



Intra-hospital transport protocol

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Abstract

Intrahospital transport refers to the transferring of patients within and around (intra) the hospital. The research study was conducted to develop and validate intrahospital transport protocol of hospitalized patients for staff nurses in a selected cancer hospital, Kolkata. It was a methodological study conducted in two phase: In the first phase, survey design was followed to collect the data. In the second phase, based on the study findings Intrahospital transport protocol was developed and validated by the experts. Sample size for the study consisted of 100 situation of intrahospital transportation in presence of the staff nurses of Tata medical center, Kolkata. The sampling technique was non-probability purposive sampling. Tools were validated by 11 experts. "Structured interview" used to assess the self-reported practice of staff nurses and "Observation checklist" was used containing forty-four items. After analysis of the results "Intrahospital transport protocol" was developed in the form of SOP (Standard operating procedures). Protocol was divided in three sections: Procedure before transport, during transport and post transport. It contains 109 items out of which 63 items to be followed before transportation, 9 items during transportation and 16 items after transportation. Protocol was validated by five experts from nursing administrator field. Out of 109 items, only 3 items had 80% agreement and 106 items had 100% agreement. Overall Agreement of tool was calculated as 99.44% for all the items.

Keywords: Intrahospital transport protocol, hospitalized patients, staff nurses

Introduction

Technological advances have led to considerable improvement in different hospital settings, in terms of treatment aspects as well as diagnostic techniques. Despite the current sophistication of different wards, intensive care units, neither all the necessary care nor all appropriate investigations can be offered at the bedside. Hence patient need to shift from one unit to another unit within a hospital according to his/her condition and improvement of condition ^[1]. Intrahospital transportation refers to transportation of patients within the hospital. Hospitalized patients are transported to alternate locations to obtain additional care, whether technical or procedural that is not available at the existing location. Provision of this additional care may require patient transport to a diagnostic department, operating room or specialized care unit within the hospital. Developing practices to reduce or minimize this necessary risk represents a potentially important area of patient safety research. This focuses on transportation of critically ill patients by health professionals (paramedics, nurses, physicians and/or respiratory therapists) between hospitals (to receive higher levels of care) and within the hospital (for diagnostic or therapeutic procedures). Stabilization before transport, in the field or in the transferring hospital, and the mode of transferring patients from the field to specialized centers also present important research and policy questions ^[2].

Aim of the study

To analyses the risk factors for complications that usually occur during intrahospital transport and describes the role of nursing in intrahospital transport policies and to develop a protocol.

Need of the Study

Intrahospital transport involves a considerable threat to critically ill patients and also poses unique challenges to the transfer team. Bullard MJ *et al.* analysis on intrahospital transfer of patients that 357 were critically injured and 160 received adequate pre-transfer stabilization out of 1,056 patients ^[3]. Beckmann *et al.* in an analysis found that 39% of incidents were attributable to equipment problems and 61% to patient and staff management issues including incorrect setup of equipment during intrahospital transport ^[4]. Verma V, Singh GK *et al.* in India, found that significant lower glasgow coma scale, higher injury severity score and a longer duration of hospital stay had found in the transferred patients ^[5]. HE Stearley determine adverse outcomes like delayed administration of medications, significant changes in vital signs, dislodgment of artificial airways ^[6]. The adequate provision of qualified staff, specially designed and well maintained equipment, as well as continuous monitoring are essential for safe intrahospital transportation. Oncology, a specialized unit demands special care from the nurses, irrespective of the experience. Tata Medical Center cancer hospital deals with the caring of cancer patients and

it provides the prolonged care to the patients. Existing checklist doesn't include all the criteria so nursing staffs were facing various types of problems before, during or after transportation. This establishes the need of the present study that instead of current following checklist of intrahospital transport, an alternative standard protocol is required for proper documentation. Choi H K *et al.* used a designed transport checklist to reduce unexpected events significantly from a value of 36.8% in the pre intervention period to a value of 22.1% in the post intervention period. ⁽⁷⁾Renata da Silva, LN Amante, 2015 conducts a research study to develop a checklist, and concluded that the checklists have the potential to improve the safety and quality of care provided to patients ^[8].

Methodology

The study was done in Tata Medical Center, New Town, Rajarhat, Kolkata by using observational approach with Methodological design, conducted in two phase: In the first phase survey design was followed to collect the data. In the second phase, based on the study findings Intrahospital transport protocol was developed and validated by the experts. Variable under study is Research variable i.e Intrahospital transport protocol. The study was done upon 100 situation of intrahospital transportation accomplished by the staff nurses selected by Non- probability purposive sampling technique. Inclusion and exclusion criteria were set. Data collection tool contain Tool I related to demographic proforma, Tool II related to structured interview to assess the self-reported practice of staff nurses and Tool III related to observation checklist to find out the areas of deficiencies in practice. Interviewing and observation was used as data collection technique. Reliability testing was done, for tool I and II value is $r = 0.88$ and for tool III value is $r = 0.97$ and the result showed that tool is highly reliable. Pilot study was done on 10 intrahospital transport situation from 20 to 26th September, 2017. Findings of the pilot study revealed that it was feasible to conduct the study. Final data was collected from 1st Jan 2018 to 31st Jan 2018.

The staffs were explained about the purpose and an informed written consent was obtained prior any day of observation. Each participant staff has interviewed for demographic data. To assess the self reported practice of the staff nurses regarding the intrahospital transportation structured interview schedule was used. To assess the practice of every intrahospital transport situation the investigator followed the staff by shadowing and maintains a record of it in the observation checklist. Average 3 to 4 observation was done per day. After interviewing and observing, investigator analysis the result and find out the deficit areas in practice regarding intrahospital transportation. After analysis the results and after doing Review of different literature related to the criteria included in the intrahospital transport protocol or guideline or checklist {like guideline of College of Intensive Care Medicine of Australia and New Zealand (CICM) and checklist of Leiden University Medical Center (LUMC)} investigator developed the intrahospital transport protocol. The first draft of the intrahospital transport protocol along with the content was prepared. After development of protocol, investigator validates the intrahospital transport protocol from five experts of nursing administrator field. Modification as per Experts opinion and suggestion was done. The final draft of the intrahospital transport protocol was prepared.

Results

Section I: Description of Demographic variables: The study represented that maximum 27 (27%) staff nurses were in the age group of 23 years. Majorities (95%) were Female and only 5% were Male. Majorities 56% (56) staff nurses had 12- 24 months of professional work experience, majority 99% staff nurses had passed B.Sc Nursing degree as professional education, maximum (30%) staff nurses were working in O.T.

Section II: Frequency and percentage distribution of practice of staff nurses regarding intrahospital patient transportation.

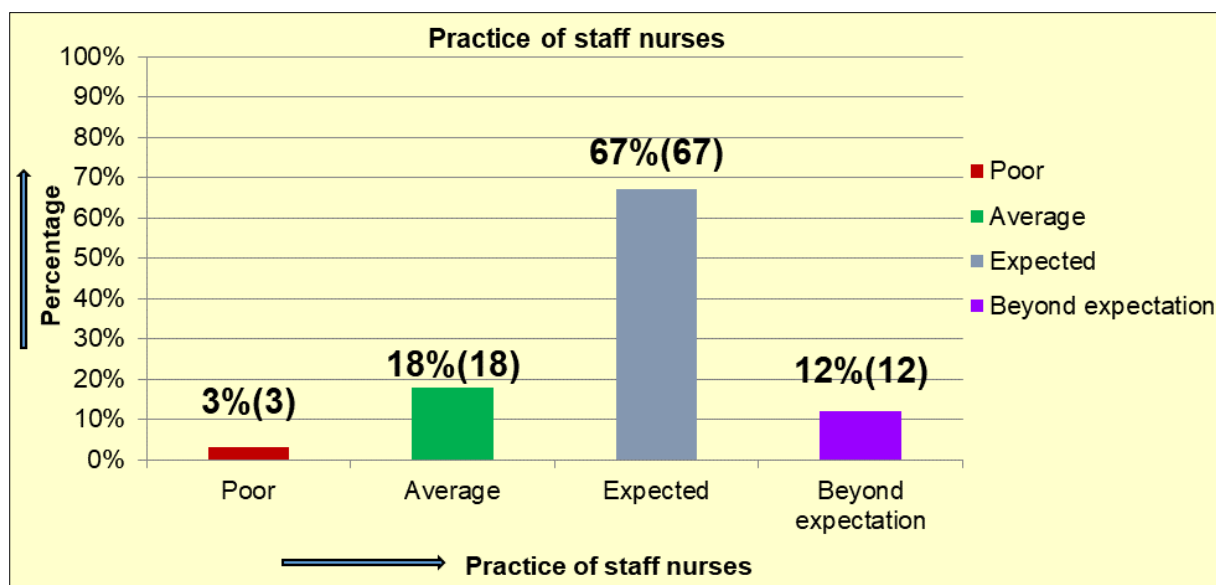


Fig 1: Cone diagram showed that majority 67(67%) staff nurses did the practice regarding intrahospital transportation at the expected level
n=100

Section III: Frequency and percentage distribution of the areas of deficiencies in practice for intrahospital patient transport.

Table 1: Table showing the frequency and percentage distribution of areas of deficiencies in practice for intrahospital patient transportation. n=100

Item title	Frequency (f) of areas of deficiency	Percentage of areas of deficiency
Recheck patient's ID band with patient file and confirmed after transportation	20	20%
Check patient ID band with patient file and confirmed before transportation	13	13%
Recheck back/pressure area and maintain documentation after transportation	8	8%
Record transfer in summary in nursing chart after transportation	8	8%
Patient relatives are informed before transportation	7	7%
Written order of transport is confirmed before transportation	6	6%
Apply all safety measures during transport (Side rails/ safety belts)	4	4%
Patient medications are gathered before transportation	3	3%
Take patient medications during transportation	2	2%
Check the working condition of the transporter before transportation	2	2%
Record and upgrade the intake output chart before transportation	2	2%
Record transfer out summary in nursing chart before transportation	1	1%
Check and record vital signs after transportation	1	1%
Signature done by handover given and handover taken staff nurse	1	1%

It interprets that out of 100 intrahospital transport situation, most of the deficit area in practice were during “Rechecking patient's ID band with patient file and confirmed after transportation (20%)”.

Table 2: Depicted that out of 97 intrahospital transport situation, 6.18% deficiency was found in actual practice during “Checking SpO₂ before transportation”. n=97

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
SpO ₂ checking before transportation	6	6.18%

Table 3: Depicted that out of 80 intrahospital transport situation, 12.5% deficiency was found in actual practice during “Checking all the require connector (SpO₂ probe, IV line, central line)”. n=80

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
Check all the require connector (SpO ₂ probe, IV line, central line) if required	10	12.5%

Table 4: depicted that out of 74 intrahospital transport situation, 2.71% deficiency was found in actual practice during “Checking sufficient intravenous medication and keeping extra intravenous fluid and medication ready before transportation”. n=74

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
Check sufficient intravenous medication if Required before transportation	2	2.71%
Extra intravenous fluid and medication kept ready if required before transportation	2	2.71%

Table 5: Depicted that out of 69 intrahospital transport situation, maximum (8.69%) deficiency was found in actual practice during “Checking sufficient oxygen level in oxygen cylinder” before transportation. n=69

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
Check sufficient oxygen level in oxygen cylinder if required before transportation	6	8.69%
Check surgical dressing site if applicable before transportation	4	5.79%

Table 6: Depicted that out of 58 intrahospital transport situation, 5.17% deficiency was found in actual practice during n=58 “Checking drain site before transportation”. n=55

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
Check drain site if applicable before transportation	3	5.17%

Table 7: Depicted that out of 55 intrahospital transport situation, maximum 5.46% deficiency was found in actual practice during “Rechecking tubes after transportation”. n=55

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
Check tubes if applicable before transportation	2	3.64%
Recheck tubes if required after transportation	3	5.46%

Table 8: Depicted that out of 53 intrahospital transport situation, 13.21% deficiency was found in actual practice during “Rechecking central venous catheter: insertion site, insertion date, patency and placement after transportation”. n=53

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
Re check central venous catheter: Insertion site, insertion date, patency and placement if applicable after transportation	7	13.21%

Table 9: depicted that out of 51 intrahospital transport situation, maximum 25.49% deficiency was found in actual practice during “Rechecking epidural catheter placement: insertion site, insertion date, patency and placement after transportation”. n=51

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
Check epidural catheter placement: insertion site, insertion date, patency and placement if applicable after transportation	1	1.97%
Recheck epidural catheter placement: insertion site, insertion date, patency and placement if applicable after transportation	13	25.49%

Table 10: depicted that out of 32 intrahospital transport situation, 12.5% deficiency was found in actual practice during “Rechecking arterial line/ femoral line: insertion site, insertion date, patency and placement after transportation”. n=32

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
Recheck arterial line/ femoral line: insertion site, insertion date, patency and placement if applicable after transportation	4	12.5%

Table 11: depicted that out of 28 intrahospital transport situation, 21.43% deficiency was found in actual practice during “Rechecking peripheral venous catheter: insertion site, insertion date, patency and placement after transportation”. n=28

Item title	Frequency (n) of areas of deficiency	Percentage (%) of areas of deficiency
Recheck peripheral venous catheter: insertion site, insertion date, patency and placement if Applicable after transportation	6	21.43%

Section IV: Description of the developed “Intrahospital transport protocol”.

Protocol was developed in the form of SOP (Standard operating procedures). Protocol was divided in three sections: Procedure before transport, during transport and post transport. It contains 109 items out of which 63 items to be followed before transportation, 9 items during transportation and 16 items after transportation.

Section V: Description of percentage of agreement given by the experts for Intrahospital Transport Protocol.

After development of protocol, it was validated by five experts from nursing administrator field. It was found that out of 109 items, only 3 items had 80% agreement and 106 items had 100% agreement. So, overall Agreement of protocol was calculated as 99.44% for all the items. Minor modification was made in the protocol in consultation with the advisors, incorporating the suggestions given by the experts.

Discussion

Study result showed that 67% staff nurses did the practice regarding intrahospital transportation at the expected level, with following areas of deficiencies in practice: Taking patient medications during transportation, Checking and recording vital signs after transportation, Spo₂ checking before transportation, Checking all the require connector, Checking and setting monitor alarms if required, Checking sufficient oxygen level in oxygen cylinder, Checking drain site, checking lines : insertion site, insertion date, patency and placement before or after transport. Fatemeh Habibzadeh *et al.* in a study concluded that 52% of them had desirable quality of intra-hospital transfers after attending the workshop [9]. Ashish K, J Singh, depicted that

complications occur during transport were: Pulmonary and airway complications and guidelines include elements for safe transfer of patients like: decision to transfer by the physician, proper communication, pre-transfer stabilization, choosing the appropriate mode of transfer, documentation and handover of the patient at the receiving facility [10]. Harish MM, *et al.* had done a research study that showed the adverse changes occurs due to accidental dislodgement of lines and drains, improper assessment before, during or after transport, unfavourable changes in vital parameters [11]. Patrick H Knight, *et al.* includes complications like oxygen probe displacement, loss of intravenous access, monitor power failure, disconnection of medication infusion [12]. “Society of Critical Care Medicine and the American Association of Critical-Care Nurses” published a study on Guidelines for the transfer of critically ill patients that includes pre transport coordination and communication, transport equipment, accompanying personnel, monitoring during the transport, and documentation [13]. Jonathan Warren, *et al.* in a study developed a practice guidelines for the intrahospital transportation of critically ill patient that contain a) pre transport coordination and communication; b) transport personnel and equipment; c) monitoring during transport d) documentation [14].

Conclusion

Intrahospital transport protocol is a well-defined set of rules of instructions to be followed for intrahospital transportation (both during receiving and transferring) by the staff nurses. The study adopted was observational study. The population of the study was the intrahospital transportation performed by staff nurses working at Tata Medical Center. The tools selected for the study was demographic proforma, interview schedule and an observational checklist. The data analysis

was made based on the objectives and analyzed in terms of descriptive statistics. Analysis and interpretation of total hundred intrahospital transport situation done. Descriptive statistic was used for analysis. Different graphs were used to describe the percentage distribution of demographic characteristics of the staff nurses performing intrahospital transport situation. Frequency and percentage distribution of practice of staff nurses regarding intrahospital patient transportation was described by using cone diagram. Majority (67%) of the staff nurses had practice at the expected level. The most (25.49%) neglected area during intrahospital transportation was “rechecking epidural catheter placement after transportation”. Based on the findings “Intrahospital transport protocol” was developed. Other researchers conducting further studies in the same field could utilize the suggestions and recommendations of the present study.

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