

Reducing The Incidence of Rejected Laboratory Specimens

This article by Nancy Borubui, Christina Mojini, Dorien Hee, Juria Sundang and Felecia Liduin of the O&G Department, Women and Children Hospital, Likas, Sabah, Malaysia looks at reducing rejected specimens from obstetric wards.

Introduction

Rejected specimens means specimens that were sent to a laboratory and returned back to the respective wards without tests being done due to non-compliance by the user, according to laboratory standard of procedure (Hopkins, J., 2007). The impact of rejected specimen can affect patient safety due to delay in a patient's treatment and management (JACHO, 2007).

SELECTION OF OPPORTUNITIES FOR IMPROVEMENT

A brainstorming session was done and some of the quality problems were identified as listed in the table below.

No	Problem identified	M1	M2	M3	M4	Total score
1.	High percentage of rejected laboratory specimens from the obstetric wards	3	3	3	3	12
2.	Delay in discharging in-patients	2	3	2	2	10
3.	Inadequate nursing documentation	2	2	2	2	8
4.	Delay in chest physiotherapy treatment in wards	1	1	1	1	4
5.	Poor compliance of post-natal physiotherapy	1	1	1	1	4

(1 = less important, 2 = important and 3 = most important)

The quality problems were prioritised by voting using the SMART criteria. The problem of a high percentage

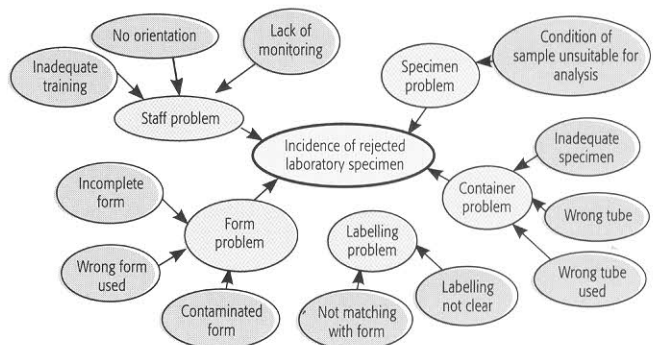
of rejected laboratory specimens from obstetric wards at the Likas Hospital was chosen.

Problem Prioritisation based on SMART criteria

S	Seriousness	Delay in patient treatment will jeopardize a patient's life
M	Measurable	The number of rejected laboratory specimens can be measured
A	Appropriateness	Need for the current situation in the obstetric wards in Likas Hospital
R	Remediable	Can be done within the hospital level
T	Timelines	Problem can be minimized after intervention within four months

Problem Analysis

A group discussion was done and five factors were identified as depicted in the primary bubble chart:-



Model of Good Care

No	Process	Criteria	Standard
1.	Filling in of Forms	Name, IC, RN, Age, Gender, Race, Ward, Diagnosis, Type of specimen, date, signature, chop	100%
2.	Preparation of blood taking items	Preparation of needles, syringe, correct tubes, swabs, tourniquet	100%
3.	Identifying correct Patients	Ensure blood taken from the correct patient by asking for the full name and IC/passport number	100%
4.	Proper blood taking technique	Correct placement of tourniquet, swab site, insert needle to correct vein, draw correct amount of blood, release tourniquet and inject slowly into the correct tube	100%
5.	Re-checking forms and specimens	Re-checking the name, labelling of the form and specimen to ensure complete and correct	100%
6.	Recording	Recording specimen in the dispatch book: Name, R/N / I/C, date and time and type of specimen	100%
7.	Correct destination code	Key in correct code number for lab and use correct pneumatic tube size	100%
8.	Confirmation by laboratory	Acknowledgement of receipt of blood samples	100%

KEY MEASURES FOR IMPROVEMENT

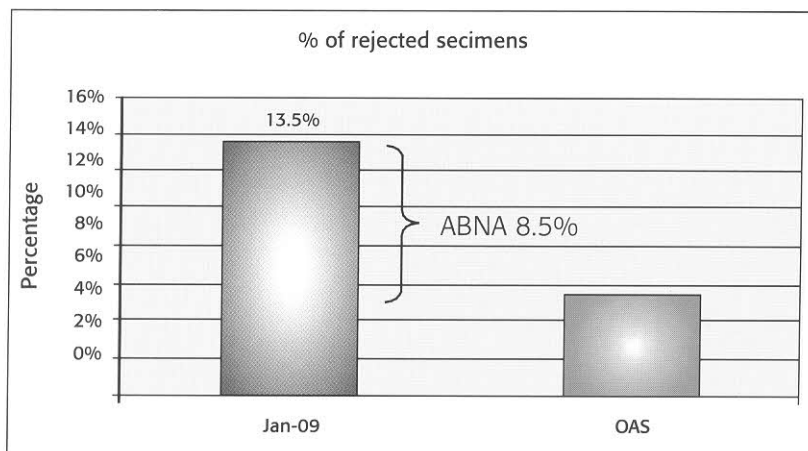
The formula used is as follows:

$$\frac{\text{Total no. of rejected specimens from obstetric wards (225)} \times 100\%}{\text{Total no. of specimens sent from obstetric wards. (1664)}} = 13.5\% \text{ (SIQ)}$$

(From 1st January 2009-31 January 2009)

Standard: ≤ 5 % specimens rejected

ABNA: 8.5% (There is SIQ)



PROCESS OF GATHERING DATA

The study objective is made up of:

General Objective:

To reduce the percentage of rejected laboratory specimens from obstetric wards, Likas Hospital from 13.5% to 5% in June 2009

Specific objective:

- To determine factors contributing to the high rejection rate of specimens.
- To ascertain knowledge of staff on handling specimen.
- To design and implement remedial measures
- To reevaluate the remedial measures implemented.

Study location:

Obstetric wards of Women and Children Hospital, Likas.

Methodology:

Study Design:

- Cross-sectional study for knowledge of staff handling specimens
- Cross-sectional study by observing staff handling of specimen
- Cross-sectional study of records (Laboratory specimen request forms and specimens)

Sampling method: Convenient sampling; all staff involved in taking of laboratory specimens (n=50) and all rejected laboratory specimens (n=149) were selected for the study.

Data collection: Questionnaires for staff knowledge were prepared and pre-tested prior to the survey and checklists were used for observation on staff handling of specimens and for study of records.

Data analysis: Using SPSS version 15.

ANALYSIS AND INTERPRETATION

Data collection was conducted from 1-31 March 2009. A total of 149 rejected specimen request forms were analysed and a total of 15 Medical Officers and 35 House officers were questioned on their knowledge of handling specimens and observation on the procedure of blood taking. Nearly 60% of the officers were in service less than six months. 92% were not given any orientation by the department while 80% have no proper training in blood taking.

Reasons for specimens to be rejected

No	Reasons for rejecting specimens	Number	Percentage
1.	Incorrect and unclear labelling	30	20%
2.	Wrong amount of specimen	23	15.5%
3.	Wrong container	2	2%
4.	Poor packing of specimen	17	11%
5.	Wrong timing	2	1.3%
6.	Incomplete patient's data in request form	72	48.3%

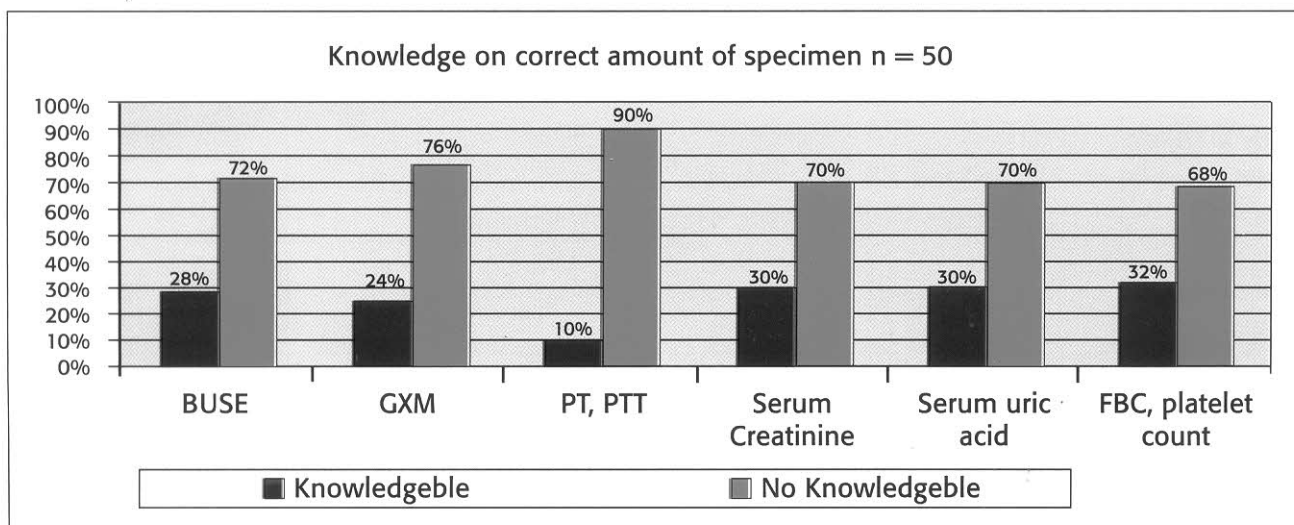
Reasons for specimens to be rejected according to positions

NO	ITEM	Medical Officer	House Officer
1.	Incorrect and unclear labelling	10%	10%
2.	Wrong amount of specimen	5%	10.5%
3.	Wrong container	5%	5%
4.	Incomplete request form	5.8%	14%

Correct knowledge on how to handle specimens

No	Item	Medical Officer		House Officer	
		Yes	No	Yes	No
1.	How to operate pneumatic tube	0	100%	0	100%
2.	Application of tourniquet during blood taking	100%	0%	33%	67%
3.	Type of blood tubes used	70%	30%	60%	40%
4.	Filling up laboratory form	100%	0%	80%	20%
5.	Labelling specimen	100%	0%	85%	15%

Knowledge on correct amount of blood sample required



Correct practice of staff in term of handling specimen as observed by the researchers

No	Procedure	Medical Officer		House Officer	
		Yes	No	Yes	No
1	Filling in forms	94%	6%	90%	10%
2	Preparation of blood taking (correct tube)	100%	0	90%	10%
3	Procedure of blood taking (correct amount)	95%	5%	90%	10%
4	Rechecking specimen to ensure complete and correct	96%	4%	94%	6%

STRATEGY FOR CHANGE

Remedial measures were implemented and evaluated. For the problem of poor knowledge on handling of laboratory specimen, a structured programme orientation was organised by the laboratory department. Continuous medical education and hands on training on handling blood specimens were conducted to improve the blood sampling techniques. Standardised labels and stickers for all the specimens were introduced and daily monitoring on rejected specimens were done by Unit Heads. Monthly achievement was set at 3% per month for three consecutive months.

EFFECTS OF CHANGE

With the implementation of remedial measures, the percentage of rejected laboratory specimen was reduced from 13.5% in January 2009 to 4.4 % in June 2009.

Process	Criteria	Standard	Before	After
Filling in Forms	Forms filled according to requirements	100%	84%	100%
Preparation of blood taking items	Preparation of needles, syringe, correct tubes, swabs, tourniquet	100%	90%	100%
Identifying patients correctly	Ensure blood taken from the correct patient	100%	94%	100%
Proper blood taking technique	Ensure correct technique and correct tube used	100%	85%	100%
Re-checking forms and specimens	Ensure correct form for the right specimens	100%	90%	100%
Recording	Recording specimen in the dispatch book: Name, R/N / I/C, date and time and type of specimen.	100%	90%	100%
Correct destination code	Keying in correct code number for lab and using correct pneumatic tube size	100%	0%	100%
Confirmation by laboratory	Acknowledgement of receiving blood samples	100%	94%	100%

In terms of cost, the hospital managed to save RM177.41 in terms of purchasing consumables.

Items	January 2009 (Before intervention)	June 2009 (After intervention)
Syringes (RM0.30 x 1)	RM 67.50	RM20.40
Needles (RM0.06 x 1)	RM 13.50	RM 4.08
Tubes (RM0.67 x 1)	RM150.75	RM45.56
Biohazard plastic (RM0.05 X 1)	RM 11.25	RM 3.40
Forms (RM0.05 x1)	RM 11.25	RM 3.40
Total amount of RM wastage	RM254.25	RM76.84

LESSONS LEARNT AND THE NEXT STEP

With continuous education sessions and supervision, the knowledge of staff improved by 58% for House Officers and 40% for Medical Officers. The next step will be working towards maintenance of the achievement for the next six months and to reduce the indicator to 0%. ■

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