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# JMCFD

JOURNAL OF THE MALTA COLLEGE OF FAMILY DOCTORS



Dr Tania  
van Avendonk  
1964 - 2018



# JMCFD

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## Journal of the Malta College of Family Doctors

The mission of the Journal of the Malta College of Family Doctors (JMCFD) is to deliver accurate, relevant and inspiring research, continued medical education and debate in family medicine with the aim of encouraging improved patient care through academic development of the discipline. As the main official publication of the Malta College of Family Doctors, the JMCFD strives to achieve its role to disseminate information on the objectives and activities of the College.

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Dr Tania van Avendonk, 1964 - 2018

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# Dr Tania van Avendonk

## 1964 - 2018

Prof. Pierre MALLIA



It is with great sorrow that one of our council members went to meet the Lord this year. Tania needs no introduction to us. She has been an avid worker outside her own general practice not only for the promotion of family medicine through her work in the council of the MCFD but also in other areas such as women's rights.

Tania was Treasurer of the College for a long time and managed the logistics. Indeed her work was revolutionary and done with great enthusiasm. She chased people to pay their dues and she was very fast to get quotes and book venues. Indeed we relied on her so much, that, as they say, she became conspicuous by her absence. Sometime you do not realise the value of the work put in by a person until they are not there any longer. Her work is now divided between another two enthusiastic members.

Tania did not shy away from discussions and indeed she pushed her argument very avidly. She was one of what I often refer to as the Titans of council – those whose word carry a lot of weight.

When news came about her illness a few years ago it goes without saying that we were all shocked. After a short while she returned on council. What do you say to a person who has just been diagnosed with an aggressive cancer? But she

solved this problem for us by her large smile. She fought the cancer tooth and nail and although she was realistic, as she used to say, she continued living in the present moment to the full. Her testimony was shown by the people attending her function. Indeed she donated her body for study by medical students – a very courageous thing to do.

Tania's demise not only reminds us that we all have to face death, and unfortunately, like her, it is more tragic when one dies young; but she reminded us how to continue to face death optimistically. Whilst some may have thought this was a form of denial, time certainly showed that it was not. It was in her character to live life fully to the end without external complaint. Of course our hearts go out to her family; her husband Frans, her son Jan and her daughter Tessa. I am sure that at home, her protected environment, things may have been more difficult. But certainly she was keen in helping them.

Tania was awarded the college Fellowship (which one only gets after completing at least five years of work to the MCFD) and a Certificate of Commendation by the Royal College of General Practitioners.

We shall all miss her but she left in our hearts an appreciation of how we ought to live enthusiastically.

# A study on plain X-ray skull imaging in the public Primary Health Care Department in Malta

Dr Glorianne PULLICINO, Dr Joanna THOMPSON, Dr Elizabeth M GRECH and Dr Philip SCIORTINO

## ABSTRACT

### Background

In January 2014, the National Institute for Health and Clinical Excellence (NICE) published the guideline [CG176]: Head injury: assessment and early management. These guidelines advise that plain X-rays of the skull should not be used to diagnose significant brain injury without prior discussion with a neuroscience unit. However, they are useful as part of a skeletal survey for suspected non-accidental injury in children.

### Objectives

Our study was conducted to quantify the skull X-rays performed over a period of 12 months and review whether the cases adhere to the NICE guideline [CG176]: Head injury: assessment and early management.

### Method

A descriptive, retrospective, cross-sectional study design was applied. Data was obtained from the Radiology Information System (RIS) and the Picture Archiving and Communication System (PACS). The Statistical Package for Social Sciences Version 20 was used in the data analysis.

### Results

There were 127 skull X-rays performed in primary health care centres in 2016. The majority of patients were males (56%,  $n = 71$ ). There were 83 (65.4%) skull X-rays requested for cases of trauma or queries about fractures. Around 3% of requests ( $n = 4$ ) were made to exclude foreign bodies.

### Conclusion

After reaching the study objectives, it was noted that there is a need to increase awareness of the NICE guidelines to improve the use of skull radiography thus ensuring more efficient resource utilisation.

## Keywords

Primary health care; quality of health care; medical imaging; head injury

## INTRODUCTION

Head injury is a highly prevalent event and can cause significant morbidity and mortality (Hofman et al, 2000; NICE Guidance, 2017b; Thompson et al, 2015). In January 2014, the National Institute for Health and Clinical Excellence (NICE) published the guideline [CG176: Head injury: assessment and early management].

These guidelines advise that plain X-rays of the skull should not be used to diagnose significant brain injury without prior discussion with a neuroscience unit. However, they are useful as part of a skeletal survey for suspected non-accidental injury in children. These guidelines were used as the gold standard for this current audit. In June 2017, NICE updated these guidelines with cross-references to related NICE clinical guidelines (NICE Guidance, 2017a).

The Royal College of Radiologists state that with the near-universal availability of Computed Tomography (CT) scanning in the United Kingdom, the Skull X-Ray (SXR) can almost never be justified in the assessment of a patient with head injury. Moreover, this College states that no patient should have a SXR performed in addition to or instead of a CT scan of the head (The Royal College of Radiologists, 2017). The absence of a fracture on an SXR can be falsely reassuring. Furthermore, SXR is suboptimal in showing a basal skull fracture (The Royal College of Radiologists, 2017).

The current primary investigation of choice for the detection of acute clinically important brain injuries is CT imaging of the head because it is generally readily available, can be performed in a short period

of time and reliably detects acute haemorrhage (NICE Guidance, 2017b; The Royal College of Radiologists, 2017). Due to safety, logistic and resource reasons, MRI scans are usually reserved for follow-up of patients with abnormalities detected on the CT scan or for further evaluation of subtle abnormalities (The Royal College of Radiologists, 2017; NICE Guidance, 2017b).

This study was conducted to quantify the SXR performed over a period of 12 months and review the cases that adhere to the NICE guideline [CG176]: Head injury: assessment and early management. The objectives of the study included examining the sociodemographic data of patients who undergo SXR radiography, reviewing the indications for SXR radiography in a primary healthcare setting and investigating the adequacy of its documentation.

## METHOD

A descriptive, retrospective, cross-sectional study design was applied. All requests for plain SXR radiographs taken in public primary health care centres between January and December 2016 were obtained from the Radiology Information System (RIS) and the Picture Archiving and Communication System (PACS). The data was obtained in an anonymous manner.

The patients' demographic and clinical characteristics were noted. This includes recording the medical question and the clinical comment inputted by the requesting physician. Data analysis was subsequently carried out using the Statistical Package for Social Sciences Version 20.

Patients who underwent plain SXR radiography in a public hospital or in the private sector were excluded from this study.

Approval for this study was obtained from the Data Protection Officer of the Primary Health Care Department.

## RESULTS

There were 127 SXRs performed in public primary health care centres in 2016. The majority of patients were males (56%,  $n = 71$ ). The sample population had an age distribution of 1 - 94 years with a mean of 44 years. Figure 1 shows the total number of SXRs performed in each month. The highest number of SXRs was performed in March and May whilst only five such X-rays were done in December. A Kruskal-Wallis Test revealed statistically significant difference in the total number of SXRs performed per month,  $p = <0.001$ .

There were 83 (65.4%) SXRs requested for cases of trauma or queries about fractures (Figure 1). The mean age of these patients was 44 years whilst the age range was 1 year – 94 years. The majority were males (56%,  $n = 47$ ). The highest number of X-rays was requested in March and the least number occurred in February. A Kruskal-Wallis Test revealed statistically significant difference in these SXRs performed per month,  $p = <0.001$ .

There were 16 patients (13%) referred for plain skull X-ray due to history of headaches. Out of the latter requests, 9 X-rays were performed due to suspicion of sinusitis. Furthermore, 11 skull X-rays were performed due to the presence of a lump whilst 5 were performed due to pain. Around 3% of requests ( $n = 4$ ) were made to exclude foreign bodies. These patients were all males with a mean age of 34 years. The medical question documented in 2 cases was Paget's disease. There was one case of suspicion of metastases and another case of dizziness and double vision. There was no medical documentation accompanying the imaging request in 3% of cases. Furthermore, there were no documented reports for consultations with the neuroscience unit.

There were no cases of suspected non-accidental injury documented on the imaging request. In 5 cases, CT brain was subsequently performed. There were fractures of the nasal bones in 2 patients. No acute intracranial abnormality was demonstrated.

## DISCUSSION

Similar to the findings of another local study conducted in 2008, the majority of patients undergoing imaging were males (62% vs. 56%) with an age distribution of 1-94 years (Cassar et al, 2008). Head injury is a common consequence of accidents and violence (Gisladottir et al., 2014). Studies have suggested that men may show more risky behaviour when driving motor vehicles and at work (Jonsson et al., 2016; Gisladottir et al., 2014; Dzupa et al., 2009). Locally, further research can be conducted to explore the mechanisms of injury of those patients undergoing medical imaging in primary health care.

The total number of requests for skull X-rays was the lowest during winter. This might be because accidents tend to be more prevalent during spring and summer (Jonsson et al., 2016). Furthermore, this time period also marks the beginning of quarterly rotations of foundation doctors and general practitioner trainees who might still be getting accustomed to the system and guidelines (Cassar et al, 2008).

In the current study, doctors' or patients' concern for serious pathology and patients' expectations might have influenced diagnostic imaging. A US-based cross-sectional survey of emergency physicians at a national meeting showed that the two most frequently cited reasons for providing low-value services were "patient and family expectations" and "concern for serious diagnosis." (Lin et al., 2017). Further local qualitative research can address these notions.

Similarly, another prospective Scottish study by Kerr et al demonstrated that SXR's continued to be performed in patients without SIGN indications. The authors postulate that this may represent pressure from the patients or it may be related to the grade and clinical experience of the doctor requesting the investigation. A previous study by McNally et al assessed patients' reactions to not having skull radiography performed, and demonstrated that, of 705 patients questioned, 51% said they expected a SXR to be performed, and of these 63% had left the department disappointed (McNally et al, 1996).

The results suggest that there is a need for further awareness of the NICE guidelines to try to avoid ineffective investigations which can result in potential physical and psychological harm to the patients, thereby improving clinical effectiveness, professional competence and behaviour. It might be argued that physicians opt for plain skull imaging due to medicolegal issues or because CT scans are not readily available in a primary care setting. Cassar et al (2008) stated that such audits may help reduce the workload in the radiology department to report large numbers of skull X-rays which are of little diagnostic utility (Cassar et al., 2008).

Adherence to NICE guidelines may help to reduce the rates of skull X-rays and hence reduce system demands, healthcare expenditure and unnecessary

radiation exposure (Cassar et al., 2008). This clinical study showed the need to enhance the adequacy of the clinical request form for plain skull radiography to facilitate the radiologists' reporting process, thus strengthening interdisciplinary communication. Furthermore, this will enhance clinical governance to ensure that the standards of care are maintained and that the system is accountable to the patients.

Several limitations were identified in the present study. Due to time and resource constraints, radiographs carried out in Gozo, in the public hospital and in the private sector were not included. Other limitations include being based solely on medical imaging request forms and being non-random and retrospective in nature. Moreover, this study did not assess whether these imaging services were cost-effective and whether patient expectations were met. Future research can address these limitations.

## CONCLUSION

After reaching the study objectives, the results suggest that there is a need for further awareness of the NICE guidelines to enhance appropriate use of skull radiography to ensure more efficient resource utilisation.

## ACKNOWLEDGMENT

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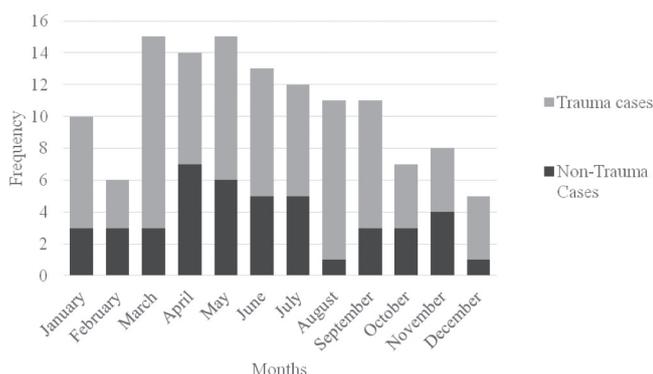
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Figure 1: Graph of SXR's per month



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# Blood investigation results at a primary health care centre in Malta – a brief evaluation

Dr Marilyn BALDACCHINO, Dr Rebecca CATANIA, Dr Jurgen ABELA and Dr Robert ELLUL

## ABSTRACT

### Background

This evaluation was based at Mosta Health Centre with a particular focus on the blood investigation results clinic.

### Objectives

To get a clinical profile of the patients being seen at the clinic, to assess whether risk assessment tools are being used in the management of dyslipidaemia and to evaluate patient feedback about the clinic.

### Method

This consisted of a cross-sectional observational study carried out over a five-week period between the end of October and the end of November 2017. Data was collected retrospectively immediately after completion of the clinic on three random days every week. Data collection was divided into two lists of patients – those who attended and those who failed to attend their appointment. A patient questionnaire was also handed to patients to fill in after attending their appointment. Data was inputted in Excel 2010 and analysed using Statistical Package for Social Sciences (SPSS) 22.

### Results

A total of 181 patients had a registered appointment at the blood investigation results clinic during the period of data collection. Seventy-five per cent of these patients attended for their appointment, with 62.2% being females. Routine blood investigations were taken in 80.7% of patients, thyroid function tests in 71.9% and glycosylated haemoglobin in 31.9%. Fourteen point eight per cent of patients had tumour markers booked, and a significant association was found between gender and whether tumour markers were ordered. A risk assessment tool was used in only 21% of the patients seen at the

clinic for a lipid profile result, with the majority of General Practitioners (GPs) using the QRISK<sup>®</sup>2 cardiovascular disease calculator. Seventy eight patient satisfaction questionnaires were filled in during the period of data collection, and the percentage of patients who gave a very positive response (>8) for questions 1, 2 and 3 was 92%, 89% and 97% respectively.

### Conclusion

Patient attendance at the blood investigation results clinic at Mosta Health Centre during the period under review was reasonably good, and patients were overall satisfied by the service provided. Tumour markers were found to be ordered more frequently in male patients, due to the common request for the PSA test. Risk assessment tools were used by GPs in only 14% of the total number of patients seen at the clinic, and the QRISK<sup>®</sup>2 cardiovascular disease calculator was the most commonly used tool.

### Keywords

Blood tests; dyslipidemias; patient satisfaction; primary health care; risk assessment

## INTRODUCTION

Mosta Health Centre is one of the eight health centres which are the core of the primary health care service provided by the Government in Malta (Primary Health Care Department, 2017). One of the services offered on an almost daily basis is blood-letting, with patients being referred from their private General Practitioner (GP), the GP at the health centre, diabetic clinic in primary or secondary care, or several outpatient clinics at Mater Dei Hospital. Approximately 450 patients make use of the blood-letting service at Mosta Health Centre on a weekly basis (data from Clinical Patient Administration System (CPAS), January 2018). The

Blood Investigation Results clinic was re-introduced in October 2017 at Mosta Health Centre with the aim of providing follow-up to patients who do not have a private GP or outpatient follow-up appointment.

The clinic is run by General Practitioners on weekdays between 11am and 1pm. Ten minute appointment slots are available, and after blood-letting patients are instructed by nurses or receptionists whether they require an appointment to be given the results. During the appointment, results are reviewed and discussed with the patients. Any medication modifications or additions are made, and the necessary examination, prescriptions, referrals or follow-up investigations are organized as required by the individual patient.

## Objectives

The objectives of this evaluation were:

1. To get a clinical profile (specifically the demographic factors, presence or absence of any medical conditions and type of investigations ordered) of the patients being seen at the Blood Investigation Results clinic;
2. To assess whether risk assessment tools are being used in the management of dyslipidaemia;
3. To evaluate patient feedback about the clinic (through a short questionnaire).

## METHOD

### Data collection

This consisted of a cross-sectional observational study. A data collection form was designed on Microsoft Excel to facilitate data collection. Data was collected over a five-week period between the end of October and the end of November 2017. Data was collected retrospectively immediately after completion of the clinic on three random days every week, and the list of patients, their record files and relevant investigations carried out through the Information Clinical Manager (ICM) system were reviewed. Such immediate collection of data allowed thoroughness of collection and minimised errors. Data collection was divided into two lists of patients – those who attended and those who failed to attend their appointment.

After due discussion amongst the authors and based on the aims of the study, it was decided that data collected should include:

- Age, gender and locality
- Presence or absence of any medical conditions
- Types of blood investigations ordered
- Any other investigations, including urine tests, bone density and ECG

- Values of total cholesterol, triglycerides, low-density lipoprotein (LDL) and high-density lipoprotein (HDL), fasting blood glucose (FBG), haemoglobin, glycosylated haemoglobin (HbA1c)
- Presence of a previously deranged lipid profile
- Whether a risk assessment tool was used in the assessment of dyslipidaemia and the risk level if this was used
- Whether the patient was already on a statin, or whether a statin was started on the day of the appointment

A patient questionnaire was also prepared, and this was handed to patients by the receptionist on arrival. Prior to distributing the questionnaire to the patients, the questions were reviewed by all four authors for validity and reliability. Patients were instructed to fill in the questionnaire after their appointment and deposit the completed questionnaire in a sealed box that was available at the reception. The questionnaire was available in Maltese and English and consisted of three questions, with a 0 to 10 rating scale as a response (See Appendix). Space was also provided for anyone who wished to add any comments or suggestions.

### Data analysis

Data input and analysis was carried out using Microsoft Excel. Further analysis was conducted using Statistical Package for Social Sciences (SPSS) programme version 22.

### Study approval

This evaluation was approved by the Department of Primary Health Care and by the Data Protection officer of the Department.

### Standards

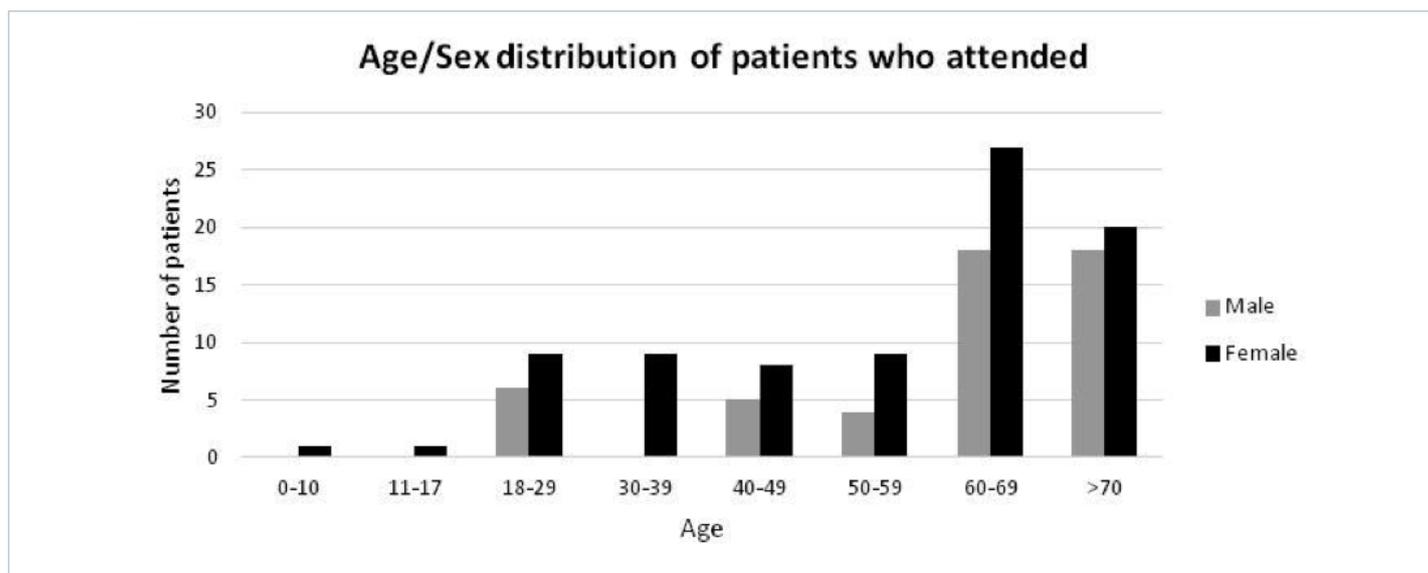
The NICE Guideline '*Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease*' was used as a guide for the use of risk assessment tools, as well as the management of dyslipidaemia and recommended follow-up after starting treatment (National Institute for Health and Care Excellence, 2014).

## RESULTS

### Attendance at clinic

During the five weeks under review, 181 patients had a registered appointment at the Blood Investigation

Figure 1: Age/sex distribution of patients who attended their appointment



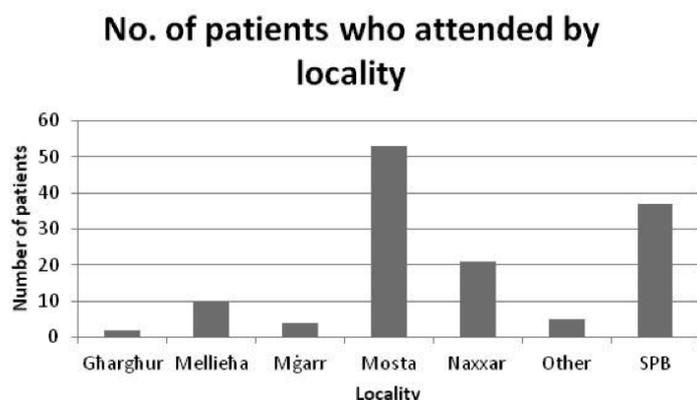
Results clinic during the particular days that data was being collected. Of these patients 61.9% were females and 38.1% were males. Forty-six patients (25%) failed to attend their appointment.

#### Demographic details

Sixty-two point two per cent (84) of the patients who attended their appointment were females and 37.8% (51) were males. The age/sex distribution of these patients is reproduced in Figure 1.

Forty per cent of the patients who attended their appointment resided in Mosta, with 28.1% coming from St Paul's Bay (SPB) and 16.3% from Naxxar. A summary of the number of patients who attended according to locality can be seen in Figure 2.

Figure 2: Distribution by locality of patients who attended their appointment



Of the 25% who failed to attend their appointment, 60.9% were females, and the most were aged 60-69 years. No significant association was found between defaulters and increasing distance of resident locality from the clinic, with the majority of patients residing in Mosta.

#### Medical conditions

The presence or absence of any medical condition in patients who had a registered appointment with the clinic was also recorded. These conditions include hypertension, asthma, ischaemic heart disease, chronic kidney disease, liver disease, diabetes and inflammatory bowel disease. This data was collected from the patient files in the case of patients who failed to attend their appointment, and from record files as well as information given by the patients themselves who attended the clinic appointment.

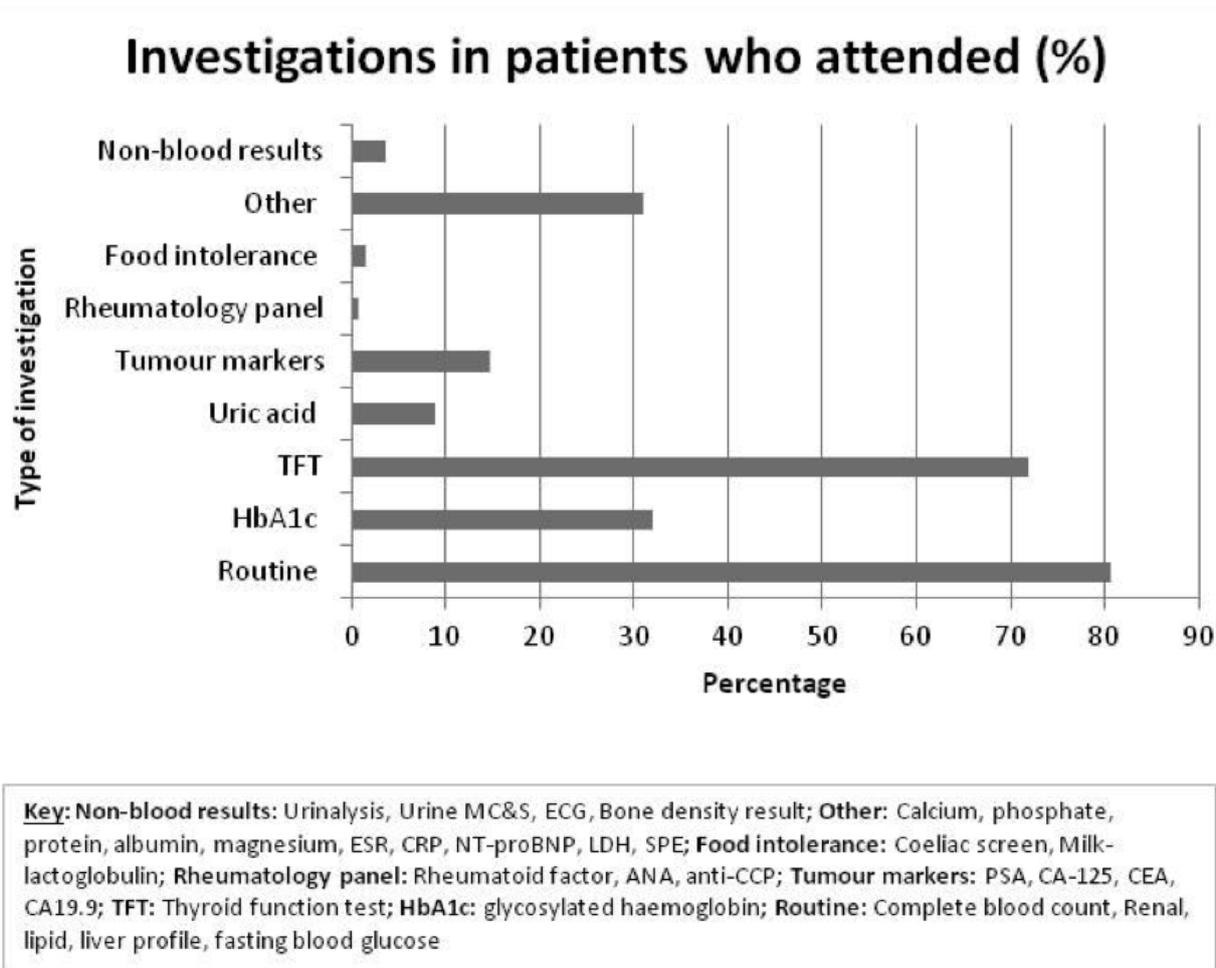
Sixty-one per cent of the patients who attended their appointment had a significant past medical history, while medical conditions were present in 48% of the patients who did not attend.

#### Investigations

Eighty point seven per cent of the patients who attended their appointment had 'routine blood investigations' taken (complete blood count, renal profile, lipid profile, liver profile and fasting blood glucose), 71.9% had thyroid function tests and 31.9% were tested for glycosylated haemoglobin (HbA1c).

Forty point seven per cent of the patients seen at the clinic had a previously deranged lipid profile (elevated total cholesterol).

Figure 3: Percentage of investigations ordered in patients who attended their appointment



Fourteen point eight per cent of patients had tumour markers booked (these included Prostate-Specific Antigen (PSA), cancer antigen 19-9 (Ca19.9), carcinoembryonic antigen (CEA) and cancer antigen 25 (CA-125)). A significant association ( $p < 0.05$ ) was found between sex and whether tumour markers were ordered, with males having tumour markers ordered more frequently.

Three point seven per cent of the patients who attended the clinic had no blood investigations booked, and presented for results of bone density, ECG or urine tests.

A summary of the percentage of all investigations taken in patients who attended the clinic is illustrated in Figure 3.

Table 1 shows the minimum and maximum values, and the mean with 95% confidence intervals, for a number of individual blood investigation parameters of the patients seen at the clinic, namely total cholesterol, HDL, LDL, total cholesterol:HDL ratio, fasting blood glucose, creatinine, haemoglobin and glycosylated haemoglobin.

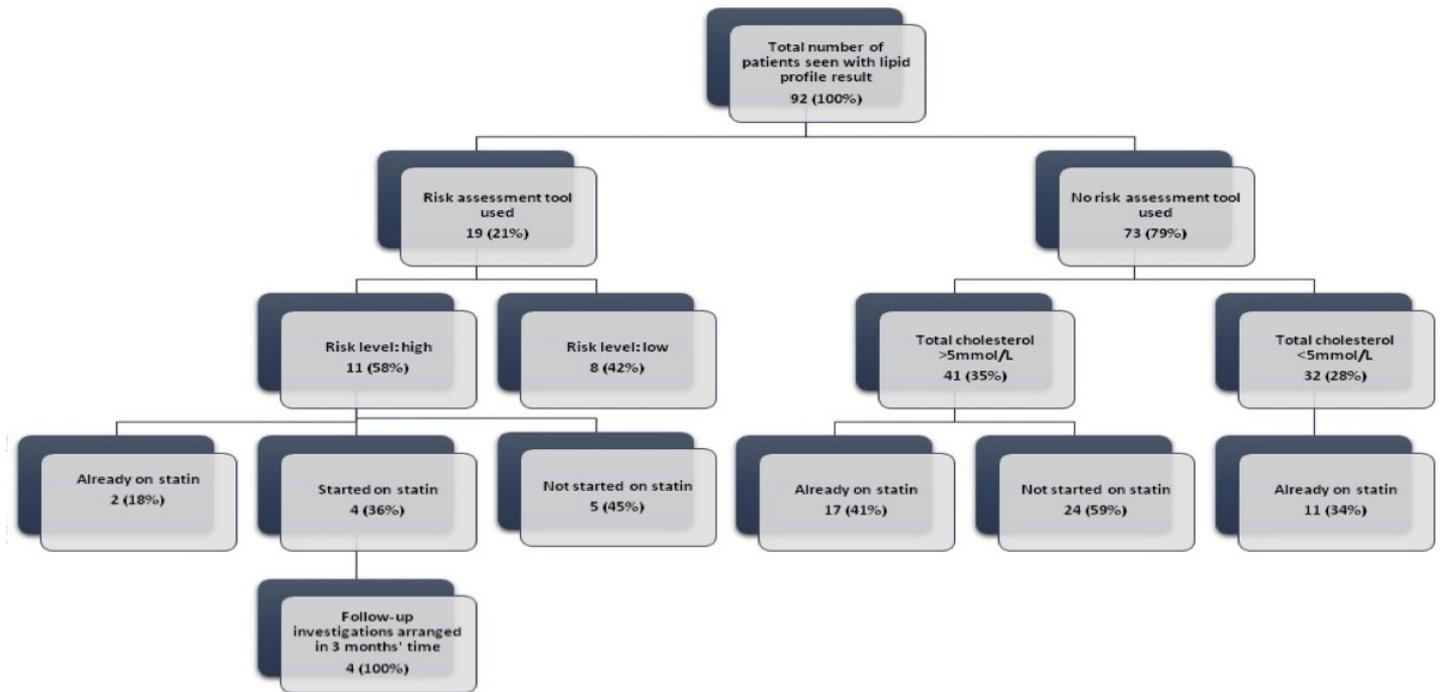
Forty-one point three per cent of the non-attenders had a previously deranged lipid profile (elevated total cholesterol), which was similar to that of patients who attended for their appointment.

#### Use of risk assessment tools and management of dyslipidaemia

A risk assessment tool was used in only 21% of the number of patients seen at the clinic who came for a lipid profile result. General Practitioners made use of the QRISK<sup>®</sup>2 cardiovascular disease calculator in 79% of these cases, with the remaining 21% having the Framingham risk score used.

Of the patients in which a risk assessment tool was used, 58% had a risk level classified as 'High'. Of these, 18% were already taking a statin, 36% were started on a statin and 45% were not started on a statin. All the patients who were started on a statin had repeat lipid profile and liver function tests booked as a follow-up in three months' time.

Figure 4: Summary of the use of risk assessment tools at the blood investigation



From the 86% of patients in whom a risk assessment tool was not used, 37% did not have a lipid profile included with their investigations and 28% had total cholesterol level less than 5mmol/L. Thirty-five per cent had a total cholesterol level more than 5mmol/L, and 41% of these were already on a statin.

A summary of the above results is illustrated in a flow chart in Figure 4.

### Patient Satisfaction Questionnaire

Over the period of data collection, a total of 78 questionnaires were filled in, which is 57.8% of the total number of patients who attended. Two of the questionnaires were incompletely filled and excluded from the data analysis. Hence the total amount of questionnaires included in the analysis was 76. Question 1 which focused on the care received from the doctor was given a maximum score of 10 and a minimum score of 6 (mean value = 9.45 [95% CI: 9.23-9.67]). Question 2 dealt with the amount of time dedicated for the appointment and was given a maximum score of 10 and a minimum score of 4 (mean value = 9.21 [95% CI: 8.86-9.56]). Question 3 asked how likely it is that another appointment would be fixed with this clinic by the patient and was given a maximum score of 10 and a minimum score of 6 (mean value = 9.59 [95% CI: 9.40-9.79]).

The percentage of patients who gave a very positive response (>8) for questions 1, 2 and 3 was 92%, 89% and 97% respectively.

A few examples of the comments left by patients include the following:

- “The appointment is good so that we can ask the doctor any questions we need to know, and it saves time. Thank you.”
- “It-tabib kien ġentili ħafna u anke tani kopja tar-riżultat biex inżommu. Grazi ħafna u prosit. Keep it up.” [“The doctor was very considerate and even gave me a copy of the results to keep. Many thanks and well done. Keep it up.”]
- “I think the whole clinic has improved in its service - even though there has been an influx of patients using it. Thank you.”

### DISCUSSION

Over the five-week period under review, between the end of October and the end of November 2017, there was reasonably good attendance at the Blood Investigation Results clinic, with 75% of patients who had a registered appointment attending the clinic. Possible reasons for patient non-attendance include patients who have pending appointments at the Diabetic Clinic (Mosta Health Centre/Mater Dei Hospital) or the Outpatient Department at Mater

Dei Hospital, patients who would have visited the GP clinic prior to their appointment and would have possibly been given the results during that visit, and patients having double appointments registered on the system.

Most of the patients attending the blood investigation results clinic were aged more than 60 years. The fact that the clinic takes place in the morning might make it difficult for people who work during office hours to attend at this time. A similar appointment system in the evening might be more attractive and practical for the younger working population.

Tumour markers were found to be ordered more frequently in male patients, with the likely reason being the frequent request for PSA in males. Tumour markers have a limited role in general practice, and the routine ordering of such investigations as a screening tool in asymptomatic patients is not recommended. Tumour markers have low sensitivity and specificity, and the inappropriate ordering of such tests can lead to false reassurance if the result is negative or a series of unnecessary investigations if the result is positive.

Possible reasons for the use of tumour markers in primary care may include requests by patients themselves to order these markers - possibly resulting from misinformation on the media, lack of patient education and fear of having cancer, as well as the fact that other investigations such as ultrasound scans cannot be ordered directly by general practitioners. Tumour markers have been mainly recommended in assessing response to treatment and detecting recurrence in known cases of malignancy (National Cancer Institute, 2018). Even in the case of PSA, which is used very commonly to screen males for prostate cancer, an increased level can be due to benign conditions and most males with a high PSA level

do not have prostate cancer (National Cancer Institute, 2018). Patients should be given enough information to be able to make an informed decision about whether a PSA test should be taken or not (Leyva et al., 2016).

A risk assessment tool was used in only 21% of the patients seen at the clinic who came for a lipid profile result, with the majority having the QRISK<sup>®</sup>2 cardiovascular disease calculator used.

QRISK<sup>®</sup>2 is a prediction algorithm for cardiovascular disease (CVD) originally developed by Hippisley-Cox and published in the BMJ in 2008 (Hippisley Cox et al., 2008). It uses traditional risk factors (age, blood pressure, smoking status and ratio of total serum cholesterol to high-density lipoprotein cholesterol) together with body mass index, ethnicity, family history, chronic kidney disease, rheumatoid arthritis, atrial fibrillation, diabetes mellitus and antihypertensive treatment. The QRISK<sup>®</sup>2 cardiovascular disease calculator can easily be accessed from <https://www.qrisk.org/>.

The NICE lipid-modification guidelines recommend the use of the QRISK<sup>®</sup>2 cardiovascular risk assessment tool for primary prevention in people aged less than 84 years (including type 2 diabetics), as opposed to previous guidance offering a choice between QRISK<sup>®</sup>2 and Framingham-based assessment tools (National Institute for Health and Care Excellence, 2014). This guideline also recommends that the threshold for consideration of treatment with statins is a risk of CVD events of more than 10% over 10 years. Atorvastatin 20mg daily is recommended first-line, which is a change from simvastatin 40 mg daily recommended in previous guidelines. Locally, simvastatin still tends to be the initial choice, possibly due to Government of Malta Schedule V protocol 12 which states that patients are entitled

Table 1: Summary of results for individual blood investigation parameters

	Minimum	Maximum	Mean	95% Confidence Interval of the Difference	
				Lower	Upper
<b>Total Cholesterol</b>	3.02	7.50	5.24	4.98	5.39
<b>HDL</b>	0.74	2.88	1.61	1.50	1.69
<b>LDL</b>	1.30	4.88	3.01	2.81	3.14
<b>Total: HDL ratio</b>	1.28	9.00	3.47	3.19	3.68
<b>FBG</b>	4.33	11.37	5.75	5.50	6.00
<b>Creatinine</b>	41.00	148.00	75.66	70.61	79.19
<b>Haemoglobin</b>	11.30	18.20	14.33	14.06	14.60
<b>HbA1c</b>	4.70	8.80	5.89	5.63	6.16

to atorvastatin when despite the use of another statin (simvastatin/fluvastatin), the respective target LDL levels (as per protocol) have not been achieved (Department of Health Malta, 2012).

In this study, 45% of the patients with a high risk level were not started on a statin. Possible reasons for this include patient reluctance to start treatment, patients opting for a trial of dietary and exercise changes and repeat lipid profile, contraindications or previous side-effects with statins, or failure of the GP to offer statins as part of the management plan.

NICE Guidelines also recommend measuring total cholesterol and HDL-cholesterol after 3 months of treatment, with the aim of a 40% reduction in non-HDL cholesterol. All the patients started on a statin at the Blood Investigation Results clinic during this study had follow-up blood investigations booked. Creatine kinase (CK) should not be routinely measured in asymptomatic people on statins or before starting statins; it should only be taken prior to starting treatment in people who have had persistent generalised unexplained muscle pain (with or without lipid-lowering therapy), and statins should not be initiated if CK levels are more than 5 times the upper limit of normal, in 2 tests 7 days apart (National Institute for Health and Care Excellence, 2014).

The results of the Patient Satisfaction Questionnaires reflect an overall appreciation of the Blood Investigation Results clinic based on an appointment system. The vast majority of patients who were seen at the clinic were satisfied by the service provided, considered the amount of time dedicated to them satisfactory and are willing to continue using the service in the future. This is supported by positive comments left by several patients who consider this system as convenient and time saving. A factor frequently pointed out in the comments section was the importance of short waiting times.

### **Strengths and limitations**

Over the five-week period under review, data of 72% of the total registered patient appointments during that period was recorded. Therefore, the sample of data is very much reflective of the activity at the Blood Investigation Results clinic over this period of time.

A possible limitation of this study is that there were a few occasions when one of the authors was assigned to the blood investigation results clinic on the day of data collection, and this may have been a source of bias with regards to the use of the risk assessment tools in the management of dyslipidaemia.

The specific medical conditions for each patient were not recorded in this study, and only the presence or absence of these was recorded. This was therefore a limiting factor particularly in evaluating the clinical profile of the patients that were being seen at the clinic.

Another limitation of the study was that patient satisfaction questionnaires were not always distributed to patients by the receptionist, as well as patient illiteracy making them unable to complete the questionnaire.

### **RECOMMENDATIONS**

The NICE Guideline 'Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease' or a summary of this guideline should be forwarded to GPs by email, particularly highlighting the section regarding use of the risk assessment tools, initiation of statins and recommended follow-up thereafter. This would serve as a reminder about the usefulness of using this tool in everyday practice and the resulting improved patient care. A small poster about the use of the QRISK<sup>®</sup>2 cardiovascular disease calculator in the all the GP rooms will serve as a reminder for all doctors. A refresher lecture for GPs and GP trainees focusing on this topic would also be useful. Developing a local protocol for the management of dyslipidaemia in primary care would help to provide evidence-based guidance to GPs and result in more standardized patient management. A re-evaluation of the use of risk assessment tools in the management of dyslipidaemia can be undertaken after these guidelines have been distributed.

Guidelines should be issued for reception staff and doctors/nurses at Mosta Health Centre stating the purpose of the Blood Investigation Results clinic and when an appointment should be arranged. Automatically registering patients for a results appointment after having blood tests taken should be avoided and the purpose of the appointment should be explained to patients. Advising patients to cancel appointments in advance if they cannot make it should be encouraged, as this affects the waiting list for appointments at the blood investigation results clinic.

Further evaluation of the clinic, including the source of referral for blood investigations, the reason/s for ordering the blood tests (with a particular focus on certain investigations, such as tumour markers) and the length of time the patients have to wait between taking blood tests and getting an appointment for the results, should be considered.

Based on the good patient feedback received, consideration should also be given to arranging appointments for results of investigations other than blood tests, like for example bone mineral density results.

## CONCLUSION

Patient attendance at the blood investigation results clinic at Mosta Health Centre during the period under review was reasonably good, and patients were overall satisfied by the service provided. Tumour markers were found to be ordered more frequently in male patients,

due to the common request for the PSA test. Risk assessment tools were used by GPs in only 21% of the patients seen at the clinic for a lipid profile result, and the QRISK<sup>®</sup>2 cardiovascular disease calculator was the most commonly used tool. A refresher lecture about or distribution of the NICE Guideline ‘Lipid modification: cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease’ to GPs would be useful as a reminder about the benefit of using this tool in everyday clinical practice.

# Appendix

## Blood investigation results clinic Patient Questionnaire

1. Overall how would you rate the care you received from the doctor at the blood investigation results clinic?

0 1 2 3 4 5 6 7 8 9 10  
Poor Excellent

2. How satisfied/dissatisfied were you with the amount of time the doctor spent with you during your appointment?

0 1 2 3 4 5 6 7 8 9 10  
Very dissatisfied Very satisfied

3. How likely is it that you would make another appointment with the blood investigation results clinic at Mosta HC?

0 1 2 3 4 5 6 7 8 9 10  
Not at all likely Extremely likely

4. Any comments/suggestions?

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Thank you for taking the time to fill in this questionnaire.

## Kwestjonarju għal-pazjenti li jattendu l-klinika tar-riżultati tad-demm

1. Kif thoss li kienet il-kura li inghatajt mit-tabib fil-klinika tar-riżultati?

0 1 2 3 4 5 6 7 8 9 10  
Fqira Eċċellenti

2. Kemm kont sodisfatt/a bl-ammont ta' hin li kellek għall-appuntament fil-klinika tar-riżultati?

0 1 2 3 4 5 6 7 8 9 10  
Lanqas xejn Tajjeb hafna

3. Tahseb li terġa tagħmel appuntament ieħor mal-klinika tar-riżultati tad-demm?

0 1 2 3 4 5 6 7 8 9 10  
Żgur li le Probabbilta kbira

4. Kummenti/suġġerimenti?

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Grazzi talli hadt il-hin liex timla dan il-kwestjonarju.

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# Use and misuse of urine cultures and antibiotics in catheterised patients at a rehabilitation hospital in Malta

Dr Kristie TONNA, Dr Francesca CAMILLERI and Dr Peter FERRY

## ABSTRACT

### Background

One of the most common samples submitted to microbiology laboratories are urine specimens for culture.

### Objectives

To assess the indications for obtaining urine cultures in a cohort of catheterised patients. The appropriateness of antimicrobial therapy in response to urine culture results was also studied.

### Method

All catheterised inpatients at Karin Grech Rehabilitation Hospital in Malta who had urine cultures taken over a 3-month period in 2016 were included. Data included the indication for sample collection, any documented urinary symptoms, culture results, antibiotic use before and after culture result and any change in antibiotic. A departmental presentation on the appropriate care of catheterised patients was delivered and a re-audit was carried out in 2017.

### Results

There were a total of 38 patients who were catheterised and had one or more urine cultures taken in 2016 and 55 in 2017. The commonest indications documented were fever and retention. Their indication was not documented in the medical notes in around 50% of samples taken for both years. The culture result was documented in 15% of cases in 2016 increasing to 40% in 2017. The commonest bacteria cultivated included *E. Coli* and *Klebsiella*. Empirical antibiotics were given in approximately 45% of cases who had a urine culture taken. In both 2016 and 2017, antibiotics were switched due to resistance in around 10% of all episodes when urine cultures were taken.

### Conclusion

Lack of documentation of the indication and culture result was evident. This improved in the re-audit. A high percentage of cultures taken did not influence the clinical management. The study clearly shows inappropriate use of urine culture requests and the need to follow available guidelines.

### Key words

Urinary catheter, bacteriuria, urinary tract infection, health care acquired infection, Malta.

## INTRODUCTION

Urinary tract infections are one of the most common health care associated infections (Magill et al., 2014). Urinary catheters are a common cause of urinary tract infections and sepsis leading to significant morbidity and mortality (Melzer and Welch, 2017). An estimated 3% of people living in the community (Simpson, 2017) and up to 10% of residents in long-term-care facilities have urinary drainage managed with chronic indwelling catheters (Smith and Nicolle, 2001).

Identifying and appropriately treating urinary tract infections early on in this population is of paramount importance. One of the most common samples submitted to microbiology laboratories are urine specimens for culture. These are expensive tests which should be ordered only if clinically indicated.

Differentiation between catheter associated urinary tract infection and catheter associated asymptomatic bacteriuria is important to avoid inappropriate antibiotic use leading to increased resistance (Trautner, 2010).

## Aims

- To audit the indications for obtaining urine cultures in a cohort of catheterised patients.
- To audit the appropriateness of antimicrobial therapy in response to urine culture results.

## METHOD

All catheterised inpatients at a Maltese rehabilitation hospital (Karin Grech Hospital) who had urine cultures taken over a 3-month period (October 2016 to December 2016) were included in the study. The data collected included the indication for sample collection, any documented urinary symptoms, culture results, antibiotic use before and after culture results, any change in antibiotics, data on documentation of culture result and antibiotic use. Data was collected from the medical notes and the hospital electronic database for ordering and viewing results.

A departmental lecture reporting the results of this study was delivered in July 2017. This included recommended guidelines on the use of urine cultures in catheterised patients and appropriate antimicrobial therapy. A re-audit was done over a 3-month period (August 2017 to October 2017). Since this was an audit, ethical approval was not requested but approval was obtained from the chairman of the department of health rehabilitation services.

## RESULTS

There were a total of 38 patients who were catheterised between October 2016 and December 2016. In the re-audit, between August 2017 and October 2017, there were a total of 55 patients who were catheterised. Catheterised patients usually had more than one urine culture taken in the 3-month period with a similar gender distribution (see Table 1).

### Indication for urine culture

Figure 1 summarises the indications for ordering a urine culture as documented on the hospital online order system. The commonest specific indications were fever (13%) and retention (13%) in 2016 whilst in 2017 these included 'UTI' (32%) and fever (10%). Forty six percent did not have a specific description for the indication and were documented as follow up in 2016 and this decreased to 27% in 2017.

Figure 2 summarises the indication for urine culture documented in the medical notes. This was not documented in 50% of samples taken in 2016 and was similar in 2017 at 48%. The commonest indications documented in the medical notes in 2016 were retention (16%) [including suprapubic tenderness (12%) and distended abdomen (4%)] and fever (10%). These were similar in 2017.

Table 1: Sample size of catheterised patients and number of urine cultures taken in each cohort

	Oct 2016 - Dec 2016	Aug 2017 - Oct 2017
Number of catheterised patients who had a urine culture taken	38	55
Male:Female	16:22	26:29
Total number of urine cultures taken	100	96
Average urine cultures booked per patient	2.6	1.75

Table 2: Showing the use of empirical antibiotics and switching due to resistance and sepsis

	Oct 2016 - Dec 2016	Aug 2017 - Oct 2017
Total number of cultures	100	96
Episodes of empirical antibiotics given	46	46
Episodes of switching antibiotics	15	9
Reasons for switching	Resistance	8
	Sepsis	1

Figure 1: Indications for urine culture as documented on the hospital electronic database in 2016 and 2017

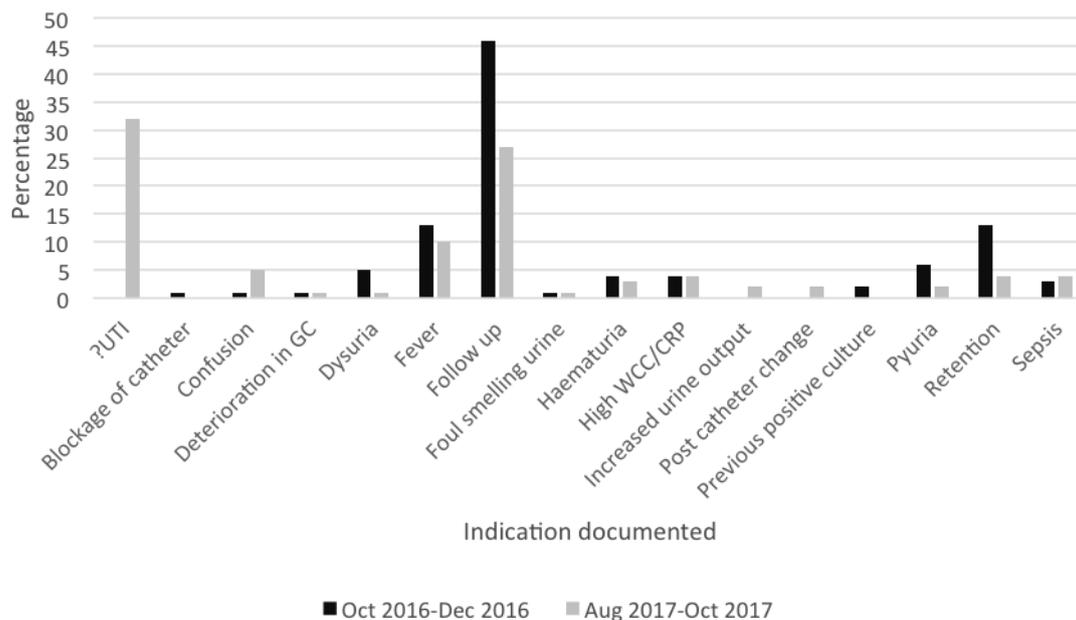
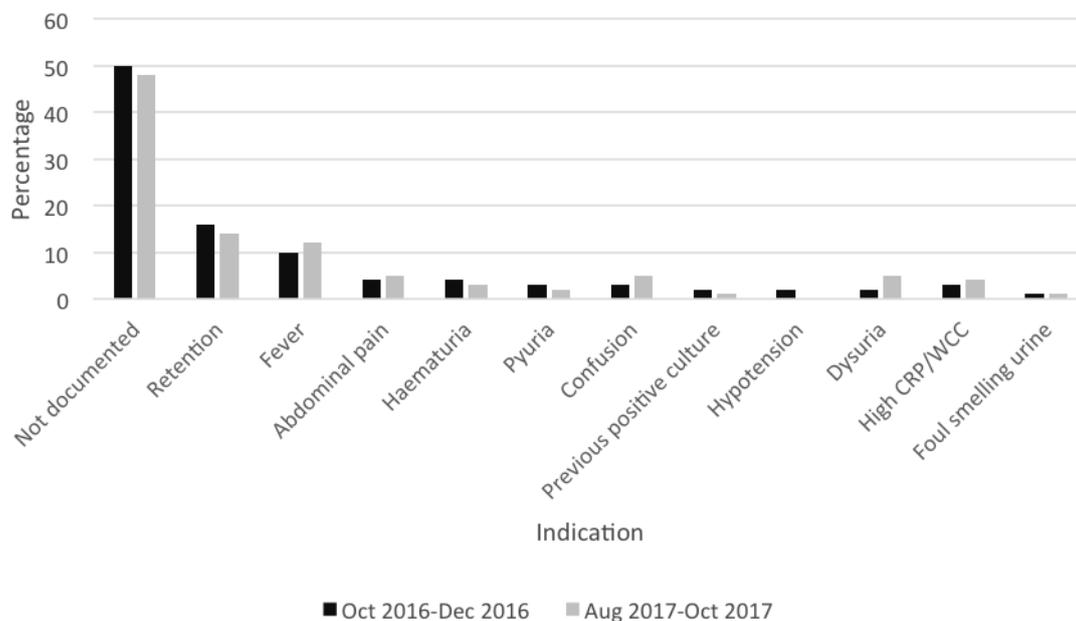


Figure 2: Indications for urine culture as documented in medical notes in 2016 and 2017



### Culture results and antibiotic use

Figure 3 summarises the organisms cultured from the urinary catheter samples in both years. Sixty-six per cent of samples sent had a positive culture in 2016 and 56% in 2017. The cultured organism was documented in the medical notes in 15% of cases in 2016 and this increased to 40% in 2017. The commonest bacteria cultivated in 2016 were *E.Coli* (18%), *Klebsiella* (5%) and *E.faecalis* (5%) whilst in 2017 these

were *E. Coli* (22%), *Klebsiella* (8%) and *Klebsiella pneumonia carbapenemase* (KPC) (5%). Culture sensitivity results were available by calling the laboratory. These were never documented in the medical notes in both 2016 and 2017.

There were 46 episodes when empirical antibiotics were given in both 2016 and 2017. The commonest antibiotics used were co-amoxiclav and nitrofurantoin in both years. Figure 4 summarises the empirical antibiotics

Figure 3: Urine culture results in 2016 and 2017 (\*KPC – Klebsiella pneumonia carbapenemase)

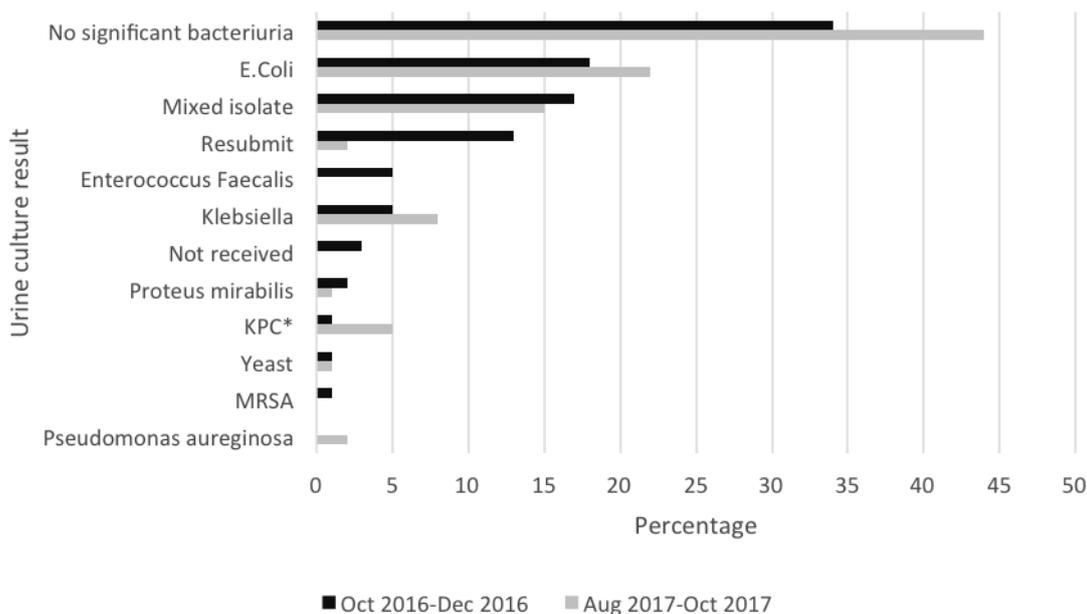
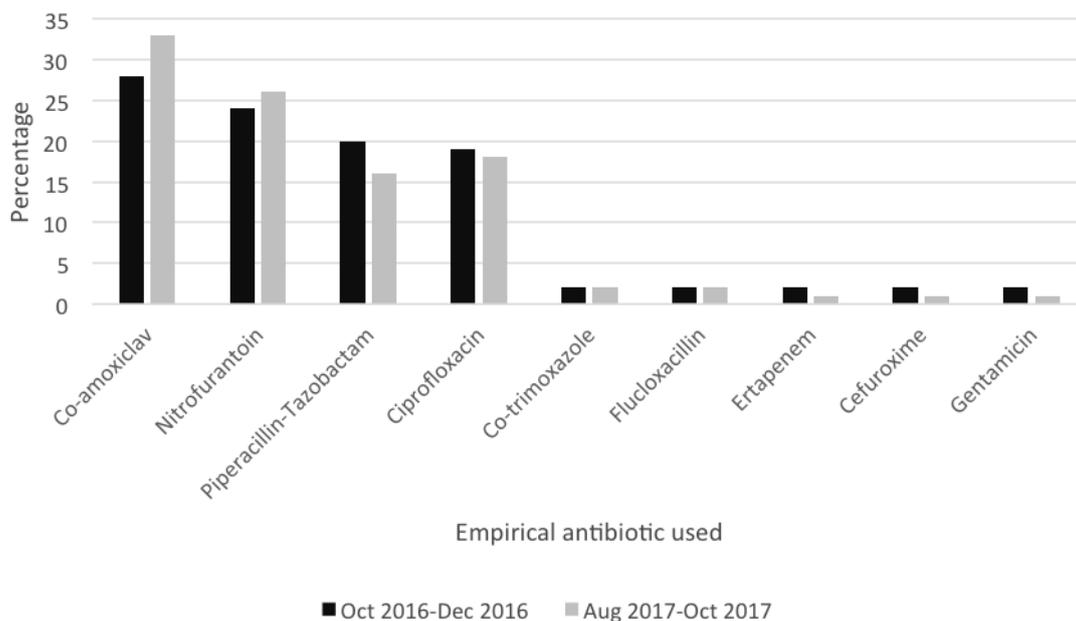


Figure 4: Empirical antibiotics used in 2016 and 2017



used in both years. Antibiotics were switched in 15 of these episodes in 2016 and 9 in 2017. Switching was due to resistance and sepsis (See Table 2).

**DISCUSSION**

Catheterised patients invariably have a bacteriuria and these may be asymptomatic. Existing guidelines advise not to treat asymptomatic bacteriuria in those with

indwelling catheters since antibiotics increase side-effects and antibiotic resistance. Urine cultures from catheterised patients should only be sent when there are signs and symptoms of infection. Urine microscopy and dipstick analysis should not be used in catheterised patients to diagnose urinary tract infections since they are of limited use (SIGN - Scottish Intercollegiate Guidelines Network, 2012). Local guidelines regarding antibiotic

choice in catheterised patients are also available on the online hospital database (Urinary Tract Infection, Clinical Practice Guidelines Mater Dei Hospital Malta, 2017).

Data from the medical case notes showed that there was no documentation of the urine culture indication for around 50% of the samples taken in both 2016 and 2017. There was an improvement in documenting the indication on the online hospital ordering system from 46% in 2016 to 27% in 2017. While the educational session has contributed to improve online documentation, regular interventions are needed to improve written documentation in the medical case notes. The lack of documentation did not necessarily mean that these cultures were not indicated; however our results have emphasised unacceptable poor documentation and need for improvement.

The commonest organisms cultivated included *Escherichia coli*, *Enterococcus faecalis* and *Klebsiella* in 2016 and *Escherichia coli*, *Klebsiella* and *Klebsiella pneumoniae* carbapenemase (KPC) in 2017 (see Figure 3). The culture result only shows bacteriuria and does not signify a urinary tract infection. Documentation and acknowledgement of culture result was only present in 15% of cases in 2016 and increased to 40% in 2017, showing an improvement. Culture sensitivity results to antibiotics was never documented in both years. The educational event might have contributed to this increase in documentation and acknowledgement of culture result; however there is a need for further improvement. Urine culture results take a few days to process and, if a urinary tract infection is suspected, empirical antibiotics should be started. Empirical antibiotics were given in approximately 45% of cases that had a urine culture taken. This could have included the same patient on different occasions. Antibiotic switching due to resistance, based on the urine culture result, was similar in both years.

This study clearly shows that a high percentage of cultures ordered (up to 75%) did not influence the clinical management. Inappropriate use of these tests leads to a waste of valuable and limited resources. The bacteria cultured were sensitive to the empirical antibiotic chosen in most cases, with however around 10% of cases needed switching due to antimicrobial resistance. This underlines the usefulness of urine cultures in directing therapy when indicated.

The lack of documentation was a limitation of the study but also highlighted the need for improvement in this area. The small sample size was another limitation. There has been a considerable

improvement in the documentation of urine culture indication and acknowledgement of the culture result after the intervention. However, further improvement in this area is needed. Regular auditing, increased educational events, checklists and active involvement of management and policy makers might help improve standards leading to appropriate use of urine culture testing. It would also be interesting to perform this audit in both primary and secondary care involving a larger sample size. This will potentially improve quality of care and decrease unnecessary costs which can be used better elsewhere.

## CONCLUSION

Lack of documentation of the urine culture indication and acknowledgement of the result was evident; however there was an improvement in the re-audit following the intervention. A high percentage of cultures taken did not influence the clinical management. The study clearly shows inappropriate use of urine culture requests and the need to follow available guidelines. This latter would help avoid waste of valuable and limited resources.

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CELEBRATING THE LIFE OF

# Dr Tania van Avendonk

1964 - 2018

