons for failure to retrieve pathology reports have included in descending order of importance:

- Reports not being ready in a timely manner
- Lack of awareness of the importance of the report by the patient
- Patient death
- Patient's lesion has been removed and feels report is no longer useful

- Lack of awareness of the importance of the report by the clinician

The first of these, which is delay in availability of reports, bothers on laboratory Turn around time (TAT). While it has been the leading reason for non-retrieval of reports, the laboratories in this study had actual average TAT for surgical pathology specimens of approximately 4 and 5 days and about 2 and 3 days for cytology specimens in about 80% of cases. This is comparable to the TAT found for 180 laboratories sampled from the United States, Canada, Australia and the United Kingdom in which over half of the audited laboratories completed processing of 90% cases within 3 days.<sup>5</sup> Grzybicki *et al*<sup>8</sup> in their analysis of physician perception of TAT for surgical pathology and cytology, discovered that Physicians' perceived TAT to be longer than the actual laboratory TAT! This would imply inadequate communication between clinicians and the laboratory, particularly regarding when reports become available.

The problem of inadequate communication between clinicians and the laboratory appears to reflect the inadequacies of current modes of report dissemination. Majority of respondents to the questionnaire would prefer a laboratory dispatcher for report dissemination as is being done in several laboratories in more developed countries. While this may be practicable within the hospital where the laboratory is located, this may be difficult for cases emanating from peripheral hospitals. The dispatcher may also have to contend with locating remotely sited hospitals as well as additional cost of dispatch the patient has to bear. In the same vein a ward or clinic messenger, as is done in a few centers, could be employed whose job it is to retrieve and deliver reports to the wards or clinics irrespective of whether from within or without the hospital where the laboratory is located. Traditionally the House Officer, even though nowhere stated in his/her job description, has been charged with report collection from various laboratories. However, while this has been helpful in report retrieval, it has been

plagued with the problem of abandonment of reports when such House Officers switch from one department to the other or when their internship is completed.

Use of intranet was also attractive to respondents. This would operate within the hospital where the pathology laboratory is located and accessible to clinicians who would be given personal identification codes. In centres where this operates patients' confidentiality is maintained by encryption of data.<sup>9</sup> However, the major drawback of this report retrieval method in our setting is the effect of epileptic power supply and attendant costs of maintaining an alternate power source such as diesel generators, inverters or solar power. In addition to this, hospitals from outside the index hospital would be unable to gain access to the intranet. On the other hand, internet service, which is an option in this instance, is associated with greater risk of loss of patients' confidentiality. Benson<sup>10</sup> in the United Kingdom has also observed the drawback of reluctance of hospital clinicians to operate computers in order to get required patient data. Lastly the collection of reports by patients or their relatives while an attractive option is also fraught with risk of breach of patient's confidentiality, high risk of patient default from treatment as well as risk of report loss or damage.

From the foregoing it is obvious that not a single method can meet all needs for timely delivery of pathology reports. A multipronged approach encompassing all the aforementioned methods would have to be instituted to meet the need for prompt report delivery.

As exhibited by responses to the questionnaire all other patient-related reasons behind failure to retrieve reports would appear to be the result of inadequate patient-clinician communication rather than as a consequence of lack of clinicians' confidence in reports. Even though presently patients are mostly responsible for collecting their reports, clinicians need to adequately impress upon them the importance

of the pathology report irrespective of outcome of treatment given. In this study a range of 14% to 20% of un-retrieved reports from AKTH and UPTH had diagnosis of malignancy or positive resection margin. This underscores the need for report retrieval irrespective of expected treatment outcome. Radiological services, another frequently utilized diagnostic modality, was also found to be plagued by un-retrieved reports, and Nabaweesi-Batuka et al<sup>11</sup> found that significant numbers of these reports also had important pathologies. Even when patients are dead or lost to follow-up, the onus is still on the clinician as well as the hospital in general to ensure these reports are archived, not only for posterity and epidemiologic purposes but also for medico-legal eventualities.

While the thrust of this study is mainly focused on the interaction of the laboratory with its clients, the clinicians, the need for introspective examination of laboratory performance cannot be overemphasized. When this is effected pertinent audit-related questions such as correctness of diagnosis, grading and staging of lesions submitted for anatomical diagnosis can then be answered. These can be achieved using several peer review mechanisms.<sup>12</sup> These include review of randomly selected percentage of cases, intradepartmental Quality Assurance conferences, cytology/ surgical pathology correlation and review of outside diagnosis of in-house cases among several other mechanisms for ensuring quality.

In conclusion, this study has shown that for optimal pathology laboratory utilization, there is need for constant communication between clinicians and pathologists as well as specific hospital-tailored framework of pathology report retrieval and dissemination. It also concludes that while enough emphasis cannot be placed on ensuring short turnaround times in histopathology it should not be at the expense of excellent laboratory practice.

## **Recommendations**

1. Establishment of protocols in clinical departments to ensure patients are not discharged or, when not applicable, seen in clinics without their pathology reports.
2. All pathology laboratories should put machineries in place to ensure and monitor short TATs.
3. Provision of intranet services to enhance easy access to pathology reports.
4. Employment of staff that will be responsible for either retrieving or dispatching of reports.

## **References**

1. Definition of turnaround time, available at:<http://medical-dictionary.thefreedictionary.com/turnaround+time>. Accessed October 8, 2011.
2. Bluth EI, Lambert DJ, Lohmann TP, et al. Improvement in stat laboratory turnaround time. *Arch Intern Med* 1992; 152: 837-840.
3. Manor PG. Turnaround times in the laboratory: A review of the literature. *Clin Lab Sci* 1999;12(2):85.
4. Malami SA, Iliyasu Y. Local audit of diagnostic surgical pathology as a tool for quality assurance. *Niger J Med*. 2008; 17(2):186-190.
5. Jones BA, Novis DA. Nongynecologic Cytology Turnaround Time. *Arch Pathol Lab Med* 2001; 25(10): 1279-1284.
6. Golstein NS, Fercowicz MT, Odish E, Mani A, Hastah F. Minimum formalin fixation time for consistent estrogen receptor immunohistochemical staining of invasive breast carcinoma. *Am J Clin Pathol* 2003; 120: 86-93.
7. Saxena S, Wong ET. Does the emergency department need a dedicated stat laboratory? *Am J Clin Pathol* 1993; 100(6): 606- 610.

8. Grzybicki DM, Geisinger KR, Silverman JF, Dabbs DJ, Brewer N, Raab SS. Physician Perceptions and Expectations of Cytology and Surgical Pathology Turn Around Time (TAT). *Abstr Acad Health Serv Res Health Policy Meet.* 2000; 17.
9. Dale AK, Sterling TB. Quality improvement in the information age. *Medical Laboratory Observer*, August, 2000. Available at: [http://findarticles.com/p/articles/mi\\_m3230/is\\_8\\_32/ai\\_65020107/](http://findarticles.com/p/articles/mi_m3230/is_8_32/ai_65020107/) Accessed October 8, 2011.
10. Benson T. Why general practitioners use computers and hospital doctors do not—Part 1: incentives. *BMJ* 325: 1086 doi: 10.1136/bmj.325.7372.1086.
11. Nabaweesi-Batuka J, Kiguli-Malwadde EE. Uncollected Radiographs in a National Hospital with Low Resources. *East Afr J Surg* 2007; 12(1): 109-113.
12. Nakhleh RE. What is quality in surgical pathology? *J Clin Pathol.* 2006 July; 59(7): 669–672.