

**Results:** Time to CA was from 0 to 31 days, mean  $\pm$  standard deviation (SD) was  $4.92 \pm 4.66$  days (median 4). LOS was from 2 to 41 days, mean  $\pm$  SD was  $7.29 \pm 3.71$  days (median 6).

**Conclusions:** The current recommendations for CA and LOS in NSTEMI are not being followed. The authors recommend that necessary measure be taken in order to adhere to current guidelines.

### P1.05

#### Iatrogenic femoral pseudoaneurysms: are they a significant problem in our institution?

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**Aim:** Pseudoaneurysms (PAs) occur after incomplete haemostasis of a punctured artery. The resulting extravasation of blood into the subcutaneous tissues is contained within a pseudocapsule of fibrous tissue. PAs are becoming increasingly prevalent with the widespread use of endovascular procedures. Incidence rates quoted in literature are between 0.05% and 4%, and as high as 16% per year. The aim of this study was to assess the incidence of iatrogenic femoral pseudoaneurysms in our institution. The factors that increased the risk of pseudoaneurysm formation in our department were also assessed.

**Method:** A retrospective review of the patients who developed an iatrogenic pseudoaneurysm was performed from March to December 2011. Their hospital files were reviewed and the following demographics were studied: gender, type of procedure, sheath size, type of anticoagulation used, ward where femoral sheath was removed, time to diagnosis and management.

**Results:** There were 12 patients who developed an iatrogenic pseudoaneurysm from March to December 2011, four females and eight males. 4 patients had undergone coronary angiograms and 8 patients had undergone a percutaneous intervention. 10 patients were on low molecular weight heparin. No PAs were noted when using a 4F sheath. The average time to diagnose a PA in our department was approximately 2 days. Most of the PAs in our department were managed via thrombin injection.

**Discussion:** A total of 2,026 invasive procedures were performed from March to December 2011 via femoral approach. Only 12 patients were found to have a PA, in total. Hence the incidence rate of post-catheterisation pseudoaneurysm in Mater Dei Hospital from March till December 2011 was 0.5%. Our incidence rate of iatrogenic pseudoaneurysms compares well with literature (0.5 to 2%). Ideally, the incidence of PAs should have been studied by performing ultrasound studies on all the patients undergoing femoral procedures. Unfortunately this would have caused an increased load on the Radiology Department, hence this could not be performed.

**Conclusion:** Iatrogenic pseudoaneurysms are not a problem in our institution as the incidence falls within the norm. Changes have also been suggested within this audit, so as to further lower the incidence of iatrogenic pseudoaneurysms.

### P1.06

#### Assessing the outcome of patients who underwent a primary percutaneous coronary intervention

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**Introduction:** Patients presenting to A&E with acute ST-elevation myocardial infarction (STEMI) of less than 12 hours from onset of chest pain are usually candidates for primary percutaneous coronary intervention (PPCI).

**Aim:** To assess the patients' outcome after 12 months of their admission and proceeding to PPCI, by performing a retrospective audit.

**Methodology:** Data of patients admitted with STEMI and proceeding to PPCI between 1st of January 2011 to 30th of June 2011 were analyzed. A total of 105 patients were recruited, identified and analyzed by using the CIPR software. Any additional target vessel revascularization after their admission was also assessed. Survival outcomes of these patients were determined by data obtained from the Department of Information, Health and Research.

**Results:** Out of the 105 patients having PPCI, the majority were men (81%). 9 of the 105 patients (8.6%) died within one year, 5 were men (4.8%) and 4 female (3.8%) with their age varying between 67 years and 95 years. 21 patients (20%) had repeat coronary angiography, with 10 (9.5%) requiring further PCI. 6 patients (5.7%) were re-admitted due to another episode of chest pain, out of which 1 of them presented with another acute MI requiring PPCI. The other 5 patients underwent an inpatient coronary angiogram, with 2 proceeding to PCI. 2 patients (1.9%) were admitted for pacemaker insertion after episodes of fainting. 66 patients (63%) did not experience any other cardiovascular related episodes.

**Conclusion:** This retrospective audit showed that over a 6 month period there were 105 admissions with acute MI that were candidates to have PPCI. These patients were followed up for a year; there was 8.6% death rate, 5.7% re-admissions due to another episode of chest pain and 1.9% admission for pacemaker insertion. From the 20% of patients having a repeat coronary angiogram only 1 patient (0.95%) had target vessel revascularization while from the remaining 20 patients (19%), 9 patients (8.6%) had other vessel PCI where 1 patient (0.95%) died after 3 months. There was 1 patient (0.95%) that after restudy was referred for CABG due to triple vessel disease, while 63% of the total patients, did not present with any cardiovascular associated events.

### P1.07

#### The effect on Poisson ratio of loss of structural elements in stents

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**Introduction:** This work investigates removal of structural elements (ribs) within auxetic or conventional stents (cellular systems), which results in a change in the mechanical properties, in particular the Poisson's ratio.

**Aim:** To investigate whether Zero Poisson ratio systems can be designed simply by removal of ribs within cellular structures and thus opening the possibility of designing cellular structures with varying Poisson's ratios.

**Methodology:** Rows of honeycombs were connected together in the x-direction (termed as crown) and connected together in the y-direction with a random number of ribs. Finite element analysis simulations were carried out in Ansys using the element 'PLANE82'. The boundary conditions were set up in such a way that the bottom most nodes were constrained not to move in the y-direction while the left-most nodes were constrained not to move in the x-direction. A number of simulations were carried out where the number of missing ribs between crown layers was varied from 1 to 7. In each case, the angles between the horizontal and vertical ribs was varied between 30° and 160°. Note that when the angle is smaller than 90°, a re-entrant system is present while when it is larger than 90° a conventional system is present.

**Results:** With a higher amount of missing ribs in the y-direction, the more the Poisson's ratio value approached zero. The Young's modulus decreased with a larger number of

missing ribs in the y-direction. For loading in the x-direction, the Poisson's ratio was not affected by removing the ribs in the vertical direction. Young's modulus for loading in the x-direction was independent of the number of missing ribs in the y-direction (as crowns have remained intact).

**Conclusion:** The Poisson's ratio for loading in the direction of the deleted ribs will tend to zero as the number of deleted ribs in the y-direction increases while leaving crowns with no missing ribs. Varying the density of deleted ribs will result in a structure with varying Poisson's ratio.

### P1.08

#### Low molecular weight heparin in ST-Acute Coronary Syndrome – auditing the learning curve and future implications at Mater Dei Hospital

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**Introduction and aim:** Primary Percutaneous Coronary Interventions (PCI). Due to its infancy locally, this audit was set up, so as to assess how low molecular weight heparin (LMWH) was administered, comparing results to the European Society of Cardiology (ESC) recommendations and Summary of Product Characteristics (SPC).

**Methodology:** Details of patients who underwent urgent revascularisation for ST-Acute Coronary Syndrome (ST-ACS) in the period between January and July 2011 were made available from the Catheterisation Lab's database, with 28 patients identified as having been treated with LMWH. Data was obtained retrospectively through case notes review and was inputted and analysed using Microsoft Excel®, with categorical data presented as percentages.

**Results:** 25 [89.3%] used only LMWH for anticoagulation, 2 [7.1%] used both LMWH and Unfractionated Heparin (UFH), and 1 [3.6%] used LMWH and fibrinolytic therapy (streptokinase). With respect to age, there were 25 [89.3%] who were <75 years and 3 [10.7%] who were ≥ 75 years. All 28 patients received LMWH subcutaneously (SC). Those <75 years were all [100%] correctly given the SC formulation as a 1mg/kg bd dose. 100% of patients ≥75 years were given a 1mg/kg bd dose instead of the recommended 0.75mg/kg bd dose. Of the patients <75 years, 23 [92%] were correctly given the recommended 30mg IV bolus, but not given in 2 [8%] cases, one of which [4%] used LMWH in combination with fibrinolysis. Despite the 30mg IV bolus not being indicated in the ≥75 years group, it was still given in 2 [66.7%] cases. Out of the <75years patient group, 18 [72%] were correctly first given an IV and then SC dose within a 30 minute time frame, boosting up the LMWH plasma concentration needed for urgent revascularisation. This was however not the case in 7 [28%] patients. 1 case [3.6%] was re-anticoagulated with UFH during PCI, despite the last LMWH being given <8hours before. 1 other case [3.6%] was given UFH and not IV LMWH (0.75mg/kg), because the last LMWH was given >12hours before. With respect to duration of treatment, 4 [14.3%] cases had LMWH stopped prematurely.

**Conclusion:** Misconceptions about the regime were clearly present, with half of the cases (14 patients) administered LMWH not according to current international guidelines. Local protocols are currently in development, so as to standardize administration, according to the latest evidence-based results.

### P1.09

#### Sharp increase in incidence of acute myocardial infarction on introduction of troponin I

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**Background:** Cardiac troponins play a central role in establishing a diagnosis of acute myocardial infarction (AMI). Troponins are more specific and sensitive than the traditional cardiac enzymes such as creatine kinase (CK) and its isoenzyme MB (CK-MB). Troponin I was introduced simultaneously with the publication of the Acute Chest Pain Management Guideline in Mater Dei Hospital (MDH) in June 2009. This followed closely the Guidelines presented by the European Society of Cardiology (ESC), where troponin I was the cardiac biomarker of choice for the diagnosis of acute myocardial infarction (AMI).

**Aim:** To evaluate the effect of the introduction of troponin I at MDH on the diagnosis of AMI.

**Methods:** The data of hospital discharges with a main diagnosis of AMI (ICD-10; Code 121) for the years 2009, 2010 and 2011 was collected from the Hospital Information System. These were subgrouped according to gender and age. The Electronic Case Summary (ECS) data was then reviewed to subclassify AMI into ST elevation myocardial infarction (STEMI) and non-ST elevation myocardial infarction (NSTEMI).

**Results:** There were 427 patients (307 males) with a diagnosis of AMI in 2009, 558 patients (402 males) in 2010, and 880 patients (581 males) in 2011. Of these, 165 patients (39%) had a diagnosis of NSTEMI in 2009, 289 patients (52%) in 2010, and 523 patients (59%) in 2011.

**Conclusions:** The introduction of troponin I in MDH has led to a marked increase in the diagnosis of AMI and in particular of NSTEMI. This has improved the management of patients presenting with AMI.

### P1.10

#### The current length of hospital stay after acute ST elevation myocardial infarction at Mater Dei Hospital

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**Objectives:** Hospital length of stay influences cost of care. The aim of this study was to identify current length of hospital stay in patients with acute ST Elevation Myocardial Infarction (STEMI) in Mater Dei Hospital (MDH) and to assess the underlying clinical, demographic and hospital-related factors that resulted in a hospital stay exceeding 10 days.

**Methods:** All patients admitted with a diagnosis of STEMI to the Critical Coronary Care Unit (CCCU) of MDH during the period 1st October 2011 to 31st January 2012 were retrospectively analyzed. Data collection was obtained from 3 main sources: the CCCU admission book, electronic case summary and patient medical records. Patients with a hospital stay of more than 10 days were assessed for pre-STEMI determinants namely diabetes mellitus, hypertension, hypercholesterolaemia, anaemia, tobacco use, previous coronary events, congestive heart failure, stroke, and renal failure; for peri-STEMI complications, namely pulmonary oedema and cardiogenic shock; and for post-primary Percutaneous Coronary Intervention (PCI) complications including pseudoaneurysm, bleeding, and contrast-induced nephropathy (CIN).

**Results:** There were 84 patients (69 males) admitted with STEMI, age 32 to 94, mean 61 years. The mean (± SD) length of stay was 7.94 ± 5.53 days (median 6). There