

# LOCAL AUDIT OF PRACTICES OF NG FEEDING IN ACCORDANCE TO THE NICE-NUTRITIONAL SUPPORT GUIDELINES 2006 & BSG 2003

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## INTRODUCTION

Malnutrition is a state in which a shortage of nutrients such as energy, protein, vitamins & minerals cause quantifiable hostile effects on body structures, effect the routines in the body and hence the medical outcome. Malnutrition can occur due to any acute or chronic illness and can also result in complications. When we perform actions to improve this condition, it is called Nutritional Support. This support can be done orally, through feeding tube called enteral (NG feeding / PEG) and also intravenously called as parenteral. Any methodology selected can improve health, but what is safest for a patient, depends on individual needs and co morbidities, which can be complex. <sup>1</sup>

Doctors, nurses and paramedical staff involved in care of such patients should know the correct method through proper training, which is very important. Without training, effort can rather create more complications. If oral feed is not possible, one of the safest is NG feeding. Nasogastric (NG) tube feeding has been common practice in all age groups, from neonates to older people, for years. It is helpful in providing needs of patients on daily basis, and hence support patient to overcome their illness. The quantity given by this rout can also vary from small to large. When appropriately done, it is associated with reduced hospital stay, reduced mortality, lower costs & few complications as compared to any other route of feeding. Usual way is to use it intermittently, and feed is given and stopped at regular intervals, called as standard method. <sup>2</sup>

Thousands of NG feeding tubes are inserted daily without complication. However, there is a risk that they can be wrongly placed in the lungs during the procedure, or can move away from stomach at a later stage. NG feeding can also cause other complications like local erosion, infection, aspiration, Gastrointestinal intolerance, gastroparesis and rarely re-feeding syndrome.<sup>3</sup> All healthcare professionals should know standard protocol for NG feeding to provide good quality nutritional care to patients and most importantly,

reduce complications due to NG tube insertion and its function.<sup>4</sup> This audit was conducted to find out if standard guidelines were implemented in our hospital, identify short comings and make Standard Operating Procedure for improvement.

## OBJECTIVES

To compare practice of NG feeding in our hospital with standard protocols & suggest improvements.

## AIM

1. To promote a clear, consistent and evidenced based approach to the placement, care and management of nasogastric tubes.
2. To promote the safety and well-being of all patients who require a nasogastric tube.

## SAMPLE

Health care professionals (staff nurses, House Officers , Medical Officers, Post graduate Trainees) working in Ward, ICU & HDU of LGH during the month of June 2015, were recruited to participate in this study.

## DATA SOURCE

Performa based

## AUDIT TYPE

Health care professionals Survey

## METHODOLOGY

Local Audit was done in Medical Ward, ICU, & HDU of Lahore General Hospital under supervision of the consultant working in the department. A Performa was designed according to the guidelines provided by NICE (2006) and BSG (2008). All care was taken in development of Performa according to the objectives of the audit. Permission was taken from the Ethical Committee of the Lahore General Hospital. After finalization, Performa were duplicated and handed over to all the health care professionals working in their

relevant wards during the month of June 2015. Help was available to them throughout the process of filling the form, after properly explaining the purpose. It was filled on the spot by majority except few, who were busy at that time and filled in isolation. It was ensured that these health care professionals had received briefing on filling the Performa, before leaving forms with them. All filled forms were properly scrutinized. Duplication by any professional was disregarded. Data was analyzed using the SPSS software 15, and report writing was done.

**FINDINGS**

Standard: All Health care professionals should follow standard guidelines to provide safe enteral nutritional support. The findings were grouped in as

- Compliance:
- Non – Compliance:

**OBSERVATIONS**

On the basis of results, observations were made. They were identified again as

- Areas of good practice
- Areas for improvement

**RESULTS**

**Demographic Characteristics of Participants**

The survey was carried out in June 2015. This study included 51 participants, of which 19(37.3%) were males & 32(62.7%) females, with the mean age of 27year. 16(31.4%) were postgraduate residents, 10(19.6%) were house officers, and 25(49.0%) were nursing staff. 14(27.5%) of them worked in ICU, 7(13.7%) in HDU & 30(58.8%) in ward. (Table 1)

**Ethical & Legal Consideration**

Consent should be taken before insertion and start of NG feeding. In this study, 39(76.5%) out of 51 participants, took informed consent before insertion and starting NG feeding. Our 22(43.1%) participants document proper NG feeding notes.(Table 2)

**NG Tube Placement**

Almost all of our participants, 50(98.0%) checked position of NG tube, after its placement. However, all used whoosh test (air insufflation & auscultation with stethoscope at epigastrium). 7(13.7%) also used pH measurement, and 6(11.8%) performed X-ray. (Table 3)

**Daily Assessment of NG Tube**

47(92.2%) of our participants daily assessed NG tube functioning. 25(49.0%) of them looked for local erosion, 41(80.4%) for patency, 37(72.5%) for fixation

and 31(60.8%) of them daily checked position of NG tube in stomach. (Table 4)

**NG Tube Feeding Care**

49(96.1%) of our participants were doing good practice of NG feeding by maintaining 30-45° of position during feeding, and 42(82.4%) maintained this position for 30minutes after feeding. To maintain patency of NG tube, 45(88.2%) out of 51 participants washed NG tube before & after NG feeding.

Checking residual volume is an important tool to find gastro paresis. Out of 51, 21(41.2%) checked residual volume before every feed and 26(51.0%) practiced adding pro-kinetic in case when residual volume is more than 200ml. (Table 5)

**COMPLICATIONS**

NG tube feeding is associated with some complications which are related to its insertion, post insertion trauma, displacement, reflux, GI intolerance and metabolic derangement. Almost all participants in our study, observed complications related to NG feeding (98%). Participants who observed aspiration were 44(86.3%). Mucosal ulceration 25(49.0%), infection 21(41.2%), re-feeding syndrome 14(27.5%), GI intolerance 21(41.2%) and abdominal distention 21(41.2%). (Table 6)

**FOLLOW-UP**

31(60.8%) participants assessed NG tube function, when patients came in outdoor for follow-up. (Table 7)

**Table 1:**

DEMOGRAPHIC CHARACTERISTICS			
characteristics		Frequency	Percentage
Age group	20-25	8	15.7
	26-30	33	64.7
	31-35	10	19.6
Gender	Male	19	37.3
	female	32	62.7
Workplace	Ward	30	58.8
	ICU	14	27.5
	HDU	7	13.7
Designation	PGR	16	31.4
	HO	10	19.6
	Nurse	25	49.0

**Table 2:**

CONSENT & DOCUMENTATION			
		frequency	Percentage
Consent	Yes	50	98.0
	No	1	2.0
Documentation	Yes	22	43.1
	No	29	56.9

**Table 3:**

<b>Confirm NG placement</b>			
		frequency	Percentage
Confirmation	yes	50	98.0
	no	1	2.0
pH	Yes	7	13.7
	No	44	86.3
Whoosh test	Yes	50	98.0
	No	1	2.0
X-ray	Yes	6	11.8
	no	45	88.2

**Table 4:**

<b>DAILY ASSESMENT OF NG TUBE FUNCTIONING</b>			
		frequency	Percentage
Daily assessment	Yes	47	92.2
	No	4	7.8
Erosion	Yes	25	49.0
	No	26	51.0
Patency	Yes	41	80.4
	No	10	19.6
Fixation	Yes	37	72.5
	No	14	27.5
Intragastric	Yes	31	60.8
	No	20	39.2

**Table 5:**

<b>How to feed through NG tube</b>			
		frequency	Percentage
Feeding position	Yes	49	96.1
	No	2	3.9
Post-feeding position	Yes	42	82.4
	No	9	17.6
NG washing	Yes	45	88.2
	No	6	11.8
RV check	Yes	21	41.2
	No	30	58.8
Add Pro-kinetic	Yes	26	51.0
	no	25	49.0

**Table 6:**

<b>COMPLICATIONS</b>			
		frequency	Percentage
Observed	Yes	50	98.0
	No	1	2.0
Aspiration	Yes	44	86.3
	No	7	13.7
Mucosal ulceration	Yes	25	49.0
	No	26	51.0
Infection	Yes	21	41.2

	No	30	58.8
Refeeding syndrome	Yes	14	27.5
	No	37	72.5
GI intolerance	yes	21	41.2
	No	30	58.8
Abdominal distention	Yes	21	41.2
	No	30	58.8

**Table 7:**

<b>FOLLOW UP ASSESSMENT</b>			
		Frequency	Percentage
Follow-up	Yes	31	60.8
	No	20	39.2

## DISCUSSION

This study was aimed to compare nutrition practice in our population with that of NICE and BSG guidelines and determined the best achievable nutrition practices across participating sites. We observed that there were large gaps between guideline recommendations and current practice. As a result of poor compliance and variation in practices, the nutritional status of the patients was compromised.<sup>5</sup>

An important part of any medical treatment is consent. It was routinely ignored in our practice. There was enormous disparity in observation of consent. Majority of participants said they took informed and verbal consent before NG insertion and start of feeding. When files were reviewed, it was not documented. According to BSG guidelines, consent is ethical and legal right of patient and it must be taken before insertion<sup>6</sup>

Clinical practice for verification of placement of large bore feeding tube is variable. In our study majority of medical staff reported that they confirmed tube placement by air insufflation and auscultation over epigastrium (Whoosh Test), which is unreliable according to literature.<sup>7</sup> This finding matches with an audit on Enteral nutrition practices in the intensive care unit performed in India by Babita Gupta, Pramendra Agrawal, Kapil D Soni.<sup>9</sup> However, it is inconsistent with finding of the observational study performed by Chan EY, Ng IH, Tan S in tertiary hospital of Singapore.<sup>7</sup> According to them, pH testing was most common method of checking tube placement in their hospital, which was consistent with BSG and NICE guidelines. The second and third self-reported methods were auscultation and the bubble test (Whoosh Test) in this study. Few chose radiography to confirm tube placement. Our observations mismatched with the first preferred method but were similar to the second and third method. Another audit was done by M Moore and

R Thomson in NHS trust, London.<sup>13</sup> According to them, tube placement was confirmed by X-ray (72%) and pH of aspirates (35%). Methodology used by majority in our audit is different from them. Our audit was also inconsistent with a study performed in university of Malawi, by C Mula, B Ncama, A Maluwa<sup>15</sup> which used water bubbling method. This method was not documented in any guideline. NICE and BSG guidelines recommend use of pH measurement of aspirate. However, x-ray remains the gold standard for confirming placement.<sup>8</sup>

NG tube care requires daily monitoring for its function like patency, local area of infection & ulcer, its position in stomach. These parameters were usually overlooked in our daily practice and could be the reason for inadequate NG feeding, with increased rate of complications of enteral nutrition. NICE recommends NG tube position in stomach should be checked before every feed, and it should be assessed daily for local erosion, patency & fixation.<sup>5</sup>

Important finding of the study was the observation that nurses placed patients in semi fowler/sitting position during tube feeding and washed NG tube before and after every feed. This finding was in line with different studies and current guidelines which stated that the head of the bed should be elevated at 30 degrees during intermittent feeds & maintained for 30minutes to minimize aspiration, and NG tube flushing before & after every feed.<sup>6,10,15</sup>

Our Medical staff did not aspirate patient's gastric residual volume. Therefore the feeding schedule remained unchanged. These results were consistent with findings from a review study conducted in Malawi.<sup>15</sup> Motility agent was added in our study by small percentage. Reason was not pure enhancement in gastric motility, but some other motives. This was inconsistent with a study performed in university of Oklahoma by Ahmad S & Le V which showed 89% of nurses terminated feeding at volumes <300 mL and 3% at volumes >400 ml to prevent complication.<sup>11</sup> NICE guidelines state measuring gastric residual volumes before giving the next tube feed and add pro-kinetic agent if gastric residual volume is more than 200ml.<sup>5,6</sup>

The majority of nurses reported that they document their feeding practices. However, this was not evident when the case files were reviewed. Many of the tube feeding aspects of care were not documented. These findings are consistent with a study conducted in Malawi, who found that important nutritional parameters were not documented by registered nurses.<sup>15</sup> Problem could be in the documentation tool being used, shortage of time or HCP's neglecting the documentation. Current guidelines recommend

document NG tube insertion, its position & fixation, daily feeding notes, about RV, observed complications etc.<sup>5</sup>

Major complications observed in our study from most likely to least were aspiration, mucosal ulceration, infection, re-feeding syndrome, GI intolerance or diarrhea and abdominal distention. When we compared it to study by Pancorbo-Hidalgo PL1 et al, results in descending order were tube dislodgement, electrolytic alterations, hyperglycemia, diarrhea, constipation, vomiting, tube clogging and lung aspiration.<sup>14</sup> The exact reason for this difference is unknown. However it seems like poor knowledge about complications was also one of the important factor in practice of NG feeding.

According to BSG when patient on NG tube feeding is discharged in community, care must be taken to ensure all community carers, district nurses and local general practitioners are fully informed and that continuing prescription of feed and relevant equipment is in place.<sup>6</sup> This practice is non-existent in our setup, due to lack of proper organization. Relatives are fully informed before discharge. It becomes more important to assess NG tube function at follow up, which was routinely overlooked due to busy outdoor.

## CAVEAT

- This is a local study, as the participants were from one hospital only, therefore the findings may not be generalized to other settings.
- Observation of tube feeding practice would be the most objective method to determine actual practice, but this was not feasible for the researcher due to time limitation.
- Incomplete documentation and missing data in case notes can result in bias which can affect the results.

## RECOMMENDATIONS

- Informed verbal and written consent should be taken before insertion & starting NG tube feeding.
- Position of NG tube after its placement should be checked by pH measurement, if non-conclusive then X-ray is mandatory. Performing Whoosh test is the minimal standard.
- NG tube function should be assessed daily for example its position in stomach, local erosion or infection and patency.
- NG feeding should be in semi-recumbent position (30-45<sup>0</sup>) and this position should be maintained for 30 minutes post-feeding.
- NG tube should be flushed before & after every feed and drug administration with water.

- Residual volume should be checked before every feed. If it is more than 200ml then add pro-kinetic agent to improve gastric motility.
- Proper documentation is mandatory, about all aspects of NG feeding.
- Complications related to NG feeding should be sorted early. Adequate management should be started to prevent further hazards.
- At follow-up, NG tube function must be assessed.

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