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Family medicine: present & future

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Future prospects of the College

Prof. Pierre MALLIA

The Presidency of the College was vacated several months ago and I find myself President again after several years (this time uncontested) after some friends encouraged me to take on the post. Indeed it is always an honour to work for doctors and the issues we face today are related but very different from the last period I spent in this position which you members entrusted me with.

Indeed there was no need for an election as there were not enough people to fill all the posts on council. This sends us the message that in the cycle of oscillation between high and low, enthusiasm is at another low. So the main agenda on the council is to provide members with several goals and objectives for the coming three years in order to consolidate the foundations of the College and entice members to be active once again. We do expect that once people see things moving, and without doubt there will be different opinions, this will entice members to contests for council posts, including that for president.

I am pleased to see that Vocational Training (VT) has succeeded over the past years and indeed those who pass the final assessment will become members of the college and have a right to apply for MRCGP(INT). We are dealing with the government to continue to support financially this collaboration as it is of mutual benefit, seeing that by EU law, doctors working in the health centres need to have vocational training. Conversely, as is done by the University of Malta, we need a serious external review of the process so that it does not deteriorate over time. The downside is that we are tied to this process for membership of the College which in turn means that a government selection board, limited by the number of posts available for VT, decides who will be accepted to undergo Vocational Training. Moreover with the increasing number of doctors qualifying (in 2012 a staggering 200 students entered the MD course at University) we cannot have only a handful of doctors doing VT whilst others are free to roam around. This is after all about patient safety. Can the College perhaps provide an alternative path for VT? Can the government be persuaded to train more people? These issues will certainly be discussed in the coming months.

Unfortunately this is not the only problem. As years went by the initiative to introduce MRCGP(INT) for College members (I refer mostly to those listed on the Specialist Register through the grandfather clause) fell on the side. There is an AGM vote for this and one of this council's agendas would be to re-address this issue. Of course the MRCGP(INT) is not ours to give and negotiations must occur with the RCGP

on how assessments can be done in a fair way for established doctors. While not all will be enthused by this, at least one should have the option.

On a more positive note I feel the time has come that the College starts a path to obtain College Fellowship. Council will discuss this in the future and there will also be an open forum of some sort to have input from members. There will be those who can be immediately honoured for the contribution they gave to the College and / or family medicine in Malta. But a path for all members to obtain fellowship will be created and should not be based simply on the amount of time that someone has been a member but perhaps tied to some form of past or present contribution to the MCFD. That way fellowship would be a recognized honour by the College to those who strengthen it.

Moreover I feel that much more can be offered to members, but the workers in the field are not considerable and we would thus need to recruit more. The Department of Family Medicine of the University of Malta will be offering to collaborate with the College to provide certificates in various fields. Such certification will therefore not only be from the College but have the rigour and indeed certification of the University of Malta. This is not an easy process but we can certainly work through the bureaucracy.

Membership of the College should count. The College is committed to helping doctors provide excellent services. Proposals from members are welcome at this stage. There is a limit to how many objectives can be reached in three years and the above is already ambitious. But if members are willing to work (and be recognized) then more can be achieved. Indeed we are already talking about the need to remunerate appropriately those people who provide a service. We remain a collegiate organization and one cannot expect to be paid for a service which should be voluntary. But a balance has to be achieved between what should be voluntary and what should have remuneration or at least an honorarium. If services, such as courses and certificates, are provided to members this is possible. Collegiality remains the key if we are to dictate the face and future of family medicine in Malta.

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The contemporary College and Council

Dr Jason J BONNICI

As the present Honorary Secretary of the Malta College of Family Doctors I have been asked by the editorial board to write about the contemporary College and Council.

What the Malta College of Family Doctors (MCFD) is about is well established nowadays. As its esteemed members you are all aware that the MCFD is the entity responsible for the continued professional development of family doctors and for the vocational training of medical doctors opting to enter the speciality of family medicine in Malta.

I said nowadays because what we are today, what the name MCFD entails, covers the story of a journey. A journey that sees how people, colleagues and friends, have started things off ... pioneers with vision and purpose. A journey that sees how people, colleagues and friends, have contributed in various means and measures to do things along the way ... milestones that make us, family doctors, what we are. A roller-coaster of a journey ... with memorable highs, dismal lows ... and emotions guaranteed at the bends!

And the journey goes on. The roller-coaster keeps moving ... because people, colleagues and friends, are looking forward to go further. Travellers know that the longer the journey is, the bigger the experience that one has ... because the more people are met and befriended and the more things are done.

We are indebted to all colleagues and friends, who have yesterday dedicated and will tomorrow dedicate, time and energy to achieve milestones in our everyday reality of family medicine. The time is overdue for proper recognition to be bestowed and a Fellowship of the Malta College of Family Doctors (FMCDF) is an official step in that direction.

How am I to present the current college activists?

Some years ago a television company issued a TV advert for its new product. The advert showed a large carton box on a table and it bluntly said that whoever wants to see the new product should get to see it personally. The same applies to us ... our activists, volunteers and representatives are around ... we are there

during family medicine activities, we are there during the College activities ... our contact details are on the MCFD website www.mcfid.org.mt.

To start your enquiries you might ask for the council members:

Prof. Pierre Mallia (President),

Dr Philip Sciortino (Vice-President),

Dr Tanya van Avendonk (Hon. Treasurer),

Dr Adrian Micallef (Registrar),

Dr Patricia De Gabriele (officer involved in vocational training),

Dr Doreen Cassar (officer involved in vocational training),

Dr Dominic Agius (Secretary for Research, officer involved in vocational training and Specialist Accreditation Committee representative),

Dr Marco Grech (assistant to secretariat),

Dr Jean-Pierre Cauchi (officer co-ordinating revision of statutes),

Dr Daryl Xuereb (officer involved in Continued Medical Education activities), and

Dr Jason J Bonnici (Hon. Secretary) - yours truly ... contact us!

The journey rolls on: vocational training, continued professional development, post-graduate certificate and diploma courses, update of GP training curriculum, training of GP trainers and examiners, MRCGP(INT), FMCDF, revision of statutes, international activities and other issues are beckoning.

The bus is coming ... are you coming on board?

Dr Jason J BONNICI MD, Dip Fam Prac (MCFD), MMCFD
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Immersion pulmonary oedema in a scuba diver

Dr Mario SALIBA

ABSTRACT

Pulmonary oedema can occur in a healthy swimmer or scuba diver due to the physiological effects on the lungs of immersion in water. A case report of fatal pulmonary oedema in a sixty-one year old diver is presented and discussed. The author believes that this is the first case of immersion pulmonary oedema that has been documented and reported in a Maltese medical journal.

INTRODUCTION

Acute pulmonary oedema associated with swimmers and divers using a self-contained underwater breathing apparatus (scuba) has been described in the medical literature (Wilmshurst et al. 1989; Weiler-Ravell et al. 1995; Pons et al. 1995 and Hampson et al. 1997 cited in Slade et al. 2001). Cold water induced pulmonary oedema was first described by Wilmshurst et al. (1989). Since then many other cases have been reported in the literature, both in swimmers and divers using scuba. According to Wilmshurst (2011), considering that swimming and scuba diving are extremely common activities, pulmonary oedema associated with these activities could be underreported. Wilmshurst (2011) himself reported 25 cases over a period of 22 years. In a survey of 1,250 divers, 460 responded and from these 5 (1.1 %) had a history suggestive of immersion pulmonary oedema (Pons et al. 1995).

DIAGNOSTIC CRITERIA

McCafferty (n.d.) has written that there are no established diagnostic criteria for acute pulmonary oedema associated with swimming and scuba diving, but from the published cases the following diagnostic criteria can be elicited. According to published cases by Slade et al. (2001) the patient has to be a swimmer or a scuba diver. The condition can occur after only a few minutes in shallow water. It can occur in both cold and warm water, usually the patient is more than 50 years old and has a history of hypertension possibly on beta

blockers or untreated blood pressure. There is rapid onset of shortness of breath with persistent coughing, sometimes with blood-tinged and frothy sputum. Water aspiration may be a contributing factor. Often it resolves quickly once a diver or swimmer exits the water but may be more severe and requires hospitalisation. In some cases it may also be potentially fatal (Slade et al. 2001).

PHYSIOLOGICAL MECHANISM

The mechanisms for development of acute pulmonary oedema in otherwise healthy swimmers and divers are not clear (Slade et al. 2001). During immersion in water, blood is redistributed from the legs to the heart and blood vessels in the lungs. Usually there is cardiopulmonary compensation, but sometimes the resulting increased pressure within the blood vessels in the lungs causes extravasation of fluid into the gas-containing spaces of the lungs (McCafferty, n.d.). This was confirmed by physiological studies cited by Slade et al. (2001) who stated that this extravasation of fluid into alveoli is due to an increased transalveolar pressure gradient caused by a combination of factors.

CASE PRESENTATION

The case involved a 61 year old male, non-smoker with a body mass index of 27. He arrived in Gozo for the fifth time for his usual diving holiday. He was part of a voluntary rescue organisation in his country and took part in rescue activities and kept himself in reasonable good health. He made his usual diving medical check up at his doctor just a couple of months before he came to Malta. According to this medical certificate there were no known or declared chronic medical conditions. Section 11a of the Recreational Diving Service Provider Regulations (2004) state that before using scuba, all divers shall fill and sign an appropriate medical statement to ensure their suitability for recreational diving. This diver had fulfilled this requirement and was therefore permitted to hire air cylinders for diving.

The subject was a qualified rescue diver with 1000

dives under his belt and his deepest logged dive was of 27 metres. On the fatal day he went for what was supposed to be an easy dive with his two friends. They planned to do a bay dive in an area where the seabed was not deeper than 15 metres. According to his friends, the evening before the dive he just relaxed in the apartment and had only a glass of wine with them. In the morning of the accident he took a light breakfast and prepared for the dive.

That day the weather conditions were excellent and sea temperature was 16 degrees Centigrade. After putting on his equipment the subject performed the routine equipment check with his buddy and entered the water from a slipway and swam for about 15 metres out into the sea. They were soon joined by the other divers. They made the 'OK' sign to each other followed by the 'descent' sign and started to descend under the water. At 5 metres, about one minute into the dive, the diver was noted to be moving away from the other divers. One of them immediately pulled at his flippers to catch his attention and when he came face to face with him he noted that he was not looking well and signalled to the other diver to abort the dive. The diver in distress was quickly pulled up to the surface. He was still alive, but looked apprehensive and panicky.

They turned him on his back, inflated his bouyancy control device and the two together pulled him towards the shore. Half way towards the slipway, they noted that he had whitish froth coming from his mouth and nose and he went limp and pale. They continued pulling him to the shore and placed him on the slip way and started cardio-pulmonary resuscitation (CPR) including oxygen by ambubag provided by other divers who were nearby. Unfortunately, CPR was not successful and he was declared dead by paramedics who arrived about 20 minutes later. The equipment he used, including the compressed air he breathed, were duly examined by a technical court expert. The equipment was found to be in good working order and the compressed air he breathed was not contaminated. A post-mortem examination was performed the following day.

The autopsy report confirmed the cause of death as immersion pulmonary oedema. Acute myocardial infarction was excluded although the victim had pathological signs of coronary artery disease. He also had mild myocardial hypertrophy and renal congestion. There were also signs of atheroma in the aortic arch and thoracic aorta. No other pathology was noted.

DISCUSSION

Cases of immersion pulmonary oedema are not common in medical literature as the condition is not well known among the medical profession (Wilshurst, 2011). This situation is the same in Malta and the author is not aware that any cases of this condition have ever been reported in Malta. This unfortunate case was a fatal one and so a post-mortem had to be performed to establish the cause of death of the diver as required by law.

If one was aware of this condition, the diagnosis was not difficult to make since the clinical picture before the diver died was that of pulmonary oedema. It was observed by the divers during the rescue operation that white froth emerged from the mouth and nose of the victim. The post-mortem report stated that there was gross pulmonary oedema, but there was no haemorrhage. This meant that there were no signs of pulmonary barotrauma which could have been caused by the fast ascent. The pathologist noted that the oedema was not like that of usual heart failure but a really massive one, implying that other mechanisms were involved in its formation.

The take-home message for general practitioners is that when they examine divers they should remember that these are a mixed community of people with possible chronic medical conditions. Long years of experience with divers makes one conclude that some divers deny that they have a chronic medical condition and do not declare it before diving. It is also a fact that the coronary artery disease may be asymptomatic (Thaulow et al. 1996 cited in AHRQ report, 2003). There was no history of alcohol abuse, no recent stress and no history of hypertension – a risk factor for immersion pulmonary oedema (Slade et al. 2001). On the day of the incident, the subject seemed to be feeling good and prepared himself well for the dive. The only contributory factor which may have caused the pulmonary oedema was the documented coronary artery disease found at autopsy. From a personal communication with Wilshurst (2011) another possible factor which could have triggered the pulmonary oedema could be a cardiac arrhythmia, but this could not be proved.

CONCLUSION

Immersion pulmonary oedema associated with swimming and scuba diving is not such a rare condition but rather under-reported. It can be fatal, especially during diving, but can also occur in non-divers during swimming.

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A study of general practice consultations at Mosta Health Centre, Malta

Dr Sarah CUSCHIERI & Dr Mario R. SAMMUT

ABSTRACT

Background

Primary care is the first contact for patients with health-related problems. In Malta, primary health is provided by both private and state sectors. The state services are free-of-charge and provide a 24 hrs walk-in GP service at health centres as well as community care, immunisation and local clinics (*bereġ*) for free prescriptions and blood pressure monitoring.

Objective

The aim of this study was to obtain basic demographic data and reasons for encounter (RfEs) of patients attending Mosta Health Centre from 8am to 5pm between 16th July and 7th October 2012. The RfE data were collected with the International Classification of Primary Care Version 2 (ICPC-2) and compared with data from local and international studies.

Method

Patients attending the clinic during the first author's allocated time at the GP clinic were anonymously recorded and data collected was organised according to gender, age, locality and RfE. The RfEs were classified according to ICPC-2 criteria.

Results

A total of 271 patients were reviewed, where 132 were male and 139 females. The age of patients ranged between 2 months and 86 years. The majority of patients were from Mosta and St. Paul's Bay. The commonest RfE according to ICPC-2 was musculoskeletal complaints.

Conclusion

Data collected showed that in general practice the reasons for consultations is vast with the most common RfEs being musculoskeletal problems, administrative work, health check-ups, respiratory problems and blood pressure monitoring. Improvement of the primary care services with an increase in resources would decrease the burden on secondary care.

KEY WORDS:

Family medicine, general practice, ICPC, Malta, reasons for encounter.

INTRODUCTION

Primary health care as stated by the Alma-Ata Declaration "is the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible where people live and work, and constitutes the first element of a continuing health care process" (Declaration of Alma-Ata, 1978). Primary health care in Malta is provided by both the private and the state sectors. These two general practice systems function independently of each other. The state services, which are offered free-of-charge at the point of use to all Maltese citizens, refugees or tourists (with latter only for emergencies), cover general practice through a number of health centres found spread throughout Malta (Floriana, Mosta, Birkirkara, Gzira, Paola, Bormla, Rabat, Qormi and Rabat-Gozo). The state also provides community care and local clinics (*bereġ*), which open for 1 to 3 hours once to five times a week on weekdays only and are spread around 40 different localities around the island (Sammut, 2000). Certain health centres also provide various specialised health services including Immunisation, Speech Therapy, Antenatal and Postnatal clinics, Well Baby and Paediatric Clinics, Diabetes clinics, Orthopaedic clinics and Wound clinics (Health, the Elderly and Community Care, 2012).

The Mosta Health Centre runs a very busy service on a daily basis catering for the northern part of the island. The health centre offers a walk-in GP clinic service where patients present to the doctor with their health problems. Mosta's Health Centre is the primary care hub for a number of localities before 5pm namely: Mosta, Sta. Venera, Naxxar, Gharghur, Mgarr, Ghajn Tuffieha, St Paul's Bay, Mellieha, Burmarrad, Buġibba, Qawra, Bahar iċ-Ċaghaq, Madliena, Mrieħel (part), Fleur-de-lys, Salina, Xemxija, Manikata, Bidnija, Żebbiegh, Magħtab, Ta' Qali, Ta' Paris, Ghadira and Ċirkewwa (Health, the Elderly and Community Care 2012). During the summer a larger amount of people visit Mosta Health Centre due to

the increase in people moving to their summer residence.

The aim of this study was to explore the content of family practice in a Maltese government health centre. Patients attending the clinic during the first author's allocated time at the GP clinic from 16th July to 7th October 2012 were reviewed to obtain basic demographic data and reasons for attending Mosta Health Centre.

METHOD

Every patient reviewed at the GP clinic by the first author between 8am and 5pm was noted. Each patient visit was anonymously recorded and the data collected was organised according to gender, age, locality and reason for attending the health centre. The reason for attending the health centre was classified using the International Classification of Primary Care Version 2 (ICPC-2) criteria (Wonca International Classification Committee, 1998).

The ICPC-2 criteria reflect the distribution and content of the aspects of primary care. ICPC has a biaxial structure, with 17 chapters on one axis and 7 components on the other. Chapters are based on body systems, with an additional chapter for psychological problems and one for social problems (Wonca International Classification Committee, 1998). Each chapter is divided into seven components, identified by a range of two digit numeric codes. Component 1 codes symptoms and complaints, while component 7 codes diseases. Therefore when it comes to reason for encounter (RfE), it can either be a symptom (Component 1) or disease (Component 7) (Soler et al, 2011). In this study, all 17 chapters were considered against Component 1 and Component 7.

The data obtained over the 3 months were further analysed according to requests for official X-ray report interpretation available on the patient archiving and communication system (PACS), blood pressure monitoring, renewal of national insurance (NI) certificates and those requiring a certificate of medical fitness to undergo sports.

As no sensitive personal data was gathered during this study, no ethical approval was needed, while authorisation was obtained from the Primary Health Care Department to use the anonymous data for this study.

RESULTS

A total of 271 patients were reviewed by the first author at Mosta Health Centre during the selected period. There were 132 males and 139 females. The ages ranged between 2 months and 86 years, with an average age of 46 years (Table 1).

Tables 2, 3 and 4 show the different localities and the

Table 1: Number of patients in different age ranges

AGE RANGES	NUMBER OF PATIENTS
0 – 10	18
11-20	27
21-30	39
31-40	36
41-50	25
51-60	32
61-70	42
71-80	41
81-90	11

Table 2: Number of patients from Mosta Health Centre's catchment area visiting before 5pm

LOCALITY	NUMBER OF PATIENTS
Mosta	82
St Paul's Bay	80
Naxxar	37
Mellieha	12
Mġarr	5
Gharghur	3
Żebbiegh	1
Salina	1
St Venera	1

Table 3: Number of patients from Rabat Health Centre's catchment area visiting Mosta Health Centre before 5pm

LOCALITY	NUMBER OF PATIENTS
Lija	7
Balzan	6
Attard	5
Rabat	4
Bahrija	1
Dingli	1

Table 4: Number of patients from B'Kara Health Centre's catchment area visiting Mosta Health Centre before 5pm

LOCALITY	NUMBER OF PATIENTS
Birkirkara	15
Iklin	5

number of patients that visited the health centre. There were 5 other patients from other localities not within the Mosta Health Centre catchment area that also visited the GP before 5pm.

The reason for attending the health centre was classified using the ICPC-2 classification, with Table 5 showing the number of patients presenting to the GP clinic for different reasons. One must note that in one consultation there may have been more than one reason for attending the GP clinic, so when it came to ICPC-2 classification one consultation may have been put done into a different number of chapters.

Further analysis of the data obtained from the 76 patients assigned to the “L - Musculoskeletal” chapter of the ICPC-2, showed that there were 30 patients who attended for the official X-ray report after these patients had X-rays taken at the Health Centre X-ray department.

Of the 31 patients within the “K – Circulatory” chapter of ICPC-2, 28 patients visited the GP clinic to have their blood pressure checked. This may have been the sole reason for attending the clinic or else an additional request during the consultation.

Within the ICPC-2 “Z– Social” chapter, 9 patients out of 15 came to have a renewal of their national security insurance certificate due to chronic illness, thus being coded here rather than in the chapter of the health problem concerned. The “A – General” chapter included 4 patients who presented to be issued with a certificate of fitness for sports activity, and 5 patients requesting a health check-up, with the majority in this chapter needing referral tickets to other health departments including physiotherapy.

From the 271 patients reviewed, there were 29 patients that were referred to other health departments with 6 referrals being to Accident and Emergency department at Mater Dei Hospital due to acute pathology. The remainder of the consultations required advice and medications according to the reason for attending the clinic. Some consultations were follow-up consultations especially where blood pressure assessment was being done. Other patients needed their consultation to be continued by the nurses and were transferred to the treatment room. Such patients included those candidates who required nebulisers or wound care / dressings.

DISCUSSION

Using the ICPC-2 classification, the five most common reasons of encounter in this study were for Musculoskeletal, General, Respiratory, Circulatory and Skin problems. Musculoskeletal problems consisted of patients requiring X-rays, patients presenting to the GP

Table 5: Number of reasons for encounter classified in different chapters according to the ICPC-2 Classification

ICPC-2 CLASSIFICATION	NUMBER OF RfEs
A: General	48
B: Blood, Blood forming	11
D: Digestive	14
F: Eye	5
H: Ear	15
K: Circulatory	31
L: Musculoskeletal	76
N: Neurological	3
P: Psychological	4
R: Respiratory	34
S: Skin	24
T: Metabolic, Endocrine, Nutrition	0
U: Urinary	6
W: Pregnancy, Family Planning	1
X: Female genital	5
Y: Male genital	1
Z: Social	15

clinic with injuries and patients complaining of joint pains. The General classification is the second most common RfE which is made up of patients that presented in need of referral tickets to other health departments and free medications as well as patients presenting for general health check-ups and check up for medical fitness for sports activity. The third most common RfE is respiratory problems, where acute upper respiratory tract infection (URTI) was the main component of this section. The circulatory category makes up the fourth most common RfE where blood pressure monitoring was the major RfE. The fifth commonest RfE is Skin, with insect and jelly fish bites/stings, rashes (both infective and non-infective), skin itching and skin lesions falling under this category.

These five most common RfEs were compared to other studies both performed locally as well as internationally (Table 6). The study performed by Soler et al. (2011) compared the most common RfEs in three private practice populations from the Netherlands, Malta and Serbia.

Table 6: A comparison of the five commonest reasons for encounter between this study's results and the other five different studies; the data was classified using the ICPC-2 Classification.

	MALTA- CUSCHIERI & SAMMUT, 2012	MALTA - SOLER ET AL. 2011	NETHERLAND - SOLER ET AL. 2011	SERBIA – SOLER ET AL. 2011	MALTA – SOLER 2000	MALTA – AGUIS MUSCAT & CARABOTT, 1989*	MALTA – GALEA, 1990
1	Musculoskeletal	Respiratory including fever	Respiratory including fever	Respiratory	Uncomplicated Hypertension (Circulatory)	Administrative (General)	ENT infections (Ear)
2	General	Gastrointestinal	Skin	Musculoskeletal	URTI (Respiratory)	URTI (Respiratory)	Pain – Orthopaedics (Musculoskeletal)
3	Respiratory	Ear	General	Headache	Administrative (General)	Blood pressure* (Circulatory)	Well person check (General)
4	Circulatory	Headache	Musculoskeletal	Gastrointestinal	No disease	Hypertension (Circulatory)	Blood pressure (Circulatory)
5	Skin	Skin	Gastrointestinal	Psychological	Hay fever (Respiratory)	Acute Tonsillitis (Respiratory)	Diabetes (Endocrine)

*In the study by Aguis Muscat & Carabott (1989), no classification was considered during the study when it came to RfEs. In the Aguis Muscat & Carabott study the third most common RfE was put down as preventive examinations. Here the authors were most likely referring to the routine blood pressure checks done as it was reported that “a specific search of 468 encounters in the Government dispensaries showed that only 28 (6%) patients did not request a blood pressure check”. This assumption was made by Soler (2000) in his thesis. Therefore, taking this in consideration, in this discussion blood pressure checks were included in the ICPC-2 Circulatory category.

In all three practices the most common RfE was due to respiratory conditions, URTI being the main encounter. The thesis written by Soler (2000) also discussed the common RfEs at a private clinic in Malta, where the most common was uncomplicated hypertension which according to the ICPC-2 falls under the Circulatory category. In a study performed by Aguis Muscat & Carabott (1989), where the ICPC classification was not incorporated, it was found that the most common RfE was due to administrative work which can be easily be put down as part of the “General” category of the ICPC-2. Another study performed by Galea (1990), also took into consideration the RfEs without using any classification. In this study ENT infections were the most common RfE, which if the ICPC-2 classification is implemented, would fall under the “Ear category”.

The results of the five most common RfEs from this study, although not strictly comparable to the other five studies, show a striking similarity in the RfEs of private practices both in Malta and internationally. Respiratory conditions (mostly URTIs) are present in almost all studies (Table 6). This shows very clearly that in general practice a large percentage of consultations are due to URTI symptoms. When taking in consideration all studies being compared, the next most common RfE falls under

the ICPC-2 “General” category, which is mainly made up of administrative work. This was also pointed out in the study by Aguis Muscat & Carabott (1989) where the authors concluded that a “large part of Health Centre work is devoted to what is mainly routine clerical work”.

Another common RfE in these studies is blood pressure monitoring, which shows that the Maltese population goes frequently to the GP to have a regular check up of their blood pressure, irrelevant of whether they have hypertension or not. In fact in the Aguis Muscat & Carabott (1989) study, the authors commented that “blood pressure checks consume a large part of the doctor’s time”. Musculoskeletal consultations in general practice are also a frequent encounter as could be seen in Table 6, not only in Malta but also in the Netherlands and in Serbia.

The Mosta Health Centre study also took into consideration the different localities from which patients attended the Mosta health centre. The majority of the patients visiting Mosta Health Centre between 8am and 5pm were from the Mosta centre’s catchment area, making up 82% of the patients. But 18% of the patients were from other catchment areas, as can be seen in Table 3 and 4. This shows that there was a significant percentage of patients that visited Mosta Health Centre

from outside its catchment area which could be either because they are not aware of their catchment area health centre or else because patients are ignoring their catchment health centre.

Limitations of the study

This study performed at Mosta Health Centre over 3 months gives a snap shot of the different RfEs in a health centre. As the data collection was performed as a personal initiative of the first author, with only a small percentage of patients visiting the health centre being considered, this is a limitation of the study. Another limitation is that cases included were only those seen in the GP consulting room, thus excluding patients sent from reception directly to the treatment room for interventions such as nebulised therapy, wound care and haemogluotests. Such limitations could have been overcome if all patients attending over two 3-month periods in winter and summer had been studied so that a more realistic picture was obtained.

However, when the results of this study were compared to larger studies performed both in Malta and internationally, there were very close similarities. So one may say that, even though only a very small amount of patients were considered in comparison to the large amount of patients that visit the health centre daily, the results were comparable to other studies performed. To have a better comparative study reflecting the RfEs at health centres, a bigger study over longer periods and involving more doctors serving in different health centres should be performed, with the results then being compared to local and international data.

CONCLUSION & RECOMMENDATIONS

In general practice the reasons for consultations are vast and this clearly demonstrates the different roles the family doctor tends to play in the management of patients' health-related problems, providing support and caring for the patients as well as having a role in the health education of the patient (Galea, 1990). In fact, according to the European Definition of General Practice / Family Medicine, there are six core competencies that every family doctor should master: "Primary care management; Person-centred care; Specific problem solving skills; Comprehensive approach; Community orientation and Holistic modelling" (WONCA Europe, 2011).

Primary care should be the front line for all patients that require health related consultations. This study shows clearly that a wide age range of patients present at the health centre from difficult localities. Moreover, patients present to the health centre with different reasons for

encounter that can be well categorized using the ICPC-2 classification.

Investment in primary health care services and patients' education about the available services at primary care level, would lead to a decrease on the impact on the different departments at Mater Dei Hospital (Malta's public hospital), mostly on the Accident and Emergency Department where large amounts of patients call on the department daily without having gone to their local health centre first.

Proposals for improving state primary health care services would include the presence of well equipped services with availability of simple investigations that can be easily accessed, such as a 12-lead ECG and radiology in all health centres. The paper-based patient records used at present could be upgraded into a more efficient electronic medical record system, ideally linked to the electronic systems already in place for investigations and electronic case summaries. Trained professionals from different health departments available in health centres as part of a roster-based clinic would decrease the waiting list at the hospital outpatient clinics.

Aguis Muscat & Carabott (1989) made a proposal that is still applicable today, in that there should be a reduction in the amount of clerical work that the general practitioner needs to do within government health centres, leading to more time to see patients and to take more responsibility for patients' management. The authors also suggested that specific blood pressure clinics should be set up so that screening and blood pressure monitoring could be done. As Malta's Health Interview Survey in 2008 found that 78% of citizens had consulted a general practitioner the previous year (Ministry for Social Policy, 2008), doctors would also have more time to avail themselves of such opportunities to practice preventive medicine (McWhinney, 1997) and provide health behaviour counselling (Saliba, 2009) in their daily practice.

Moreover "patient education, preferable through mass media, could help towards achieving better utilisation of our human resources (including doctors and nurses) and material resources (including medication and clinic facilities) especially when provided for free of charge" (Aguis Muscat & Carabott, 1989). Additional knowledge of the catchment areas for each health centre would decrease any unnecessary backlog at health centres. All this would lead to a more efficient and effective primary care system.

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Immersion pulmonary oedema in a scuba diver

Prospective divers should be screened carefully for other comorbidities such as hypertension, heart or lung disease. It can occur in otherwise healthy people. There is no accurate way to predict whether or not a diver is at risk to develop acute pulmonary oedema but better screening of divers to identify the above-mentioned potential triggers is recommended.

Consent

Written informed consent was obtained from the patient's next-of-kin for publication of the report.

Competing Interests

The author declares that he has no competing interests.

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Drug-drug interactions in repeat prescriptions at village dispensaries (bereg) in Malta

Dr Anton BUGEJA

ABSTRACT

Background and Objective

Inappropriate treatments and drug-drug interactions (DDIs) are known to occur in settings where repeat prescriptions are issued. In view of this, a study was carried out to document any such problematic drug prescribing and propose changes that would enhance patient safety.

Methods

A random sample of 100 clients who requested a repeat prescription at a group of peripheral village dispensaries (bereg) in southern Malta was chosen and following anonymisation, the drugs requested for such prescriptions were entered into a database. A freely available online DDI checker was used in the analysis of the results and these were rechecked through the appropriate section of the British National Formulary. The resulting DDIs were then grouped according to type, potential effect or disease for which the drugs were used.

Results

A total of 255 DDIs were detected in the prescriptions of 53 clients. Drug combinations with a potential for increased hypotensive effect were the most common cause of DDIs (49.8%) in this sample, but other categories of DDIs were found. These included DDIs which could affect the management of diabetic patients (27.3%), patients on psychiatric treatment (7%) and anticoagulants (4.8%) as well as DDIs that affected serum potassium levels (2.2%).

Conclusions

The results obtained indicate that DDIs are common at a number of peripheral village dispensaries in Malta, and these could affect disease management in some patients. Other DDIs can be potentially harmful. Awareness, knowledge and vigilance by the prescribers involved remains crucial to address the issues raised

by DDIs. Suggestions for addressing these issues on an administrative level are proposed.

KEYWORDS:

Primary Health Care; Drug-drug interactions (DDI); Repeat Prescription Clinic; Malta

INTRODUCTION

Unmonitored repeat prescriptions are known to have adverse, occasional fatal outcomes (Manfredi, Sabbatani, Orcioni, Martinelli and Chiodo, 2006). This is an issue of concern, particularly since it is known that repeat prescribing can occur in settings where patients are not regularly reviewed by their general practitioner, thus exposing patients to serious adverse effects (Zermansky, 1996). Some client categories are also known to be at an increased risk of pharmacological interactions particularly those on polypharmacy, with pluripathology, as well as those in the geriatric age group with a deterioration of cognitive functions (Castillo, García, Barrios, de Pablos, Villar and de la Cuesta, 1995; Shah and Hajjar, 2012). Patients with problems to access care are also at an increased risk (Farmer, 1995). Use of certain drugs, such as warfarin, is another factor which attracts an increase risk. Indeed, in a study by Snaith, Pugh, Simpson and McLay (2008) on a cohort of patients on warfarin it was found that the prescription of interacting medicines was common. The prevalent one-off prescriptions in this study could have arisen from particular clinical scenarios whereby the doctor weighs the benefits and risks of combined treatment. Notwithstanding, the common occurrence of repeat prescriptions for treatments with a potential for drug-drug interactions (DDI) was of concern. The possibility that this arises from the dynamics of the repeat prescription procedure was considered as an important issue in the study by Snaith et al. (2008) and this needs to be considered in Malta.

Regional state health centres, eight in Malta and one in Gozo, serve as hubs for the provision of public primary

health care in the Maltese Islands. General practitioner and nursing services as well as various specialised health services, such as immunisation and speech therapy, are provided here (Ministry of Health, the Elderly and Community Care, 2012). In the villages where no such health centres exist, a further service is provided by peripheral clinics, locally known as *bereg*. At these 42 peripheral clinics basic medical and nursing services are provided by appointment (Ministry of Health, the Elderly and Community Care, 2012). Although when originally set up in the first half of the nineteenth century the peripheral clinics were pioneering gateways for access to secondary care (Abela, 2002), these clinics are now mostly used to issue repeat prescriptions or medical certificates (Sciortino, n/d). For repeat prescriptions, the doctor has to rely on the information provided by the patient or his/her representative, with no manual or electronic records held by the doctor or at the clinic. No mechanism is in place such as those used in other countries (Floor-Schreudering, de Smet, Buurma, Amini and Bouvy, 2011) to monitor and reduce adverse effects from DDIs. It was clear that the mechanism for the issuing of repeat prescriptions had to be studied as the potential for harmful DDIs was clear. The criterion was that no harmful DDIs were to be issued in drug prescriptions. The present paper gives an overview of the results of the first part of the audit cycle carried out to document and address DDI issues at these peripheral clinics.

As patients may personally attend the clinic or delegate the request of a repeat prescription to third persons, the term 'client' is used to refer to persons attending the clinic while the 'patient' is the person needing the prescription irrespective of whether he personally attended the clinic or not.

METHOD

Anonymised records were kept of clients asking for a repeat prescription from the author at the peripheral clinics for the months of June-July 2012. The age and gender of the clients as well as the pharmacological name and dosage of the medicine requested was recorded. A note was also taken of whether the client personally attended the clinic or not, and the type of forms presented to doctor.

A random sample of 100 clients was chosen from this population according to a sampling method provided by World Health Organisation (1993) for studies of drug use in health facilities. Each client's list of drugs was checked through an online computer programme for DDIs (Drug Interactions Checker, 2012) and the resulting DDI pairs verified against the Interactions Appendix of British National Formulary September issue (2012). The resulting DDIs were then grouped according to type, potential effect or disease for which the drugs were used.

RESULTS

During the two months, a total of 473 clients from eight peripheral clinics (i.e. Birżebbuġa, Ġhaxxaq, Gudja, Mqabba, Qrendi, Tarxien, Żejtun, and Żurrieq) were included in the study. Out of the 100 clients randomly selected for study, it turned out that there were equal numbers of females (50%) and males (50%). Sixty one clients personally attended the clinic, 34 (56%) were females while 27 (44%) males. A slightly lower number of females, 16 (41%), as compared to 23 (59%) males delegated the prescription collection to third persons. This random sample of 100 clients had a mean age of 63 years (median 65 years), the youngest being 14 years and the oldest 90 years. Most clients (78%) were between 50 and 79 years (Table 1).

Table 1: Age range of clients in the random sample of patients included for study (%males= Number of males in the age group expressed as percentage; %att.= Number of patients in the age group who personally attended the clinic expressed as percentage; % m. att.= Number of male patients in the age group who personally attended the clinic expressed as percentage)

AGE GROUP (YEARS)	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
Number	0	3	1	4	6	19	33	26	7	1
%males	0	66	0	75	33.3	47.4	61	38	43	1
% att.	0	0	0	25	33.3	63	70	77	29	100
% m. att.	0	0	0	33.3	50	42	50	40	0	100

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- ✓ Civil Protection Department (Malta)
- ✓ Department of Health (A&E Dept.)
- ✓ Emergency Fire and Rescue Unit (EFRU)
- ✓ Enemalta Corporation
- ✓ European Commission Representation in Malta
- ✓ Emergency Response Rescue Corps (E.R.R.C)
- ✓ F. A. S. Ltd.
- ✓ Gozo Channel Company Ltd.
- ✓ Gozo General Hospital (A&E Dept.)
- ✓ Gozo Health Centre
- ✓ Health Services Group Ltd.
- ✓ Hilton Malta Hotel
- ✓ Hotel Le Meridien
- ✓ Hotel Riviera Resort and Spa
- ✓ The Westin Dragonara Resort Malta
- ✓ Hotel Xlendi
- ✓ Malta Football Association
- ✓ Malta Freeport
- ✓ Malta International Airport
- ✓ Malta Maritime Authority
- ✓ Malta Red Cross
- ✓ Malta Resuscitation Council
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- ✓ Primary Health Care Centre - Mosta
- ✓ Primary Health Care Centre - Qormi
- ✓ Sir Paul Boffa Hospital
- ✓ Smart Supermarket
- ✓ Soċjeta Nazzjonali ghas-Salvataġġ
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Table 2: Characterisation of clients according to number of drugs requested (%M att.= Number of males making the request for the particular number of items who actually attended the clinic, expressed as percentage; %F att.= Number of females making the request for the particular number of items who actually attended the clinic, expressed as percentage; % tot. att.= Total number of persons making the request for the particular number of items who actually attended the clinic, expressed as percentage)

NUMBER OF ITEMS PRESCRIBED PER CLIENT	NUMBER OF CLIENTS	MALE	MALES PERSONALLY ATTENDING CLINIC	% M ATT.	FEMALES	FEMALES PERSONALLY ATTENDING CLINIC	% F ATT.	% TOT. ATT.
1	17	12	6	50	5	2	40	47.1
2	22	9	5	55.6	13	9	69.2	63.6
3	13	9	4	44.4	4	4	100	61.5
4	6	1	0	0	5	5	100	83.3
5	14	7	6	85.7	7	4	57.1	71.4
6	10	3	0	0	7	4	57.1	40
7	4	3	3	100	1	1	100	100
8	5	1	0	0	4	4	100	80
9	3	3	2	66	0	0	0	66
10	1	0	0	0	1	0	0	0
11	1	1	1	100	0	0	0	100
12	2	0	0	0	2	0	0	0
13	0	0	0	0	0	0	0	0
14	1	0	0	0	1	1	100	100

A whole array of documentation, averaging around 1.6 per client, was brought to the doctor for a prescription. Eighty five (M=42, F=43) had a yellow Schedule V cards and/or the related extension form (DH 29 and DH 29(ii) respectively). These cards are used by patients to obtain free medicines for chronic diseases. A pink form (DH128), used by clients with low income or diabetics to obtain free medicines was presented by 24 clients (M=13, F=11). In the studied population, 21 (M=6, F=15) asked for a prescription of at least one controlled drug by using a drug control card - DH 680 (i). These cards are used to monitor and control the use of narcotic and psychotropic drugs as stipulated by Maltese law.

Together with these documents, 8 (M=4, F=4) presented a diabetic permit (SLH 145) necessary for the free dispensing of anti-diabetic medicines. Sixteen (M=6, F=9) permits necessary to obtain free medicines not listed on government formulary were presented, a client bringing two permits on behalf of one male patient. Although the Maltese Primary Health Care Department has issued a memo encouraging the use of a prescription green card (PHCD REC/16) to have on record all the

patient's medication, only 4 (M=3, F=1) presented this card. No patients presented an equivalent form issued by Zammit Clapp Hospital, a geriatric rehabilitation hospital. Although all the discharge letters from Mater Dei Hospital (Malta's main public hospital) contain the list of prescribed drugs for discharged patients, no clients brought this document as a reference. On the other hand 4 (M=3, F=1) used an informal method for making their drug request known and this varied from the use of a handwritten or typewritten paper containing the list of drugs needed, or bringing the medicine boxes to the clinic (Table 2).

Polypharmacy was common with an average of 4 items per client, varying from one item for 17 clients and one client having fourteen items. Clustering tends to occur towards a lower number of drugs, with the sample having a median of 3 items per person, and 72% of clients having 5 items or less.

The drugs or class of drugs with a potential to cause DDIs recorded through the study are presented in Tables 3 to 9. The heading to each table groups the DDIs according to type, potential effect or disease for

Table 3: DDIs which may cause enhanced hypotensive effect

ENHANCED HYPOTENSIVE EFFECT (TOTAL DDIs=113; 49.8%)
Enhanced hypotensive effect when diuretics given with angiotensin-converting-enzyme inhibitors (ACE-inhibitors) (n=20)
Enhanced hypotensive effect when diuretics given with beta-adrenergic-antagonists (beta-blockers) (n=17)
Enhanced hypotensive effect when calcium channel blockers (CCB) given with ACE-inhibitors (n=10)
Enhanced hypotensive effect when anxiolytics given with ACE-inhibitors (n=9)
Enhanced hypotensive effect when CCBs given with beta-blockers (n=8)
Enhanced hypotensive effect when CCBs given with diuretics (n=8)
Enhanced hypotensive effect when anxiolytics given with diuretics (n=8)
Enhanced hypotensive effect when ACE inhibitors given with nitrates (n=7)
Enhanced hypotensive effect when beta-blockers given with ACE-inhibitors (n=5)
Enhances hypotensive effect when anxiolytics given with beta-blockers (n=5)
Enhanced hypotensive effect when beta-blockers given with angiotensin II receptor antagonists (ARB) (n=4)
Enhanced hypotensive effect when anxiolytics given with nitrates (n=3)
Enhances hypotensive effect when anxiolytics given with ARBs (n=2)
Enhanced hypotensive effect when diuretics given with ARBs (n=1)
Enhanced hypotensive effect when ACE-inhibitors given with levodopa (n=1)
Enhanced hypotensive effect when anxiolytics given with hydralazine (n=1)
Enhanced hypotensive effect when alpha-blockers given with diuretics (n=1)
Enhanced hypotensive effect when alpha-blockers given with CCBs (n=1)
Enhanced hypotensive effect when alpha-blockers given with beta-blockers(n=1)
Enhanced hypotensive effect when alpha-blockers given with ACE-inhibitors (n=1)

Table 4: DDIs which may interfere with the management of Diabetes Mellitus

DRUGS USED IN DIABETIC PATIENTS (TOTAL OF POTENTIAL DDIs = 62; 27.3%)
Hypoglycaemic effect of metformin possibly enhanced by ACE-inhibitors (n=15)
Warning signs of hypoglycaemia masked by beta-blockers (n=15)
Hypoglycaemic effect of antidiabetics antagonised by thiazides (n=12)
Loop diuretics antagonise hypoglycaemic effect of antidiabetics (n=7)
Hypoglycaemic effect of sulphonylureas possibly enhanced by ACE-inhibitors (n=6)
ACE-inhibitors possibly enhance hypoglycaemic effect of insulin (n=4)
Maybe improved glucose tolerance and an additive effect when insulin or sulphonylureas given with fibrates (n=3)

which the drugs were used. The total number of relevant DDIs is given as 'total DDIs' and this is expressed as a percentage of all the DDIs found during the study. The rest of the table gives a more detailed breakdown of the DDIs included under the heading of table, with 'n' representing the number of relevant DDIs.

DISCUSSION

Drug-drug interactions

Nearly half of the DDIs (49.8%) had the potential of causing an enhanced hypotensive effect. Taking into account the fact that thiazide-like diuretics have not replaced thiazides in the national formulary, 39 DDIs

Table 5: DDIs which may interfere with the management of patients on psychiatric treatment

DRUGS USED IN PATIENTS ON PSYCHIATRIC TREATMENT (TOTAL OF POTENTIAL DDIs = 16; 7%)
Increased sedative effect when tricyclic-related antidepressants (TCA) given with anxiolytics (n=7)
Increased sedative effect when anxiolytics and hypnotics given with antipsychotics (n=2)
Increased sedative effect when selective serotonin re-uptake inhibitors antidepressants (SSRIs) given with anxiolytics (n=1)
Antipsychotics increase plasma concentration of TCAs – possibly increased risk of ventricular arrhythmia (n=1)
Increased risk of bleeding when aspirin given with SSRIs (n=1)
Anticonvulsant effect of anti-epileptics antagonised by TCAs (n=1)
Increased risk of side-effects when clonazepam given with valproate (n=1)
Plasma concentration of quetiapine possibly increased by valproate (n=1)
SSRIs antagonise anticonvulsant effect of antiepileptics (n=1)

Table 6: DDIs which may interfere with coagulation or the management of patients on anticoagulation

EFFECT ON (ANTI)COAGULATION (TOTAL OF POTENTIAL DDIs = 11; 4.8%)
Allopurinol possibly enhances anticoagulant effect of coumarins (n=2)
Anticoagulant effect of coumarins possibly enhanced by omeprazole (n=2)
Anticoagulant effect of warfarin enhanced by simvastatin (n=2)
Omeprazole reduces antiplatelet action of clopidogrel (n=1)
Increased risk of bleeding when Aspirin given with clopidogrel (n=1)
Anticoagulant effect of coumarins enhanced due to antiplatelet action of clopidogrel; avoidance of coumarins advised by manufacturer of clopidogrel (n=1)
Anticoagulant effect of coumarins possibly enhanced by SSRIs (n=1)

Table 7: DDIs which may increase risk of myopathy

MYOPATHY (TOTAL OF POTENTIAL DDIs = 9; 4.0%)
Increased risk of myopathy when simvastatin given with amlodipine (n=8)
Increased risk of myopathy when statins given with fibrates (n=1)

Table 8: DDIs which may interfere with potassium balance and relevant consequences

EFFECT ON POTASSIUM BALANCE (TOTAL OF POTENTIAL DDIs = 5; 2.2%)
Increased cardiac toxicity with cardiac glycosides if hypokalaemia occurs with loop diuretics (n=2)
Increased risk of severe hyperkalaemia when ACE-inhibitors given with potassium sparing diuretics (n=2)
Increased risk of hyperkalaemia when ARBs given with aldosterone antagonists (n=1)

Table 9: A miscellaneous group of DDIs not classifiable under headings of Table 3 to 8

MISCELLANEOUS (TOTAL OF POTENTIAL DDIs = 11; 4.8%)
Excretion of aspirin increased by alkaline urine due to some antacids (n=3)
Omeprazole possibly inhibits metabolism of diazepam (increased plasma concentration) (n=2)
Aspirin antagonises diuretic effect of spirinolactone (n=2)
Thiazides increases cardiac toxicity with amiodarone (n=1)
Plasma concentration of digoxin possibly increased slightly by proton pump inhibitors (n=1)
Increased risk of AV block and bradycardia when cardiac glycosides given with beta-blockers (n=1)
Increased risk of leucopenia and hypersensitivity reactions when allopurinol given with ACE-inhibitors especially with renal impairment (n=1)

involved drugs which correspond to the first three steps proposed by the guidelines of the National Institute of Clinical Excellence (NICE) for the management of hypertension. Their combination may be interpreted as part of an effort to control blood pressure through use of multiple drugs (NICE, 2011).

The number of DDIs with an enhanced hypotensive effect increases by a further 34 drug pairs when one considers the combination of beta-blockers with these drugs. In five clients, it seems that beta-blockers were added to diuretics, ACE-inhibitors, angiotensin II receptor antagonists (ARBs) and calcium channel blockers (CCBs) to achieve a better control of hypertension, with a further client also using an alpha-adrenergic-antagonist (alpha-blockers). For the other DDIs in this category (see Table 3), a case by case review indicates that their use is mostly not in line with the recommendations provided by the NICE guidelines. Indeed, while these guidelines suggest that beta-blockers should be considered for younger people if ACE-inhibitors and ARBs are contraindicated or not tolerated, the youngest person to be on beta-blockers in the study was aged 52 years (NICE 2011, p.12). Furthermore, a beta-blocker was added in 8 clients without evidence of use of a CCB and in another client without the use of an ACE-inhibitors or ARB as suggested by NICE (2011, p.13). Contra-indications or intolerance to a drug could be behind these cases. One, however, has to consider that in Malta, while beta-blockers can be added by a general practitioner once the patient is entitled to free anti-hypertensive drugs through a Schedule V yellow form, a special permit is required to have a CCB added on this form. This raises the possibility that doctors may be opting for a beta-blocker rather than a CCB to avoid lengthier procedures for drug prescriptions. The fact that one client only out of the eight using beta-blockers rather than CCBs had a permit certainly needs further research to be undertaken in this area.

Thirty-six DDIs which could potentially result in an enhanced hypotensive effect occurred as part of the management of hypertension and another co-morbidity. Contrary to the DDIs described above these were probably unintentional. DDIs involving use of antihypertensives with anxiolytics proved to be the most common (n=25), but an enhanced hypotensive effect resulted when antihypertensives were used with nitrates (n=10) and levodopa (n=1). While short term use of benzodiazepines as an anxiolytic is recommended (BNF 2012, p.218), a “repeat prescription syndrome” by which patients continue taking these drugs long-term is known (Bjerrum and Andersen 1996; Neutel, Walop and Patten, 2003). The present documentation of enhanced hypotensive effect in a country where such long-term use of benzodiazepines is known necessitates a review of the prescription of anxiolytics and the need to monitor blood pressure at least in the patients likely to be effected.

One client had an atenolol and co-amilofide combination considered to increase risk of diabetes (NICE 2011, p.12); the repeat prescription of this once commonly used drug combination needs to be addressed.

A quarter of the DDIs were found to potentially affect diabetic control (Table 4). ACE-inhibitors are often used in diabetic patients (n=25) and together with fibrates (n=3) contribute for the attainment of good glycaemic control. Nonetheless, DDIs which adversely influence control of blood sugar have also been recorded (n=19). Certainly of concern are the number of DDIs which can mask warning signs of hypoglycaemia (n=15). These cases reveal that in patients on anti-diabetic treatment, particularly those with relevant DDIs, patients should be educated and glucose monitoring carried out more intensely (Hendrychová and Vlček, 2012).

Likewise in patients on psychiatric treatment (Table 5), the occurrence of unwanted sedation which arises from unwanted DDIs (n=9) should be monitored, particularly

in elderly patients taking multiple drugs (Heppner, Christ, Gosch, Mühlberg, Bahrmann, Bertsch, Sieber and Singler, 2012). Increased risk of bleeding (n=1), decreased anticonvulsant effects of drugs (n=2) as well as increased risk of ventricular arrhythmia (n=1) confirms that special care needs to be adopted to prevent DDIs in patients on psychiatric treatment (Hahn and Braus, 2012).

Patients on anticoagulants are another well-known risk category for DDIs (Table 6). Allopurinol, omeprazole, simvastatin and SSRIs were responsible for a number of DDIs with warfarin and coumarins (n=7). Omeprazole is well known to reduce the antiplatelet action of clopidogrel (n=1) but some studies suggest that this is not important (Douglas, Evans, Hingorani, Grosso, Timmis, Hemingway and Smeeth, 2012). Likewise even though an increased risk of bleeding occurs when low dose aspirin is given with clopidogrel (n=1), combination of the two drugs is a well known treatment as part of the management of a number of cardiac conditions (BNF 2012, p.153).

Nine DDIs exposed patients to an increased risk of myopathy (Table 7). Indeed, the prescription of amlodipine with simvastatin should be approached with caution as this may lead to muscle injury. The United States Food and Drug Administration (FDA) recommends that the dose of simvastatin should not exceed 20mg when combined with a number of drugs, which include amiodarone and amlodipine (FDA, 2011). Eight patients were on an amlodipine/simvastatin combination in the present study but with the dosage of simvastatin being 20mg or less, these were not of significance.

Vigilance should be exerted for DDIs which effect serum potassium levels (Table 8), particularly in a primary care setting where biochemical assessment of serum potassium is notoriously problematic (Muscat and Buhagiar, 2011). The 5 DDIs which effect potassium levels are likely to be significant. Thus, particular attention should be given for prescribing drug pairs that increase serum potassium levels (Eschmann, Beeler, Kaplan, Schneemann, Zünd and Blaser, 2012).

A further 11 DDIs could not be listed under the categories described above (Table 9). Four of these may lead to AV block, cardiac toxicity, leucopenia or effect digoxin levels which may have adverse outcomes. Such combinations need to be avoided.

Addressing DDIs in Maltese Primary Health Care

This study was undertaken by the author as part of a 'Quality Assurance Initiative' within the Primary Health Care Department of Malta (Department of Health, 2012). In view of the fact that the data was collected by a single person, arguments may be made that this represents a

limitation as the methodology may have sampled only a number of dispensaries from southern Malta and could have introduced researcher bias. While these limitations may affect the generalisability of the results to other village dispensaries in Malta, the results undoubtedly reveal that DDIs need to be addressed in repeat prescriptions in Maltese public primary health care.

The results presented above are in line with those carried in Primary Health Care settings, such as that carried out by Teixeira, Crozatti, Dos Santos and Romano-Lieber (2012) in Brazil, where the estimated prevalence of DDIs was relatively high. In this study by Teixeira et al. (2012), clinically significant DDIs occurred in a smaller proportion of patients. While this aspect was not studied locally, prevention of unwanted or potentially harmful DDIs remains a desirable goal for patients both locally and abroad.

The method used in the present study is useful to highlight the DDIs prevalent in repeat prescriptions at the peripheral clinics, yet it remains too laborious to be implemented to address all the DDIs of the clients. Computerization of the clinic records and specialised programmes to address DDIs have been successfully used abroad (Rommers, Teepe-Twiss and Guchelaar, 2011) and these can be implemented locally. Nonetheless this will not automatically provide a solution for it is known that despite the availability and daily use of computerized surveillance systems, exposure to potentially relevant DDIs persists. Besides being user friendly and simple to manage, such programmes also need to be applicable to everyday practice (Floor-Schreudering et al., 2011). There will also be the need for the prescribing doctors to adopt the tools made available to them (Malone and Saverno, 2012).

Community pharmacists are known to have been successfully involved in preventing harmful DDIs (Bond, Matheson, Williams, Williams and Donnan, 2000). The implementation of the Pharmacy Of Your Choice (POYC) scheme, places the community pharmacists in a key position to deal with problematic issues with DDIs. The computerization of patient records adopted in this scheme can provide a useful database through which unwanted DDIs can be reduced. Abroad, medication review reports submitted by pharmacists to the patients' general practitioners is known to have had positive outcomes in this regard (Stafford, Stafford, Hughes, Anglely, Bereznicki and Peterson, 2011).

The dynamics of issuing cards, such as the Schedule V, to allow patients with chronic disease to obtain free medicines may also be contributing to problems in a local scenario. Hospital consultants in different specialties may be issuing such cards with little or incomplete knowledge of the patient's medication, exposing patients to DDIs.

Reducing the number of such cards may address this situation, but access to a national patient medication database during the application process for such cards remains desirable. Such database will also be useful for any doctors in the management of patients.

Certainly until then, and probably also in such situation, it is clear that the role of the general practitioner issuing repeat prescriptions in the peripheral clinics remains crucial in reducing unwanted DDIs. Any issuing of repeat prescriptions should also be documented and accompanied by the necessary examinations.

CONCLUSIONS

DDIs are common at a number of peripheral village dispensaries in Malta. Some are potentially harmful while

others may have unwanted outcomes during management of chronic diseases. Awareness, knowledge and vigilance on behalf of the doctors concerned remains crucial to avoid such circumstances. Community pharmacists attached to the POYC scheme may also contribute. A national database recording patient medication may also be implemented and used to further decrease unwanted DDIs.

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Dangerous creatures of the Maltese sea: Injuries and treatment - Part 2

DR DAVID JAMES SAMMUT

ABSTRACT

This is the second of a two-part article intended to give information about different organisms which inhabit the Maltese sea and which are potentially harmful. Doctors working in the primary health setup and sometimes also in secondary care are often faced with injuries related to these organisms. The nature of the injury and its treatment is then discussed. Treatment however is not evidenced based as little if any studies have been conducted in this field of medicine. After the first article considered venomous organisms, this second article will review sea creatures that may cause injury through bites, spines and electricity.

KEY WORDS

Bites, moray eel bites, sea urchin puncture

INTRODUCTION

The second part of this article will detail the other dangerous sea animals which do not possess any venom (Table 1). Most injuries are caused by sea urchins. Though frequent, this type of injury is only minor. The worse injuries in this category are those of bites. Several fish possess strong jaws capable of inflicting serious injuries which are sometimes fatal. These types of injuries are luckily uncommon, and fatalities very exceptional. The last organism to be mentioned in this article is a very peculiar one, because it uses electricity to defend itself.

CREATURE CAUSING INJURY THROUGH SPINES

The Organism and Nature of Injury

Sea urchins (Figure 1, Table 2) are bottom dwellers, living in shallow waters in rocky areas. They feed on algae which they scrape off the rocks (Sultana et al., 1995). Injury occurs when they are either stepped upon or when they are collected. Spines penetrate the skin and break off, with the palms and soles mostly affected. Often multiple spines are present in the same area. The spines of sea urchins are very sharp but brittle, so they do not penetrate

deeper than the epidermis. The common Mediterranean sea urchin does not possess any venom in its spines, thus injury is often of a minor nature.

Treatment

Treatment options vary. Embedded spines can either be removed immediately, after a few days, or left to come out spontaneously. Any large projecting spines should be carefully removed with tweezers (Drobina, 2008). Deeper spines are more difficult to remove. Removing them immediately is often time consuming, painful and may cause more trauma to the site. Superficial spines are best left undisturbed, as they will eventually be rejected spontaneously as the epidermis renews itself. Deeper spines will come out easier if left for a few days before attempting to remove them. The skin over the spine is broken with a needle and the spine is easily removed by applying pressure at the sides of the spine. This procedure is facilitated if the area affected is left immersed in hot water for 5-10 minutes to allow the skin to become softer before the procedure. Some doctors advocate the use of magnesium sulphate paste to aid spontaneous removal of the spines. Sometimes the area can become infected, with pain, swelling and redness developing around the area. This should be treated with antibiotics.

Figure 1: Sea Urchin

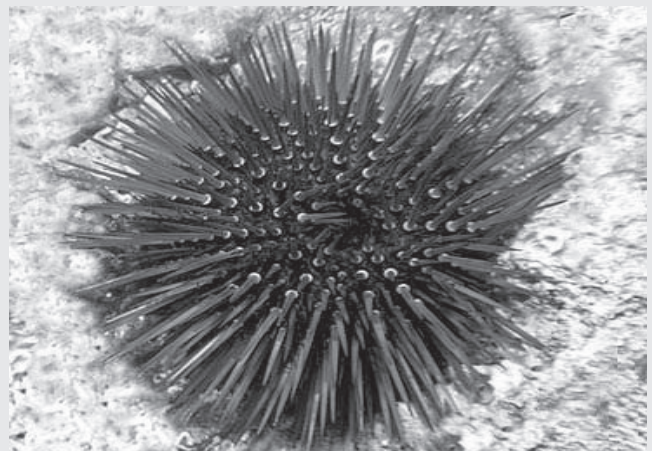


Table 1: Dangerous creatures divided according to mechanism of injury.

VENOMOUS	BITES	SPINES	ELECTRIC
Anemones	Sharks	Sea Urchin	Electric ray
Jellyfish	Moray eel		
Bristle worm	Conger eel		
Greater Weever	Barracuda		
Lesser Weever			
Scorpion fish			
Sting ray			
Eagle ray			

Table 2: Information about the Sea Urchin

FAMILY	Echinidae
SCIENTIFIC NAME	Paracentrotus lividus
ENGLISH NAME	Sea urchin
MALTESE NAME	Rizza
MAXIMUM LENGTH	15cm
HABITAT	Rocky Bottom

CREATURES CAUSING INJURY THROUGH BITES

There are several organisms living in the sea that can bite and cause injuries (Table 3). A full description of all these creatures is beyond the scope of this review.

1. Shark family, Conger Eel & Barracuda The Organisms and Nature of Injuries

Members of the shark family all possess sharp teeth capable of ripping off flesh if the occasion arises. The number of the larger and most dangerous sharks has declined drastically and shark attacks in the Mediterranean waters are unheard of. According to the Florida Museum of Natural History (2012), there have been 22 recorded unprovoked white shark attacks in the Mediterranean since 1907. Two of these occurred in the Maltese territorial waters, the most recent in 1956. Other members of the shark family, mainly dogfish and

six-gilled sharks, live on the bottom in deep waters and are commonly caught by deep-sea long lines. Since these are cartilaginous fish which do not possess air bladders, they are not affected by drastic pressure changes. As a consequence they remain very active and strong even when brought up from the deep. Fishermen have to stay very careful not to be bitten while handling these fish, as they can incur very nasty bites, tearing off flesh instantly.

The Conger Eel (scientific name: *Conger conger*, Maltese name: Gringu) is an eel which lives in crevices and holes (Sammut, 2001). It is mostly a nocturnal fish lying in its hole during the day and scavenging for food during the night. The conger eel possesses powerful jaws with tiny teeth capable of inflicting serious injuries (World Health Organisation, 2012). The bite does not rip off flesh, with damage being more due to the pressure exerted and the powerful wriggling of the fish. It will not attack on its own accord unless provoked or when trying to free itself when caught.

The Barracuda (scientific name: *Sphyraena sphyraena*, Maltese name: Lizz) is a free swimming predatory fish that can reach a length of 1.2 m and weigh a maximum of 8 kilos (Sammut, 2001). Juveniles are often found in shoals, while adults are either solitary or in pairs. Over the past few years, the barracuda has increased in numbers in Maltese coastal waters and is an avid catch for many amateur fishermen. It possesses a large mouth and powerful jaws lined with strong pointed teeth with which it catches its prey. This fish secretes a slimy fluid from its body which together with its streamlined body and violent wriggling action makes it very difficult to hold once caught. As a result one can very easily be bitten

Table 3: Dangerous biting fish (Sammut, 2001)

ORGANISM	MALTESE NAME	SCIENTIFIC NAME	MAX. SIZE	MAX. WEIGHT
Great White Shark	Kelb Abjad	<i>Charcharodon carcharias</i>	8m	6000kg
Shortfin Mako	Pixxitondu	<i>Isurus oxyrinchus</i>	4m	600kg
Spotted Tigershark	Tawru	<i>Eugophodus taurus</i>	3m	280kg
Kitefin Shark	Murruna Sewda	<i>Dalatias licha</i>	1.6m	30kg
Spiny Dogfish	Mazzola Griza	<i>Squalus acanthias</i>	1.2m	22kg
Barracuda	Lizz	<i>Sphyaena sphyaena</i>	1.2m	8kg
Conger Eel	Gringu	<i>Conger conger</i>	2.8m	65kg
Moray Eel	Morina	<i>Moraena helena</i>	1.5kg	10kg

while trying to unhook it, especially when handling larger specimens. While the fish is being unhooked, it will continue to fight vigorously and may cause the hook to pierce the fisherman's hand, especially if treble hooks are being used. Since usually large hooks are needed to catch these strong fighters, a minor operation under local anaesthesia is often needed to remove the hook from the fisherman's hand. This has been experienced firsthand by the author. It is always wise to avoid inserting the fingers in the fish's mouth and to use pliers to remove the hook. There are no reports of any attacks on bathers or divers in the Mediterranean by the barracuda as occurs in tropical seas where nasty injuries and even fatalities have occurred from bites of a very similar species.

Treatment

Treatment of bites consists of cleaning the area well, debridement and suturing as necessary, tetanus toxoid prophylaxis and treating any complicating infection.

2. Moray Eel

This article will now focus on another fish which more commonly causes severe injuries and is well known for this: the moray eel.

The Organism

This very common fish, as the name implies, is an eel which lives in crevices and holes on rocky sea beds, from very shallow to deep waters (Figure 2, Table 4). The moray eel has a small pointed head with a thicker body which is not covered by scales, rendering it very slippery. It has powerful jaws lined with razor sharp teeth capable

Table 4: Information about the Moray Eel

FAMILY	Muraenidae
SCIENTIFIC NAME	<i>Muraena helena</i>
ENGLISH NAME	Moray eel
MALTESE NAME	Morina
MAXIMUM LENGTH	1.5 m
HABITAT	Rocky Bottom

Figure 2: Moray Eel



of ripping off flesh with a snap (Sammut, 2001). It is a curious fish which is not easily scared, giving it a fierce look. Moray eels are solitary and stay on the lookout for anything which happens in their surroundings. Scuba divers favour these fish as they keep to the same holes and are not shy of divers. They often feed them octopus and dead fish by hand. This is a potentially dangerous practice as the eel may grab the diver's fingers in the process (Barreiros & Haddad, 2008).

Nature of Injury

The moray eel will fight with all its strength to free itself once caught. Its relative calm appearance when seen in its hiding place is deceptive, as it will put up a fierce fight if disturbed or caught. It will twist and twirl its powerful body and snap at anything within reach of its mighty teeth, even itself. When it bites, the sharpness of its teeth together with the twisting movement of its body will rip off chunks of flesh in a split second. Since the fish is very slippery it is impossible to hold, rendering it more dangerous when it frees itself in the boat. One has to be very careful not to be bitten in the feet by it. Once dead the head should be cut off and thrown away somewhere safe as the teeth can be dangerous if touched. Since this fish is a scavenger, its teeth are full of bacteria giving rise to nasty infections. Persons bitten by moray eels sometimes describe an intense stinging pain at the site of the injury, more than one would expect from the bite itself, as if some poison was injected into the wound. Whether moray eels do in fact produce toxins is controversial, however some studies do support this hypothesis (Lichtenberger, 2007). Toxins from bacteria in the eel's mouth could also be the reason for such pain.

Treatment

Emergency treatment consists of stopping the bleeding and cleaning the area well. Often secondary care is needed for the more extensive bites. The laceration should be thoroughly cleaned. Debridement and suturing of the wound may be necessary under anaesthesia. Antibiotic cover, as well as tetanus toxoid, should be given due to the high possibility of infection. Ciprofloxacin, cefuroxime, tetracycline or trimethoprim/sulfamethoxazole are often chosen for these wounds due to the concern for infection with *Vibrio* and *Pseudomonas* species (Erickson et al., 1992).

Table 5: Information about the Electric Ray

FAMILY	Torpinidae
SCIENTIFIC NAME	Torpedo marmorata
ENGLISH NAME	Electric ray
MALTESE NAME	Haddiela komuni
MAXIMUM LENGTH	0.8m x 0.5m
HABITAT	Sandy/Posedonia bottoms

CREATURE CAUSING INJURY THROUGH ELECTRICITY

Electric Ray

The Organism

This is a very peculiar fish. It is a ray which lives on the bottom of the sea. It is rounded in shape with a short thick tail without any barb (Figure 3, Table 5). It is a very clumsy swimming fish which one can even touch where it not for the ingenious system of defence which this fish possesses (Sammut, 2001). This fish

Figure 3: Electric Ray



is capable of producing an electric current which it discharges either to capture its prey or in self defence. It is a very potent discharge of about 220 volts which can be repeated several times in rapid succession, even 8-10 times. Specimens can be found even in very shallow water less than 50 cm deep. These rays can bury themselves completely in the sand rendering them invisible.

Nature of the Injury

Despite the high voltage that this fish can discharge, the current has very low amperage. This does not lead to any injury, although it makes you release the fish with a start. Most commonly these fish are caught through spear fishing and discharge their electricity on being handled. Rarely they can cause a fright to bathers who accidentally step upon them in shallow sandy beaches.

Treatment

No treatment is needed as they do not cause any persisting injury.

CONCLUSION

Having reviewed the dangerous sea creatures which inhabit the local Maltese waters and their potential injuries, one has to mention that serious injuries are often rare. However the 'creature' which causes the most frequent and often the most severe injuries is not a marine one but a bipedal one. Human activity is often the cause of injuries through a number of factors. Miscalculation of risky bathing in strong currents or rough seas is a major factor. Also scuba diving when one is not perfectly fit can result in fatalities. Probably the worst of all injuries is being hit by a powerboat or jet ski while snorkelling or swimming, resulting from complete neglect of safety measures. Persons snorkelling should have a red buoy marking their position and should keep away from zones

of heavy marine traffic in the midst of summer. On the other hand, drivers of motor boats should keep on the constant lookout for any swimmers or people who are snorkelling, and pass at least fifty metres away from any buoy at a safe speed. Only by respecting the sea and its environment, and by abiding to safety procedures, can these potentially fatal situations be avoided.

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eHealth and mHealth - bridging gaps in health care

Dr Martina FALZON

INTRODUCTION

The Commonwealth Secretariat has set electronic health (eHealth) as one of the priorities of the Commonwealth Heads of Government Meetings (CHOGM), Commonwealth Health Minister Meetings (CHMM) and millennium development goals. There are numerous definitions of eHealth but overall eHealth provides information about patients' health and clinical status and enables data exchange, transmission, sharing, dissemination, interprofessional communication and health service delivery (Iluyemi, Jones and Anie, 2012, p.13). The Commonwealth Secretariat document on eHealth in the Commonwealth has highlighted the priorities of eHealth as being information sharing between patients and health care professionals, amongst health care professionals and for use in health surveillance (Iluyemi, Jones and Anie, 2012).

According to the Global Health Observatory of the World Health Organization (2012), in 2008 thirty-six million deaths were due to non-communicable diseases (NCD) and 29% of deaths occurred before the age of 60 in low-middle income countries. This has been proven to be draining the financial resources of countries. NCD are chronic conditions which require lifelong monitoring and treatment (World Health Organization, 2012).

CONFERENCE ON NON-COMMUNICABLE DISEASES & INFORMATION COMMUNICATION TECHNOLOGY

The author attended the Commonwealth International Conference on Non-Communicable Diseases and the Role of Information, Communication Technology (eHealth & mHealth) that was held on 14-16 September 2012 in Chennai, India. During this conference each of the 12 participating member countries (including Malta) presented the worrying prevalence of NCD namely cardiovascular disease, diabetes, chronic obstructive pulmonary disease and cancers in their respective countries.

The conference discussed the concepts of electronic and mobile health (mHealth) and how these are utilized as cheaper, cost-effective modalities for health education, data collection, screening and follow-up tools. eHealth and mHealth can help overcome the shortage of health care professionals (Iluyemi, Jones and Anie, 2012, pg 8,9,15), creating the idea that the doctor "is in my pocket" (Arulrhaj, 2012) and can now make services available in rural areas, "making geography history" (Ganapathy, 2012).

The biggest problem with regards to health care pointed out by many representatives is that of accessibility in rural and low income areas. The author had the opportunity to meet with family doctors from the Chennai area whose concern is that they are reluctant to be sent to rural areas as there is not only a lack of services but also a lack of basic needs for the doctors themselves. Mobile penetration is on the rise with countries as large as India which, with a population of 1.2 billion, already has 90% coverage and is estimated to rise (Arulrhaj, 2012). This is a potential resource for obtaining and sharing of information and targeting NCD in such areas.

Some concepts for mHealth are medical device readings from sphygmomanometers, thermometers, more advanced electrocardiograms and intensive care parameters which pass information to doctors' phones. Many NCDs require regular monitoring and optimization of treatment. One such initiative is the "Mother and Child Tracking system" - taking photographs of retinas of newborn babies to screen for blindness in Bangalore (Arulrhaj, 2012).

mHealth services can also be in the form of appointment reminders, prevention texts, dietary advice messages, links to information especially in the context of chronic disease management and primary care prevention. In Chennai a diabetologist hands her diabetic patients a code which is messaged to a central database and can be used to notify them via mobile regarding treatment schedules, diet advice and appointment reminders (Mallan, 2012).

Other initiatives presented within Commonwealth countries included "Get the Message" by the Caribbean

Table 1: Current IT services available in the Public Health Care system (Agius Muscat, 2010)

SERVICE	FUNCTION
Patient Administration System (PAS)	Holds the demographics of all Maltese citizens having an active link with the Government's Common Database and moreover records Accident & Emergency, inpatient, outpatient, day case and ward attenders' registration.
Picture Archiving and Communication System (PACS)	Allows high quality views of X-rays, MRI, US and CT scans.
Electronic Case Summary (ECS)	Used for input and access of online discharge letters.
"Order Communications System" (iSOFT Clinical Manager)	For ordering lab tests and accessing results of lab tests, histopathology and radiology.
Lab information system (iSOFT)	Integrated laboratory system.
KURA www.kura.gov.mt	Online portal for updates to the government health care professionals.
myHealth portal www.myhealth.gov.mt	Patients have access to their test results, Pharmacy of Your Choice medicine information, appointment data, case summaries and, in doing so, choose a doctor for sharing of this information.
eHealth portal www.ehealth.gov.mt	Provides medical information for patients with access to "ADAM's library" and other services.
Diabetes management system	Accessible at primary and secondary care level from specialized diabetes clinics.
Schedule V system	
Child Health Electronic Surveillance System	
Immunisation system	
Pharmacy of Your Choice	
Blood Bank System	
Human Resources system at Mount Carmel Hospital and Accounting systems at Mater Dei Hospital	

Community and Common Market (CARICOM) with prevention texts and links to websites with relevance to NCD. A study on "Effectiveness of Information, Education and Communication (IEC) on Childhood Obesity among Parents of Obese Children" was carried out using mHealth to send messages to patients to remind them about their diet schedules as well as to recommend 'YouTube' links to cartoons promoting health. It also served as a mode of communication between the doctor and patients. Conclusions showed that there is an improvement in the level of knowledge and a favourable change in attitude and compliance after use of IEC (Grace, 2011).

Other eHealth initiatives in Commonwealth countries were electronic health records, an eHealth card, online continuous medical education, virtual home visits, myHealth Portals, tele-primary care for notifiable diseases and screening, tele-health services including tele-consultation with specialists being available from their homes and tele-education across continents. The

non-profit organization Apollo Telemedicine Network Foundation (2012) is involved in providing tele-consultations, promoting tele-health virtual home visits through centres spread in India and others overseas. It also provides tele-consultation and tele-education to patients and doctors in African countries through a pan-African eNetwork project

However a number of barriers can halt the progress of these exciting developments. First and foremost the working group during this conference suggested that eHealth and mHealth require good policy making and an infrastructure to support them with governmental and financial commitment. The latter should be tailored to the respective country status and culture. Moreover National Medical Associations should be involved in the implementation of these policies. Suggestions were made to incorporate this technology in curricula of health care professionals; in Sri Lanka, there is specialized training in biomedical informatics. The software to be implemented

must be user-friendly, cost effective and ensure privacy and data protection. There also needs to be an adequate supply of electricity and an internet connection. Moreover this new development requires a change in our medical culture and in our idea of the doctor-patient relationship. As one may feel he/she is talking to a machine rather than to a person, is this dehumanizing our profession?

SITUATION IN MALTA

The Maltese Government has embarked on “The Smart Island strategy” as part of the Government 2015 vision which “will be transforming the provision of healthcare”, “ensure that access to knowledge about health and healthcare is far easier and far greater”, “ensure that patients will be able to safely carry their medical history with them wherever they are to be able to share it with any doctor they happen to be seeing without delay and without risk of losing vital information along the way” (MITC, 2008 pg 34). The current information technology (IT) services available in the Maltese public health care system are shown in Table 1.

PITFALLS

In primary care, paper records are the rule, be it for wound care, general practitioner (GP) consultations, podology visits, etc., but unfortunately these do not always find their way into the patient’s file. Primary care is about interfacing different specialties - so understandably these should be linked into one system to allow the GP or other health professional to have access to the information passed on and then tailor the patient’s management accordingly.

Primary care professionals are unable to access outpatient records at Mater Dei Hospital (MDH) since these are recorded in the MDH file. This poses problems when patients do not understand what has been discussed with regards to surgeries, chronic complaints (such as back pain) or chronic conditions. Such is also the case with the lack of a registered GP system and the culture of doctor shopping. Ultimately the author believes that this is creating havoc with patient care due to repetitive tests, repetitive referrals and treatment.

Both at Accident & Emergency and in primary care, patients present with no knowledge and documentation of the medicines they consume or of the medical conditions they suffer from, thus posing risks for themselves. Having online access to the latest Pharmacy of Your Choice medication and being able to be update that medication through hospital or private/public GPs will ensure patient safety.

WHERE DO WE GO NOW?

The 2010 eHealth vision of the Ministry for Health, Elderly & Community Care was “to use ICT to attain an effective and integrated yet sustainable healthcare system that is centered on the patient” (MITA, 2010). All the public hospitals and health centres in Malta were functionally considered to form part of a single, distributed hospital (Agius Muscat, 2010). In 2010, the government was in the tendering process for the second part of an integrated health information system (MITA, 2010).

This is a change for us all, both doctors and patients – “not only a technical development but also a state-of-the mind, a way of thinking, an attitude and a commitment for a networked, global thinking, to improve health care locally, regionally and worldwide by using information and communication technology.” (Eysenbach, 2001 cited in Iluyemi, Jones and Anie, 2012, p.12)

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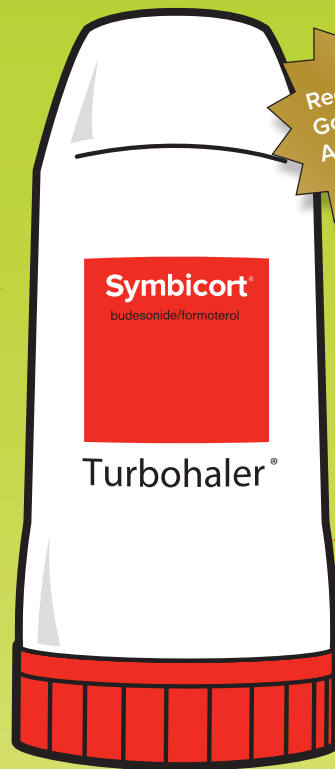
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Symbicort 100/6 is not appropriate for patients with severe asthma. **COPD (Symbicort 200/6; 400/12):** Symptomatic treatment of patients with severe COPD (FEV₁ <50% predicted normal) and a history of repeated exacerbations, who have significant symptoms despite regular therapy with long-acting bronchodilators. **Dosage and Administration: Asthma (Symbicort maintenance therapy – regular maintenance treatment with a separate rescue medication): Adults (including elderly) 100/6 and 200/6:** 1-2 inhalations twice daily. Some patients may require up to a maximum of 4 inhalations twice daily; **400/12:** 1 inhalation twice daily. Some patients may require up to a maximum of 2 inhalations twice daily. **Adolescents (12-17 years) 100/6 and 200/6:** 1-2 inhalations twice daily; **400/12:** 1 inhalation twice daily. **Children 6 years and older 100/6 only:** 2 inhalations twice daily. **Symbicort is not recommended for children under 6 years. Symbicort 400/12 is not recommended for children under 12 years.** Not intended for the initial management of asthma. Dose should be individualised. If an individual patient requires dosages outside recommended regimen, appropriate doses of β_2 adrenoceptor agonist and/or corticosteroid should be prescribed. When long-term symptoms are controlled, titrate to the lowest effective dose, which could include a once daily dosage. **Asthma (Symbicort maintenance and reliever therapy – regular maintenance treatment and as needed in response to symptoms) for Symbicort 100/6 and 200/6 only (NOT recommended with 400/12 strength):** especially consider for (i) patients with inadequate asthma control and in frequent need of reliever medication (ii) patients with asthma exacerbations in the past requiring medical intervention. Close monitoring for dose-related adverse effects is needed in patients who frequently take high numbers of Symbicort as-needed inhalations. **Adults (including elderly) 100/6 & 200/6:** 1 inhalation twice daily or as 2 inhalations once daily. For some patients a dose of 2 inhalations twice daily may be appropriate (200/6 strength only). Patients should take 1 additional inhalation as needed in response to symptoms. If symptoms persist after a few minutes, an additional inhalation should be taken. Not more than 6 inhalations should be taken on any single occasion. A total daily dose of more than 8 inhalations is not normally needed; however, up to 12 inhalations a day could be used for a limited period. Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice and should be reassessed; their maintenance therapy should be reconsidered. Patients should be advised to always have Symbicort for reliever use. **Children and adolescents under 18 years of age:** not recommended. **COPD (200/6): Adults:** 2 inhalations twice daily. **(400/12):** 1 inhalation twice daily. **Contraindications, Warnings and Precautions etc.: Contraindications:** Hypersensitivity (allergy) to budesonide, formoterol or lactose (which contains small amounts of milk proteins). **Warnings and Precautions:** If treatment is ineffective, or there is a worsening of the underlying condition, therapy should be reassessed. Sudden and progressive deterioration in control requires urgent medical assessment. Patients should have their appropriate rescue medication available at all times, i.e. either Symbicort or a separate reliever. If needed for prophylactic use (e.g. before exercise) a separate reliever should be used. Therapy should not be initiated during an exacerbation. Serious asthma-related adverse events and exacerbations may occur and patients should continue treatment but seek medical advice if asthma symptoms remain uncontrolled or worsen after initiation of Symbicort. Paradoxical bronchospasm may occur, with an immediate increase in wheezing and shortness of breath after dosing. This responds to a rapid-acting inhaled bronchodilator and should be treated straightaway. As with any inhaled corticosteroid, systemic effects may occur, particularly at high doses prescribed for long periods. These may include Cushing's syndrome, Cushingoid features, adrenal suppression, growth retardation in children and adolescents, cataract and glaucoma and more rarely a range of psychological or behavioral effects. Potential effects on bone should be considered especially in patients on high doses for prolonged periods that have co-existing risk factors for osteoporosis. Prolonged treatment with high doses of inhaled corticosteroids, particularly higher than recommended doses, may also result in clinically significant adrenal suppression. Therefore additional systemic corticosteroid cover should be considered during periods of stress such as severe infections or elective surgery. Treatment with supplementary systemic steroids or inhaled budesonide should not be stopped abruptly. During transfer from oral steroid therapy to Symbicort, a generally lower systemic steroid action will be experienced which may result in the appearance of allergic or arthritic symptoms which will need treatment. In rare cases, symptoms such as tiredness, headache, nausea and vomiting can occur due to insufficient glucocorticosteroid effect and temporary increase in the dose of oral glucocorticosteroids is sometimes necessary. Observe caution in patients with thyrotoxicosis, phaeochromocytoma, diabetes mellitus, untreated hypokalaemia, or severe cardiovascular disorders. As with other β_2 adrenoceptor agonists, hypokalaemia may occur at high doses. Particular caution recommended in unstable or acute severe asthma as this effect may be potentiated by xanthine-derivatives, steroids, diuretics and hypoxia. Monitor serum potassium levels. Hypokalaemia may increase the disposition towards arrhythmias in patients taking digitalis glycosides. In diabetic patients, consider additional blood glucose monitoring. Symbicort contains lactose monohydrate, as with other lactose containing products the small amounts of milk proteins present may cause allergic reactions. **Interactions:** Concomitant treatment with potent CYP3A4 inhibitors should be avoided. If this is not possible the time interval between administration should be as long as possible. Symbicort maintenance and reliever therapy is not recommended in patients using potent CYP3A4 inhibitors. Not to be given with beta adrenergic blockers (including eye drops) unless there are compelling reasons. Concomitant administration with quinidine, disopyramide, procainamide, phenothiazines, antihistamines (terfenadine), MAOIs and TCAs can prolong the QTc-interval and increase the risk of ventricular arrhythmias. L-Dopa, L-thyroxine, oxytocin and alcohol can impair cardiac tolerance. Concomitant administration with MAOIs, including agents with similar properties such as furazolidone and procarbazine, may precipitate hypertension. Risk of arrhythmias in patients receiving anaesthesia with halogenated hydrocarbons. Concomitant use of other beta adrenergic drugs or anticholinergic drugs can have a potentially additive bronchodilating effect. **Pregnancy and Lactation:** Should only be used when the benefits outweigh the potential risks. Budesonide is excreted in breast milk, however at therapeutic doses no effects on the child are anticipated. **Undesirable effects: Common:** headache, palpitations, may precipitate hypertension. Risk of candida infections in the oropharynx, coughing, mild irritation in the throat, hoarseness. **Uncommon:** tachycardia, nausea, dizziness, bruises, aggression, psychomotor hyperactivity, anxiety, sleep disorders. **Rare:** hypokalaemia, cardiac arrhythmias including atrial fibrillation, supraventricular tachycardia and extrasystoles, bronchospasm and immediate and delayed hypersensitivity reactions including exanthema, urticaria, pruritus, dermatitis, angioedema and anaphylactic reaction. **Very Rare:** psychiatric disorders including depression, behavioural changes (predominantly in children), angina pectoris, prolongation of QTc-interval, hyperglycaemia, taste disturbance, Cushing's syndrome, adrenal suppression, growth retardation, decrease in bone mineral density, cataract and glaucoma and variations in blood pressure. As with other inhalation therapy, paradoxical bronchospasm may occur in very rare cases. **Package Quantities:** Each Symbicort Turbohaler 100/6 or 200/6 contains 120 inhalations. Each Symbicort Turbohaler 400/12 contains 60 inhalations. **Legal Category:** Prescription Only Medicine (POM). **Marketing Authorisation Number(s):** PA 970/28/1-3. **Marketing Authorisation Holder (MAH):** AstraZeneca UK Limited, 600 Capability Green, Luton, LU1 3LU, UK. **Further product information available on request from:** The MAH (address above), Freephone -1800 800 899. **Abridged Prescribing Information prepared:** 04/12. Symbicort and Turbohaler are Trade Marks of the AstraZeneca group of companies. URN: 12/0447 **Date of Preparation:** October 2012.



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*JIDPO (Japan Industrial Design Promotion Organisation) Good Design Award Japan 2010: <http://www.g-mark.org/award/detail.html?id=36687&sheet=outline&lang=en>

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