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Survey of Telephone Calls Received in a Singapore Public Hospital Clinical Laboratory

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Abstract

Objective: Our objective is to determine the total burden of telephone calls, reasons for calling the laboratory and to identify opportunities for intervention and improvement.

Methods: A retrospective, cross-sectional study was done using data from the telephone recorder over 14 days in January 2018. We identified the type and number of calls, duration of calls and call locations, and categorized them under six main domains: Information Needs (IN), Tracing Results Sand Specimens (TRS), Test Cancellations and Rejections (TCR), Electronic Medical Records (EMR)-related, calls from Internal/External Stakeholders (IES) and others.

Results: A total of 867 calls were recorded. Overall, an average of 1.4 hours a day and more than 1 man-day a week was spent on phone calls. We identified 1454 queries and 61.5% of the queries were categorized under the domain of IN with the rest as follows: from IES (11.8%), EMR-related (9.1%), TCR (8.1%), TRS (7.0%), and others (2.5%).

Conclusion: We have identified the common queries from laboratory users and areas of opportunity to reduce the number of inbound calls. There is a need to educate our laboratory users on how to access laboratory-related information by other means, such as online platforms or mobile laboratory apps without calling the clinical laboratory.

Keywords: Telephone calls; Quality improvement; Clinical laboratory

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Introduction

Clinical laboratory related information is disseminated regularly through various means to multiple internal and external stakeholders. Circulated information ranges from specimen type, specimen size, special instructions, necessary containers, storage and transportation, analysis methods, to relevant clinical information [1,2]. However, despite information disseminated through online information resources, printed/ online versions of Laboratory Service Manual and hospital intranet, our staff tends to receive repetitive queries regarding laboratory tests. This contributes towards non-value-added workload of Medical Laboratory Technologists (MLTs) as well as poor job satisfaction. Prevailing demand for manpower and manpower deficits in Singapore public healthcare sector [3], reported high burnout rates among Health Care Professionals (HCPs) [4-7], and financial structure of Singapore's Public Healthcare Sector [8], make it challenging to recruit more manpower. Therefore, reducing the burden of non-value-added work through effective and sustainable interventions is a way-forward in improving quality.

Our objective was to determine the total burden of telephone calls, reasons for calling the laboratory and to identify opportunities for intervention and improvement. This was achieved through a retrospective cross-sectional survey which was conducted using data retrieved from the phone call recorder from 4 to 17 January 2018 (Phone calls received in the laboratory via general laboratory inquiries phone line are recorded for the purposes of training, trouble-shooting and quality improvement).

Materials and Methods

We listened to all phone call recordings, identified the queries and categorized them into six main domains. For the purposes of data analysis and interpretation, we introduced the following terms: A single call received by the laboratory staff that could result in a single or multiple query was called an 'inbound one-off call', whereas multiple calls with one or more stakeholders required to resolve a single or a set of queries were called 'inbound thread calls'. Data analysis was carried out using Microsoft Excel (MS Excel (Version 16.0) [Computer Software] Microsoft Corporation, One
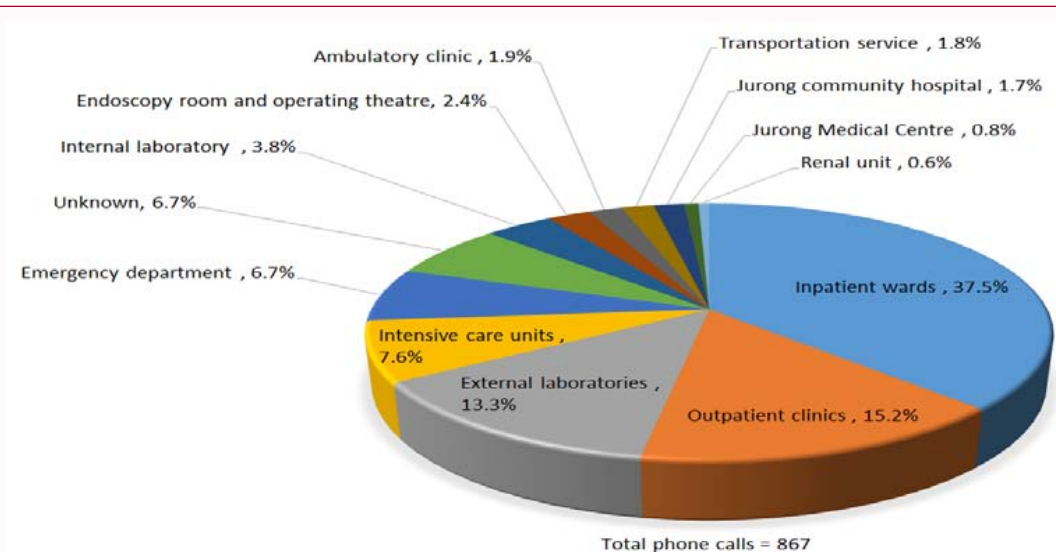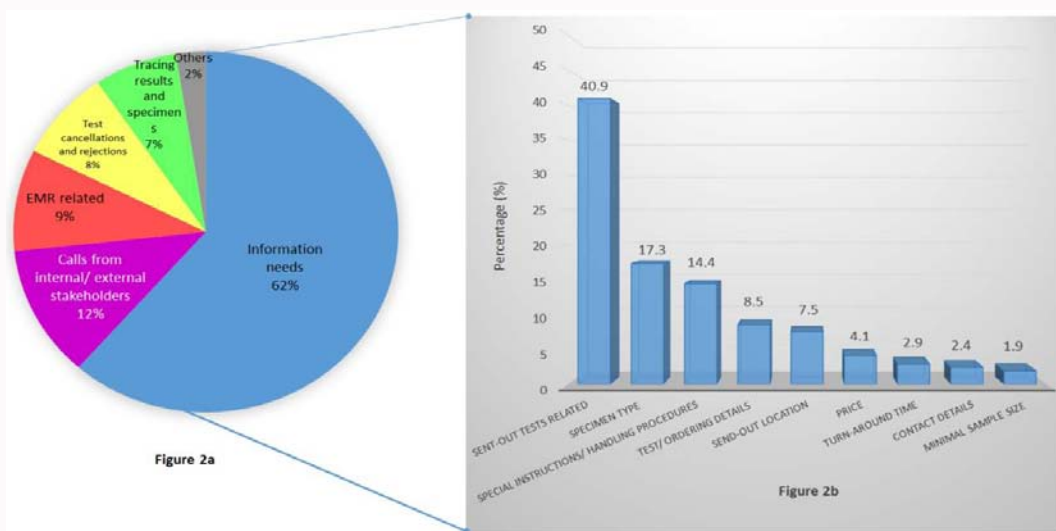
Figure 1: Locations of in-bound calls.

Figure 2a: Classification of call queries in to six domains based on common characteristics and **2b:** Sub-categories of call queries under the domain of "information needs".

Microsoft Way, Redmond, WA).

Results

A total of 867 calls were recorded over 14 consecutive days and its total duration was 19.6 hours. The longest phone call was 10.2 minutes. About 1.4 hours a day and 9.8 hours a week (more than 1 man-day a week) was spent on answering phone calls.

Distribution of locations of inbound calls was as follow: inpatient wards (37.5%), outpatient clinics (15.2%), external laboratories (13.3%), intensive care units (7.6%), emergency department (6.7%), internal laboratory (3.8%), endoscopy room and operating theatre (2.4%), ambulatory clinic (1.9%), transportation service (1.8%), Jurong community hospital (1.7%), Jurong Medical Centre (0.8%), renal unit (0.6%) and unknown (6.7%) (Figure 1).

We identified 1454 queries and 61.5% of the queries was categorized under the 'information needs' domain. The rest of the queries were distributed across the domains as follow: calls

from internal/ external stakeholders (11.8%), Electronic Medical Records (EMR) related (9.1%), test cancellations and rejections (8.1%), tracing results and specimens (7.0%), and others (2.5%). The queries in the domain of information needs were further classified into sub-categories (Figure 2). Most of the domains in the audit are self-explanatory, and perhaps it's important to elaborate that 'other' domain was a representation of hang-up calls and calling the wrong number. Interestingly, the top five locations (Figure1) accounted for 82.3% of all inbound calls and all the locations within the hospital had contributed to 89.6% of total number of inbound calls.

Discussion

We first excluded the areas where the telephone calls were necessary and unavoidable. These areas included calls from external/ referral laboratories (for urgent clarifications, to communicate specimen rejections and critical results) and calls for test cancellations. The latter was tagged as mandatory as it directly affects clinical care and outcomes. The areas where improvements and interventions can

be introduced were then identified.

Information needs accounted for more than 60% of total queries, highlighting the need for dissemination of salient and frequently-accessed information and making awareness of existing resources available for laboratory users through various means.

The ability to request for add-on tests has been made available through the EMR system. Similarly, Laboratory Information System (Epic Systems, Verona, Wisconsin) updates status of specimens and uploads finalized results real-time. These established interventions should have negated the need for calling the laboratory; however, the results signified that training, education and making awareness could possibly play a major role in further reducing the burden. Exceptions such as intranet/internet downtime could still provide valid reasons to override general workflows.

Send-out tests related queries created a major portion of the domain of information needs (40.9%). According to our local experience, send-out test volumes have grown steadily over the past several years attributing to increases in number of available genetic tests, as well as proprietary tests that require dispatch of specimens to specific laboratories [9]. These tests often involve multiple steps/processes than in-house tests, thus its contribution towards phone call burden. In order to mitigate this issue, we had implemented the following measures: a common computer interface with our biggest referral laboratory to mitigate pre- and post-analytical errors, carefully picked collaborations with external laboratories in order to simplify procedures/ work-flows and provision of information [9,10]. The cost-effectiveness and net benefit of these interventions had not been formally assessed; however results indicated that there is room for further improvement, probably in terms of access to information and awareness.

Conclusions

In this audit, areas of opportunity to reduce the number of inbound calls by up to 40% were identified where training, education and raising awareness are possibly indicated as avenues for intervention. As part of our quality improvement journey, we hope to leverage on smart phone technology to implement mobile health applications (mHealth apps) to empower our laboratory users to access laboratory information at their fingertips and further reduce the burden of unnecessary phone calls in our clinical laboratory setting.

Limitations

Our audit had several limitations. The major limitation was due to the cross-sectional nature of collected data within a specific period of time. This may have contributed to an observer bias. Secondly, phone calls received on the laboratory general enquiry hand-held phone were not recorded, which may have in-turn resulted in an underestimated phone call burden. (Although we have one general enquiries phone line, it is a hunting line connected to three desk phone sand a hand-held phone). Lastly, the call burden may vary during different times of the year depending on the number of experienced staffs working in the wards and clinics, rotation of medical officers, bed occupancy rate of the hospital, severity of cases, number of surgeries performed, total number of operating clinics, but these factors were not taken into account during data collection and analysis.

Acknowledgment

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