16th April 2020

Duncan Selbie, CEO
Public Health England
Wellington House
133-155, Wellington Road
London SE1 8UG

Dear Mr Selbie,

Re: Nasogastric (NGT)/nasojejunal tube (NJT) placement and aerosol generation (AGP)

BAPEN has been reviewing the evidence base for WHO/PHE assertion that nasogastric tube (NGT) placement is non-aerosol generating (non-AGP). With other professional groups working independently, we have come to the conclusion that NGT is AGP, particularly apropos the present Covid-19 pandemic crisis.

We would like to set out our case that the designation of NGT as non-AGP should be changed forthwith.

In accordance with NICE guideline 032, Revised 2017, enteral tube feeding should be considered and offered to patients unable to eat or drink for more than 4 days. Many such patients with Covid-19 pneumonia and other complications come into this time frame as they pass through Critical Care or Intensive Care units, particularly if they require non-invasive ventilation (NIV – BiPAP or CPAP) or invasive ventilation. To pass a NGT or NJT under such circumstances in such environments presents significant risk to the nurses, dietitians or doctors so doing.

For many years, the risk of transmission of SARS like viruses through particulate effluent from patients has been divided into 2 categories – droplets with a size of 10 microns, or aerosols with particle size 5 microns. Droplets were assumed to have range of 1-2 metres whereas aerosols could reach much greater distances and volumes for longer periods, up to hours. This arbitrary division according to particle size has come under criticism recently. The provision of personal protection equipment (PPE) depends on the particle size pertaining to individual procedures.

The designation of NGT as NON-AGP dates back to a PHE document in 2007, and studies following the SARS pandemic in 2003. The most quoted paper by Tran et al, 2012 was used by WHO to rationalise its recommendations including NGT as a NON-AGP. This evidence is now quoted as the source of PHE recommendations using a review by Health Protection Scotland in the PHE online PPE recommendations, 2020.

The review by Tran and colleagues from Canada and Switzerland in 2012 refers to only 2 studies of NGT risk of SARS transmission.

In the first paper, published 2004 (Loeb et al), following a SARS outbreak in Toronto, Canada, 43 intensive care nurses were studied (but only 32 were exposed in infected patients rooms and only 8 became infected) for risk of transmission of SARS by various procedures. A risk ratio of 1.7 (0.2 – 11.5 confidence limits) indicating increased risk was found. Tran's paper 2012, describes the quality of this study as "Very Low". In fact, close perusal of Loeb's actual paper reveals that the risk factor was only 1.44 and not statistically significant. Furthermore, the statistics were performed on 2/6 nurses infected after exposure to NGT insertion and 6/26 unexposed. There is no mention of how this translates to generation of risk from aerosol and those nurses could have been infected from other sources too. Indeed, the authors quote in their summary "The 11 nurses in our study who did not enter a SARS patient's room did not become infected. This finding, along with the finding that respiratory care activities pose high risk, implicates either droplet or limited aerosol generation as a means of transmission to healthcare workers". It is only by extrapolation from the type of PPE used that any possible guess can be made as to whether droplets or aerosols were the vectors of transmission. They go on to conclude "We acknowledge that the study cohort was small, and this limits inferences that can be made". In the opinion of BAPEN, this study cannot be used to justify NGT as non-AGP.

The second study, by Raboud et al, 2010, also looked at the risks of transmission from 45 infected patients during the 2003 SARS outbreak in 624 healthcare workers. Using multivariant analysis, they found no significant increased risk from NGT insertion. Tran interpreted their data as giving a risk ratio of 1.0 (0.2 – 4.5) indicating no extra risk from NGT insertion. Again, no direct evidence of infection by aerosol or droplet is given. Tran again categorised the quality this study as "Very Low".

Tran went on to pool the data from these 2 studies and reached the conclusion that there was no increased risk from NGT insertion. Thus the assertion by WHO, HPS and PHE that NGT is NON-AGP is based upon 2 very low quality papers reviewed in a single 2012 paper. This evidence is inadequate for purpose in the opinion of BAPEN and this is confirmed by statements in the HPS document below.

Turning now to the Health Protection Scotland (HPS) document on which PHE guidance is founded. We find that NHSE (and NHS Wales & Scotland) guidance 2007 was based on WHO guidance at the time. This was updated in 2014. The WHO guidance 2014 has in turn been used to justify present PHE guidance. Both WHO and the latest PHE guidance are based on the single paper by Tran et al, 2012 already discussed above. Procedures are ranked according to descending risk of transmission according to Tran et al, 2012. The HPS paper goes on to state "Given the extremely limited volume and quality of studies available, this hierarchy should be used for academic purposes only and not for clinical decision making".

The HPS paper goes on to state

"In the systematic review completed by Tran and colleagues in 2014, endotracheal aspiration, nebuliser treatment, administration of oxygen (including high flow oxygen), defibrillation, chest compressions***, insertion of nasogastric tube***, and collection of sputum were not found to be significantly associated with an increased risk of transmission of SARS. That said, some of these procedures are considered to have a theoretical risk of aerosolisation, and therefore are listed as AGPs based on consensus of expert opinion, specifically, induction of sputum.

Induction of sputum typically involves the administration of nebulised saline to moisten and loosen respiratory secretions (this may be accompanied by chest physiotherapy (percussion and vibration)) to induce forceful coughing, this may create conditions for aerosol generation as described by WHO (2014)".

and….

“Although there is an absence of strong evidence to support some of the procedures listed as AGPs in this document this does not mean that there is an absence of risk. A precautionary approach should be taken for all AGPs specified as potentially capable of generating infectious aerosols from patients suspected or known to have respiratory infections”.

As we have seen from examination of the review by Tran et al, 2012, this not only uses very low quality studies, it has formed the only basis for WHO and NHSE guidance from 2014 to the present time. We contend that this evidence is so poor as to offer no useful scientific evidence for NGT as a NON-AGP. At best, the evidence is no more than speculative.

Using sputum induction as an example of AGP, this implies that coughing is an AGP. Since insertion of an NGT frequently induces coughing or sneezing, it should be considered as an AGP. Covid-19 patients have cough as an index symptom so can be expected to cough during the procedure even if the tube does not itself induce a cough.

Even if there is no cough induced by NGT insertion in Covid-19 patients receiving invasive ventilation with sedation, the presence of aerosol in the surrounding environment from other AGPs and other patients (for example in the new Nightingale Hospitals) poses a risk of transmission. Precautions against aerosol transmission must be taken for any procedure involving close proximity to a patient’s face - well within 1 -2 metres in the case of NGT insertion.

An identical situation has occurred with upper gastrointestinal endoscopy. The BSG made representations to NHSE to the effect that such procedures should be redesignated as AGP. This has proved successful. Nasendoscopy has also been redesignated as AGP.

NGT insertion is now officially regarded as AGP by the following relevant expert professional bodies:

BAPEN (British Association for Parenteral and Enteral Nutrition): https://www.bapen.org.uk/pdfs/covid-19/covid-19-and-enteral-tube-feeding-safety-revised-11-04-20.pdf and https://www.bapen.org.uk/pdfs/covid-19/ngt-and-agp-and-ppe.pdf

BDA (British Dietetic Association): https://www.bda.uk.com/resource/covid-19-coronavirus.html

NNNG (National Nutrition Nurse Group): https://www.bapen.org.uk/pdfs/covid-19/covid-nnng-document-updated-12-04-20.pdf

RCN (Royal College of Nursing): unpublished but endorsing this letter.

Updated Intercollegiate General Surgery Guidance: on COVID-19 27th March 2020 https://news.rcpsg.ac.uk/wp-content/uploads/2020/03/Updated-Intercollegiate-General-Surgery-Guidance-on-COVID-19-Amended-27-March-2020.pdf

ASPEN (American Society for Parenteral and Enteral Nutrition): https://www.nutritioncare.org/uploadedFiles/Documents/Guidelines_and_Clinical_Resources/Nutrition%20Therapy%20COVID-19_SCCM-ASPEN.pdf

The decision by BAPEN to dissent from PHE/NHSE guidance is based on clinical experience of insertion NGTs under adverse conditions such as those prevailing now. It is widely known that insertion of an NGT induces a cough or sneeze in many patients and that this could generate both droplets and aerosols within the range of 1-2 metres required for proximity to the patient during NGT insertion.

The presence of aerosol generated by other procedures on the same patient or adjacent patients on the same ward is further reason. The rejection by Health Protection Scotland of the very evidence base used in the latest PHE guidance must surely render that guidance invalid. Our position on this subject has been published in links above.

We respectfully suggest that PHE should change its guidance to reflect the decisions of the professional bodies representing those who have to insert NGT/NJTs during the Covid-19 crisis.

This letter has been formally endorsed by the **Royal College of Nursing** and the **British Dietetic Association.**

Signed:

Dr Trevor Smith
President BAPEN

Dr Barry Jones
Chair BAPEN Independent Advisory Committee

References

Tran K, Cimon K, Severn M, et al. Aerosol generating procedures (AGP) and risk of transmission of acute respiratory diseases (ARD): A systematic review. PloS One 2012; 7. Conference Abstract.

Loeb M, McGeer A, Henry B, Ofner M, Rose D, et al. (2004) SARS among critical care nurses, Toronto. Emerg Infect Dis 10: 251–255.

Raboud J, Shigayeva A, McGeer A, Bontovics E, Chapman M, et al. (2010) Risk factors for SARS transmission from patients requiring intubation: a multicentre investigation in Toronto, Canada. PLoS ONE 5:e10717. Available: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2873403/pdf/pone.0010717.pdf Accessed 2010 Nov 26.

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