

# Reducing calls missed by the hospital telephone exchange from 26% to less than 10%

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## Abstract

A hospital's telephone exchange is the first point of contact for patients and their attendants to take appointments, to collect healthcare related information and to connect to the hospital in case of emergencies. At Sitaram Bhartia Institute of Science and Research the doctors, patients, and attendants often complained about the inefficiency of the hospital exchange. In February 2012, a doctor raised her concern of calls not being picked up at the exchange with the senior management and a QI project was initiated to tackle the problem.

Baseline data showed that about 26% of incoming calls to the hospital during 8am to 8pm were not being picked up. On the basis of the baseline data, call audits, staff interviews, and observations the project team identified the defects. These defects were categorized under four headings - manpower, equipment, processes, and environment. The team proposed several change ideas. Some of these change ideas were implemented immediately. Three proposed change ideas were tested through individual PDSA cycles. The percentage of missed calls dropped from 26% to 18.1% after the first cycle and then to 9.6% and 6.5% after the subsequent cycles which involved testing of two other additional change ideas. These changes were implemented and a benchmark of no more than 10% calls to be missed was set. For nearly three years we have held the gains and have met the benchmark of missing not more than 10% calls coming to the hospital exchange between 8am to 8pm. The contributing factors to the success have been the involvement of frontline workers, an expert and engaged head of department, and senior leadership support.

## Problem

In February 2012, our Medical Director received a complaint from a consultant that her patients couldn't reach her or get appointments because calls to the hospital were not being picked up. Our Medical Director asked me, the General Manager, to look into the matter. After speaking to other consultants and patients, I gathered enough anecdotal evidence to suggest that the complaint was legitimate. Access to the hospital through the telephone exchange was difficult; many calls were not being picked up at all and some were being picked after several rings. There were also complaints of calls being kept on hold for long periods of time and being bounced off from one person to the other.

## Background

The first point of contact for a patient with the hospital is often through the telephone - for information, appointments, or emergencies. If this experience is negative, some patients might decide not to come to the hospital at all. This could mean loss of revenue leading to consultant and staff demotivation or even create a safety hazard. Therefore, easy and efficient access to the hospital through an efficient telephone exchange is critical.

Sitaram Bhartia Institute of Science and Research has a telephone exchange which is manned 24/7 by in-house staff. There are seven staff members who work exclusively in the exchange and attend to both external and internal calls. External calls are the calls that come to the hospital from outside of the hospital premises and can

be from patients, patient attendants, healthcare providers, or others. Internal calls are calls to the telephone exchange from within the hospital either to connect to another extension, a staff mobile phone or other external phones. Besides receiving calls, the telephone exchange also makes calls to reschedule appointments or invite people for events.

## Baseline measurement

Baseline Data Collection:

Once the problem was identified we began to collect data on how many incoming calls were being missed by the hospital exchange. To our surprise we did not have a reliable automated system to collect information on number of incoming calls, missed calls, or duration of calls.

We requested procurement of an automated call management software. We also began auditing calls to assess the quality of telephone customer service by hearing them. The department manager also observed and interviewed staff to identify process and system related defects.

In June 2012, we installed a new automated call management system. We collected baseline data on total number of incoming calls and total number of missed calls from July 1, 2012 to July 31, 2012 by the hour. We categorized the calls into day time (8am to 8 pm) and night time calls. During these 31 days there were 32,630 incoming calls during the day, out of which 8,536 were missed (26%). We focused on `calls between 8am and 8pm as they

accounted for >90% of call volumes.

Based on call audits, observations, staff interviews, and data collected on incoming and missed calls a fish bone diagram was created. (Please refer to the fishbone diagram in Appendix 1).

The fishbone diagram helped us categorize defects under four headings - manpower, equipment, process, and environment. There were several issues related to manpower. There was no tool available to measure individual performance. Data on login hours or the number of calls attended or missed by each staff member of the telephone exchange could not be captured. As a result staff left their work stations unmanned several times during the day. Staff was not always allocated based on demand during peak hours and no training was given to staff to handle difficult calls which were time consuming. The existing equipment in the telephone exchange was also outdated. It could not capture the number of missed calls and the duration of calls. The calls coming to the exchange were not being equally distributed among staff and nor could the staff see how many calls they had in waiting. Computers were available at only two workstations therefore only two staff members could multitask i.e. give appointments and transfer calls. The other staff could only transfer calls therefore any call for an appointment that landed at this station had to be transferred again irritating the caller. The incoming calls did not land up to the free staff member automatically. There were no standards of performance - no SOPs for attending calls and no TAT's were created. It was not specified how many hours the staff was expected to attend calls at their stations in a particular shift and there were no protocols on how staff could take breaks. We also observed several culture issues – people in the hospital were used to making internal calls through the exchange rather directly and would have long conference calls keeping lines busy. Many non-value added activities such as collecting and printing rosters were being done during peak working hours.

See supplementary file: ds6454.docx - "Appendix 1- Fishbone Diagram"

## Design

Change Ideas:

Once the defects were identified, the project team along with the frontline staff brainstormed and proposed a list of change ideas to reduce missed calls. A few of the changes proposed were implemented immediately. We installed an automated call management system to collect reliable call data. The manager created standard operating procedures for attending calls and standards of performance. A list of frequently asked questions was also created to help standardize and speed up response to queries. The department head ensured that staff was allocated according to call demand at all times. Required but non-value activities like cleaning were scheduled during non-peak hours. But some proposed changes were tested through PDSA cycles. We ran several PDSA cycles. One each to test if introducing the logout and login feature, sharing standards of performance, sharing individual performance and department performance would help reducing

missed calls. We also ran a PDSA cycle to test if multitasking of staff would also help reducing missed calls.

Not all change ideas were tested or implemented. A few changes - like training staff for difficult queries, work on turn-around-time for closing calls, work on the culture piece of internal callers not using speed dials, and direct extension numbers to other departments was taken up later.

## Strategy

PDSA 1

First idea to be tested was to see if introducing a login and logout feature for the exchange staff would help reducing missed calls. The department manager explained the login and logout feature to the staff before commencing the test for a period of 4 days - 17th, 18th, 20th, 21st August, 2012. Staff members logged in each time, at the start of the shift and before resuming their work after taking any break. They logged out after end of their shift and before going on break. A form was given to the staff to record their feedback on the change being tested. The data for number of missed calls was collected for the four days from 8am to 8pm from the automated call management system and analyzed. The average percentage of missed calls for these four days during 8am to 8pm reduced from 26.2% to 18.1%.

PDSA 2

The objective of the second PDSA was to test if sharing 'Standards of performance' and individual performance report with each staff member daily along with the login and logout facility would help in further reduction of missed calls. The test was carried out for a period of 5 days - 27th to 31st August, 2012. A Standards of Performance document for the telephone exchange staff was created by the department manager. These standards were explained to the telephone exchange staff. Individual performance report was generated daily and discussed with the staff the next day starting from Aug 28th, 2012. The average percentage of missed calls for these five days reduced to 9.6% from 18.1% .

PDSA 3

During observations it was found that at any given time only two staff members would be giving appointments and the other staff would be answering queries or transferring calls.

The objective of this PDSA was to test whether multitasking of all staff members of the day-shift with the login/logout feature and other two inventions of sharing individual performance and standards of performance would reduce the missed calls down further.

Multitasking would be done by enabling the landing of all calls (general information/call transfers/appointments) at all the work stations, enabling everybody to attend all types of calls. This was done by providing three additional computers and three KTS (operating consoles).

This PDSA was carried out for a period of 6 days - 10th to 15th September, 2012. Staff was trained to attend all types of calls on their respective work stations. Calls were equally distributed as they would land up on a free workstation automatically. Staff was logging out while leaving their work stations and logging in while resuming work. Staff was aware of their daily individual performance and of the standard of performance. Data was collected and analyzed daily. The average percentage of missed calls for these six days from 8am to 8pm reduced to 6.5% as compared to 9.6% of the previous cycle.

## Results

### Implementation and Results:

Once the PDSA cycles were completed, we were ready to implement the changes. The department manager created key performance indicators for the telephone exchange. These indicators included percentage of missed calls by the exchange to be reviewed by her on a daily basis. This data is shared with senior management on monthly basis with a benchmark of no more than 10% calls to be missed. Standards of performance were communicated to all staff – including the expectation that they were to spend no less than 6.5 hours on their stations during each 8 hour shift. This was measured for each person using the login/logout feature. Individual and overall department performance was shared regularly and all staff members were trained to attend to all types of calls.

We have sustained the gains for nearly three years and have not had any month in which missed calls have exceeded the 10% benchmark. (Please refer to the graph in the attachment).

See supplementary file: ds6216.docx - "Graphs 1&2- Percentage of missed calls with each PDSA cycle 2. Percentage of missed calls for each month(June 2012 to June 2015)"

## Lessons and limitations

### Learnings:

Involving the front line staff with the project was critical to success. We sought ideas for improvement, provided continuous feedback, and reported individual and department performance to the front line staff. As a result, we had little resistance when changes were finally implemented and the staff felt a sense of accomplishment.

Having a department head who had technical and people skills was key to success. The department head owned the project and motivated her staff throughout the initial stages of testing and implementation and led to sustained improvement.

Support from senior leadership is a must. Approval for the automated call management system was very beneficial for the project as it helped us generate data that helped in planning our interventions.

### Limitations:

The biggest limitation is that we have not assessed quality of calls and there is concern that staff may compromise on quality to minimize the number of missed calls. Though we did audit calls from time to time to assess quality, we have not been able to sustain this effort. We need to initiate another project that focuses on the critical service elements of attending phone calls. We have also not addressed missed calls on the night shift when responsibility for answering calls is with the inpatient front desk staff member rather than a dedicated telephone exchange staff member.

## Conclusion

### Conclusion:

For nearly three years we have not exceeded the benchmark of no more than 10% missed calls. For an improvement to happen, all stakeholders - the senior management, the department head, and the front line staff have to be engaged. Technology such as the automated call management makes continuous measurement easy that aids improvement and helps sustain the gains over a long period of time.

## References

1 Langley GJ, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP. The Improvement Guide: A Practical Approach to Enhancing Organizational Performance. 2nd ed. Jossey- Bass;2009.

## Declaration of interests

Nothing to Declare.

## Acknowledgements

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## Ethical approval

This project was deemed to be an improvement project and not a study on human subjects. Therefore, ethical approval was not required.