distance and effective thyroid depth on RAIU rate with experimental tests. **Materials and Methods** $^{131}$I 370 kBq point source was measured by Captus-3000 thyroid uptake system with a change detector-source distance from 20 cm to 30 cm at an interval of 1 cm. And we changed the neck surface-source depth with 1 cm, 2 cm, 5 cm using the neck phantom in order to reproduce the effective thyroid depth. **Results** Every experimental group follows power curve as inverse square curve ($R^2$≧0.915). The average count rates between the case of not using a phantom and every case of applied the effective thyroid depth 1 cm using a phantom in every energy ROI were significantly different ($p$=0.00). There were significant fluctuations of count rates applied the effective thyroid depth above 1 cm in 364.4 keV±10% energy ROI ($p$=0.000). But there were not significant differences between 1 cm and 2 cm in 364.4 keV±20% and 637.1 keV±6.2% ($p$=0.354, $p$=0.397). In assumed RAIU rate, 364.4 keV±20% was lower difference than 364.4 keV±10% as 6.42% and 5.09% per 1 cm. Every change of count rate upon depth appears decreased line on Linear Regression, but the case of 284.3 keV±10% increased only. And also, the graphs of coefficient of variation increased as for the straight line on every experimental group when distance increase. **Conclusion** In this study, we demonstrated that measurement errors can increase when radioactive iodine thyroid uptake rate increase, effective thyroid depth deepen, detector-thyroid distance shorten, and set up inappropriate energy ROIs. It seems that checking the patient's thyroid depth with sonographic images or CT images before administration radioactive iodine and applying appropriate distance or neck phantom depth when measure standard count before administration in accordance with thyroid depth reduce errors of RAIU rate effectively. And also, it is thought that the error from thyroid depth can reduce through applying correction factor as thyroid depth, set up 364.4 keV±20% energy ROIs.

## TP041

### Practices in radiopharmacy: Is the use of a breathing needle a concern on the radiochemical purity of $^{99m}$Tc-radiopharmaceuticals?

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**Aim:** The action of collecting the patient's individual doses isn't subjected to any followed protocol, unlike most practices in the Nuclear Medicine department. In certain departments, the individual doses are withdrawn by perforating the rubber septum at every dose while others choose to keep a needle in the *kit* to avoid multiple perforations. Radiochemical purity is typically the primary concern for $^{99m}$Tc-radiopharmaceuticals so the potential presence of impurities will affect the radiochemical stability of the radiopharmaceutical and, after being injected to a patient, result in an altered biodistribution and poor image quality. Therefore, it's important to verify every practice used on the product, which results in a need to learn if the needle kept in the *kit* at some departments is affecting the radiopharmaceutical's stability. It is aimed to disseminate the results obtained on a large study performed to evaluate whether there is any correlation between keeping the needle in the *kit,* during the clinical practice and during the stability period of two different radiopharmaceuticals. **Material and Methods:** Two commonly used $^{99m}$Tc-radiopharmaceuticals, $^{99m}$Tc-Tetrofosmin (n=20) and $^{99m}$Tc-HDP (n=20), were included. The radiopharmaceuticals were prepared strictly according to manufacturer's instructions. All preparations were stored at room temperature. To assess the radiochemical stability, the reference sample was withdrawn directly from the vial, immediately after radiolabelling, and subsequent aliquots were tested for each time-point predefined (1h, 3h and 6h after radiolabelling). Radiochemical purity was assessed by thin-layer chromatography, according to manufacturer's or EU Pharmacopeia instructions. Student's t-Test was used to evaluate differences between means for each hour. **Results:** At 0h, the results were identical since the labeling was performed similarly in both situations. However, at 6h, a variation of 1,32% and 0,61% is seen on the radiochemical purity, for $^{99m}$Tc-HDP and $^{99m}$Tc-Tetrofosmin, respectively, with the smaller values obtained when a needle is kept in the *kit*. Still at 6h, the free pertecnetate values differ 0,20% and 0,20% and the $^{99m}$Tc-colloid impurities values present variations of 1,12% and 0,42%, for $^{99m}$Tc-HDP and $^{99m}$Tc-Tetrofosmin, respectively, being higher when the needle is kept in the *kit*. **Conclusion:** Results demonstrate that a higher percentage of $^{99m}$Tc-radiopharmaceuticals is obtained when the needle isn't kept in the *kit*. This can have a positive impact on subsequent clinical images, due to a highest concentration of radioactivity in the target organs.

## TP042

### A New Approach of Tc-99m Sestamibi Resting Early and Delayed Myocardial Perfusion images in Patients with Vasospastic Angina Pectoris

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**Aim:** Previous study have suggested that Tc-99m sestamibi(MIBI) shows very slow washout from the heart after its initial uptake, which is related to mitochondrial function.On he other hand, some investigators have reported that reverse redistribution(washout) of MIBI was observed in patients with acute myocardial infarction after PCI, dilated cardiomyopathy, and hypertrophic cardiomyopathy. However, the clinical usefulness of myocardial MIBI washout was not established yet. The purpose of this study was to investigate whether the myocardial washout of MIBI is thought to be a tool for the evaluation of vasospastic angina pectoris(VSA). **Meterials and Methods**: This study was performed on 14 patients with VSA(9 men and 5 women, mean age, 69.9±10 years) and 5 normal subjects(2 men and 3 women, mean age, 34.6±9 years). We also performed coronary vasospasm induced test with acetylcholine or ergonovine in all patients. The resting MIBI SPECT myocardial perfusion imaging was obtained 1 hour(early image) and 6 hours(delayed image) after 600 MBq of MIBI injection. We divided the patients in two groups: Group A(9 patients; coronary spasm induced test(+)) and group B(5 patients; coronary spasm induced test(-)). We calculated global myocardial MIBI washout rate from the early and delayed images in all subjects. **Results:** The global myocardial MIBI washout rate was significantly lower in group A(25.0±7.8) than in group B(33.9±9.0, p=0.04) and in normal subjects(34.1±6.2, p=0.02) respectively. These results indicate that the myocardial MIBI washout in gruop A patients aws almost done on the early imaging phase(1 hour after MIBI injection). **Conclusion**: This approach may provide a useful information on the evaluation for the patient management of VSA. Further studies are needed to obtain the early image within 1 hour after MIBI injection.

## TP043

### Evaluation of different strategies for reduction of extra cardiac activity in myocardial perfusion imaging

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**Aim** In technetium (Tc)-99m myocardial perfusion imaging (MPI), abdominal activity often interferes with the evaluation of the perfusion of the inferior wall. Increased abdominal activity necessitates repeated imaging of some patients and may reduce the diagnostic accuracy of MPI. The aim of the study was to compare the efficacy of consuming a sausage roll versus our conventional preparation in reducing infra-cardiac activity. In this study we examined the effect of sausage roll, chocolate bar versus (chocolate)milk upon the image quality of MPI studies. **Methods** Data of 1804 consecutive MPI studies in Institute Verbeeten were prospectively collected. This includes all studies with exercise, adenosine and rest. Patients consumed a sausage roll, (chocolate)milk or a chocolate bar prior to SPECT imaging. The frequency of intestinal activity adjacent to the inferior myocardial wall resulting in the need for a repeated scan, was evaluated by observers on SPECT images. **Results** The frequency of a poor quality scan due tot abdominal activity in the sausage roll group was 7.2% (43/597); in the chocolate bar group 7.7% (54/700); vs. 5.3% in the (chocolate)milk group (27/507). There was no significant difference between the three groups. In the subgroup of patients undergoing exercise there was no need to rescan due to adequate image quality. **Conclusion** This study shows no significant improvement of infra-cardiac activity in MPI using sausage roll, in comparison to our conventional schedule (chocolate bar or (chocolate)milk). During exercise abdominal activity is a far less frequent problem, and in this respect is the preferred modality.

## TP044

### How to increase the distance between myocardia and subdiaphragmatic $^{82}$Rubidium uptake in PET

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**Aim** High gastric activites are often seen in $^{82}$Rb myocardial Positron Emission Tomography (PET) scans. These subdiaphragmal activites may interfere with the myocardium and could mask out true defects. Studies have shown oral uptake of sparklingwater ten minutes prior to scanstart may increase the cardio-subdiphragmal distance when performing $^{99}$mTc SPECT (Single-photon emission tomography) scans(1). The aim of this study was to investigate if the distance between myocardia and subdiaphragmatic organs would increase after an oral uptake of 300 ml sparkelingwater in $^{82}$Rb PET scans. **Methods** In this study 72 patients were analyzed for evaluation of myocardial blood-flow using $^{82}$Rb. The patients were scanned for 9 minutes in a rest-setup. Static images were reconstructed for clinical evaluation. The static images were reconstructed from the 2$^{nd}$ to the 9$^{th}$ minute of the scan, using an iterative OSEM-reconstrution (3 iterations and 8 subsets) method using 5mm Full-Width at Half-Maximum (FWHM) Gaussian filtration, image size 128 X 128, zoom 2. The patients were divided into three groups. Group one, the controlgroup, were not given any sparkelingwater, group two were given sparkelingwater one minute before the scan and group three were given sparkelingwater ten minutes before the scan. The shortest distance between the inferior wall and the gastric activity closest to the heart was measured in the coronal plane. **Results** In the controlgroup (n=30), the average distance between myocardia and gastric activity was 2,9 cm and with a standard deviation of 1,5. In group two (n=19), the average distance was 3 cm (p=0,94 compared to