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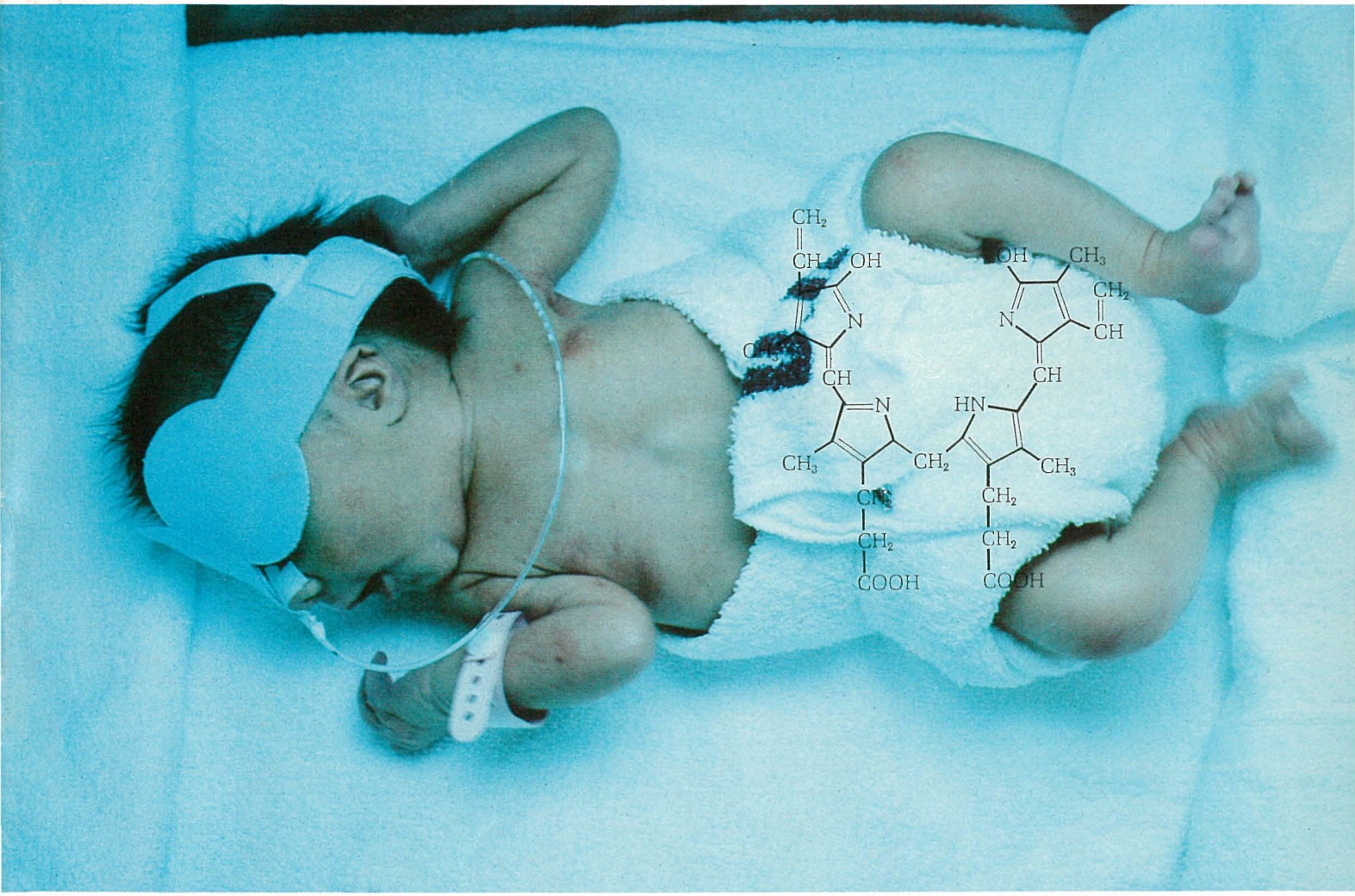
THE MEDICAL JOURNAL FOR STUDENTS OF MEDICINE AND SURGERY IN MALTA

NEONATAL JAUNDICE: BILIRUBIN AND PHOTOTHERAPY



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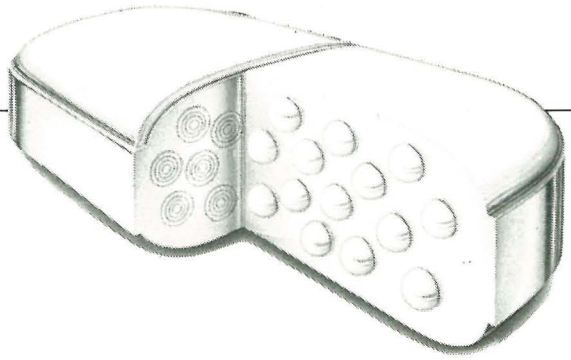

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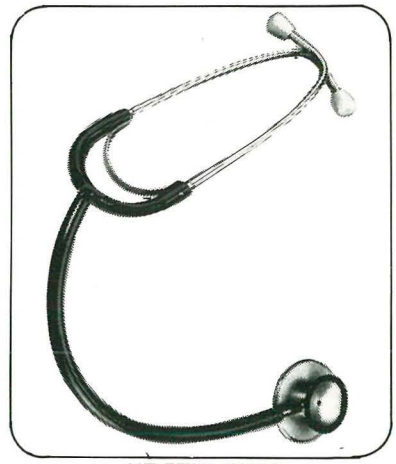

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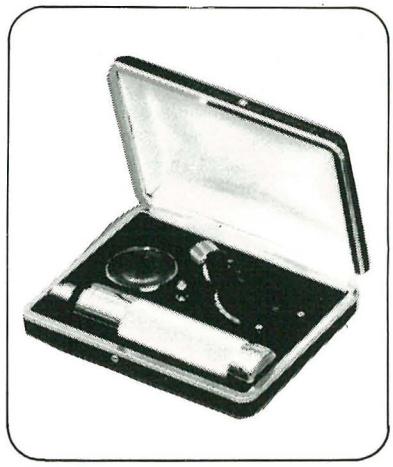

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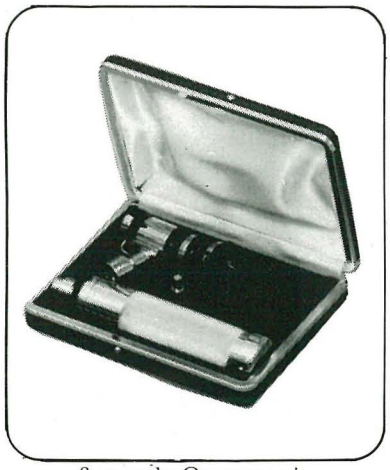

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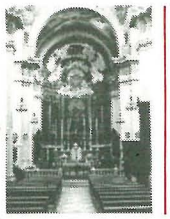

Cover Photo:
Jaundiced Baby Under
Phototherapy
(P. Zammit)

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Editor's Letter

It is an honour for me to welcome the reader to the new Medi-Scope; new in its editorial board, new in its format and new in its content.

The present editorial board took office late in 1987 when the previous editor, Dr. Mark Bugeja, and secretary, Dr. Ronnie Borg, resigned for personal reasons. In this past year of office the board has given the magazine its first facelift since it was founded in 1983, and decided that Medi-Scope should be distributed free of charge to all medical students and practitioners in Malta. This step involved doubling the number of copies printed, with large increases in printing costs.

All this effort was directed towards a single goal, to rekindle interest in the journal and urge more specialists, general practitioners and, especially, medical students to write original articles for this medical journal. With this in mind, our guidelines for authors have been printed in this issue to aid the prospective contributor. With this appeal I conclude my first editor's letter.

The Editor
14th April 1989

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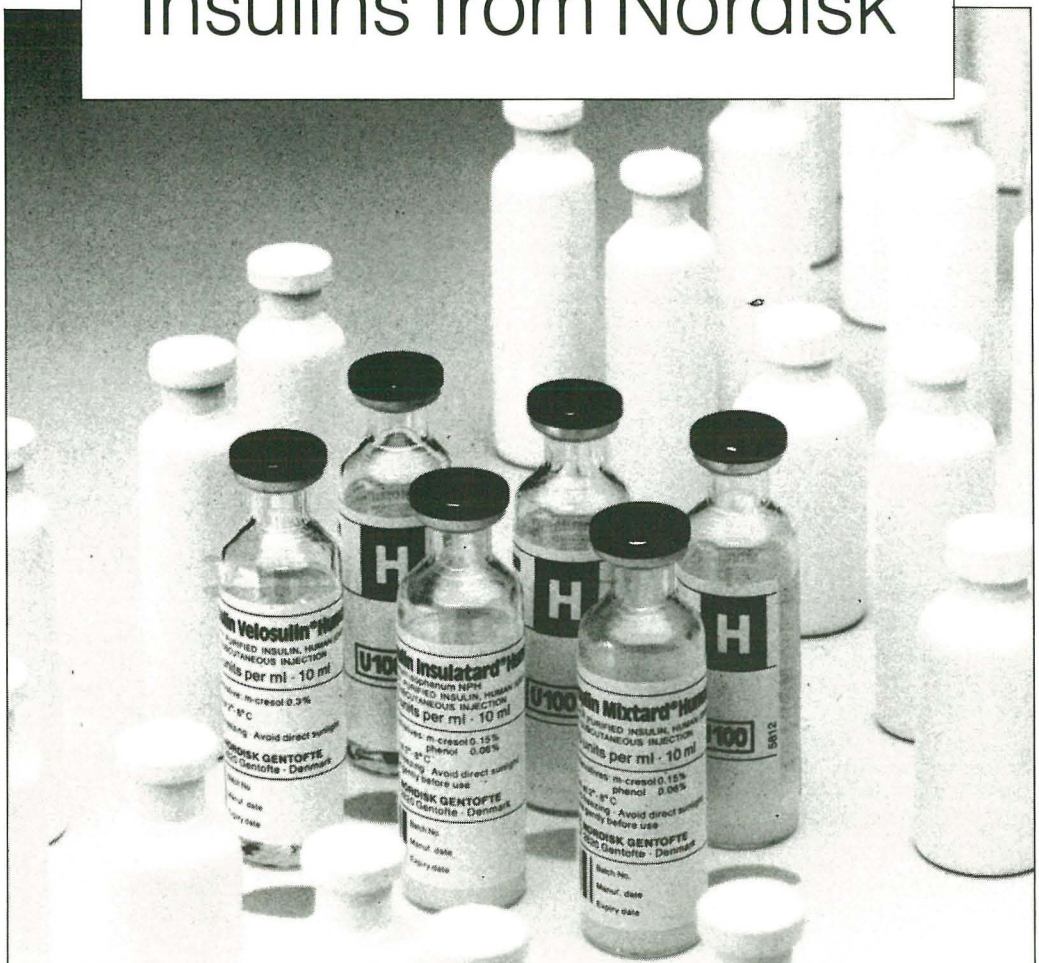
Insulins from Nordisk



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NEONATAL JAUNDICE:
Bilirubin and Phototherapy

MOSES CAMILLERI

1st Year (Final) Medical Student

Bilirubin is a product of hemoglobin breakdown. Catabolism of the heme group of haemoglobin involves the opening of the porphyrin ring, usually at the *a* position, and loss of the *a* carbon atom to yield bilirubin IX-*a*. In normal adults the latter is excreted in the bile primarily as a conjugate with glucuronic acid. In adults a red blood cell has an average life span of 120 days; in babies, the value is only 70 days. The rate of bilirubin production in the newborn is, therefore, several times that of the adult on body weight basis. This rapid turnover implies that metabolism and eventual excretion of bilirubin is more critical in babies if accumulation and subsequent damage due to its toxicity are to be avoided. A potential consequence of hyperbilirubinemia in the newborn is irreparable damage to the central nervous system due to precipitation of this substance in certain areas of the brain (kernicterus). *This follows damage to the blood-brain barrier precipitated by situations such as asphyxia in an ill premature baby.* Lesser, but still hazardous complications include mild types of encephalopathy and damage to the auditory nerve.

A high percentage of newborn babies develop hyperbilirubinemia which is clinically known as physiological jaundice. Levels of bilirubin around 1.5 mg/dl (normal adult level 0.2-1.2 mg/dl) are almost universal during the first week of life, because the liver is still not developed enough to conjugate bilirubin to glucuronic acid. Unconjugated bilirubin accumulates in the plasma and extracellular fluid until the liver is in a position to tackle the workload expected of it. This condition, which appears at birth, usually disappears within a few days.

Some babies, however, have more elevated plasma bilirubin levels or levels which keep rising after the first weeks of life. In these individuals there is usually a higher rate of bilirubin production due to increased red blood cell breakdown. The commonest cause is the condition known as erythroblastosis fetalis or hemolytic disease, which arises due to Rh-incompatibility between the mother and the baby and which results in massive breakdown of the latter's red blood cells.

Bilirubin levels of 18 to 20 mg/dl are considered by some to be the point at which an exchange transfusion is indicated, but plasma bilirubin levels as low as 10 mg/dl may be dangerous.

Bilirubin has two carboxyl groups and can exist either as an unionized acid or as a bivalent anion (Figure 1a). In a polar solvent such as water, the un-ionized acid, as a result of the formation of intramolecular hydrogen bonds, assumes a conformation known as a knot structure (Figure 1b). This form is insoluble in aqueous solutions since its NH and CO groups are no longr available to hydrogen bond with the water molecules of the solvent. It binds tightly to the phospholipids in biological membranes, and is the toxic species. The bilirubin anion binds to serum albumin to form a soluble complex which is non-toxic since it will not diffuse through the plasma membrane. The distribution of bilirubin in the body may be represented as follows:

bilirubin-albumin complex		bilirubin anion	+2h+ —2H+ bilirubin acid

tissue bilirubin

It is its poor water solubility that makes bilirubin difficult to excrete. The adult solves this problem by conjugating bilirubin to glucuronic acid, thus rendering it more soluble and more readily excreted, but the newborn's liver, due to its immature enzyme systems, does not conjugate bilirubin effectively and this toxic waste product accumulates. Thanks to albumin's buffering capacity and the body's functional reserve, a certain amount of bilirubin can be accumulated without harmful consequences. The albumin sink is not infinite, however, and when a certain threshold is exceeded, the buffering capacity breakds down. The amount of bilirubin which may be safely accumulated is generally less for a premature or critically ill infant than for a normal newborn baby.

Several factors are known to influence the distribution of bilirubin in the body:

1. Some drugs bind to albumin and reduce its affinity for bilirubin. The effect of these drugs will be to shift the equilibrium in favour of transfer of bilirubin from the plasma to tissues. Care should be taken when prescribing drugs to neonates and also in pregnant and lactating women. Examples of drugs having this effect are sulfisoxazole (Gantrisin), injectable preparations of diazepam (Valium), frusemide (Lasix) and gentamicin (Genticin).
2. The bilirubin-binding capacity is known to be reduced to premature babies and in ill newborn infants.
3. Changes in pH will influence the transfer of bilirubin from albumin to tissue and vice-versa. Since the bilirubin molecule takes up two hydrogen ions in its movement from the plasma to the tissues, acidosis could be an important factor in precipitating hyperbilirubinemia with its possible consequences.
4. Another factor which can cause the accumulation of bilirubin in tissues is hypoxia. Mitochondria in normal brain cells and other tissues of the body, are equipped with an enzyme system which oxidizes bilirubin to yield products which can be excreted. This enzyme system is com-

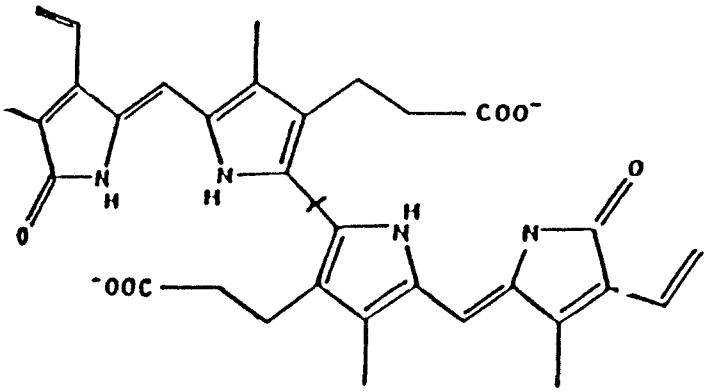


Figure 1a: Structure of Bilirubin Anion.

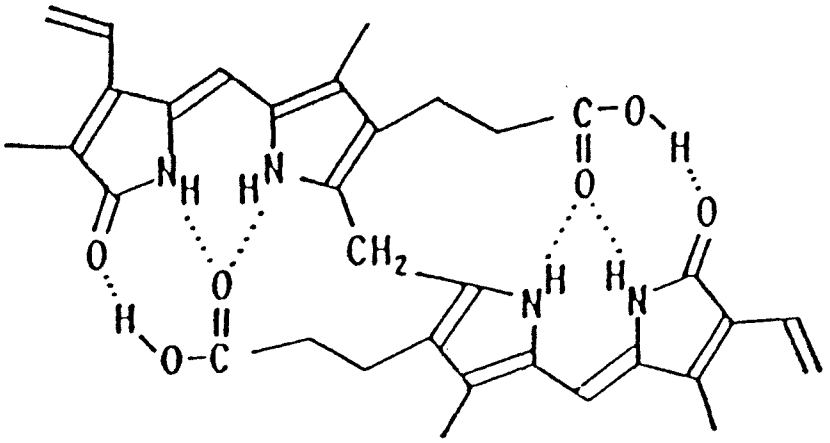


Figure 1b: Structure of Bilirubin Acid known also as the Knot Structure; this is the Toxic Species.

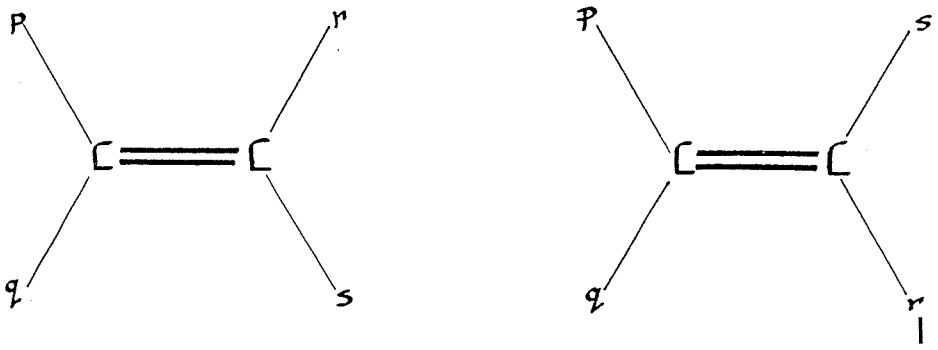


Figure 2: Configurational Isomers.

promised in a hypoxic neonate.

For many years, the only practical solution for the jaundiced neonate was an exchange transfusion. Today, phototherapy can also be employed. This achieves what a liver capable of glucuronidation does, that is, it increases the solubility of bilirubin in water to an extent that it may be excreted. Originally, phototherapy was believed to degrade bilirubin via photo-oxidation; recent evidence suggests that it works via photoisomerization.

At this point, a review of some general chemistry may be helpful. If two carbon atoms are joined by a single bond, there is free rotation about the C—C axis. If they are joined by a double bond, however, two structures are possible since the double bond prevents free rotation (Figure 2). The two structures shown in Figure 2 are configurational isomers, and though they have the same composition, they have a different arrangement of atoms in space and different chemical and physical properties. By convention, one isomer is denoted by the postscript Z, the other by the postscript E. When such a configurational isomer absorbs a photon of light, it assumes an excited state in which the double bond behaves transiently as a single bond, thus making possible rotation around the bond and conversion to the related isomer. This is the basis for phototherapy.

The bilirubin molecule has two carbon-carbon double bonds outside the four pyrrole rings (at C4 and C15). Thus, isomerization is possible at these two double bonds which connect the outer rings to the methin groups (Figure 3). Bilirubin produced naturally in the body has the most stable configuration possible and is denoted as the 4Z, 15Z isomer.

When bilirubin is irradiated, there is a change in configuration as one or both of the terminal porphyrin rings undergoes a 180-degree rotation about the double bond connecting the ring to the methin group (Figure 4). Blue light of wavelengths between 400 and 500 nm has been found to be most efficient at bringing about this transition.

There are four possible configurational isomers of bilirubin IX-*a*, isomerization can occur at the C4 double bond resulting in the 4E, 15Z isomer: at C15 giving the 4Z, 15E isomer; or at both C4 and C15 producing the 4E, 15E isomer.

In the newborn undergoing phototherapy, it has been established using

high-performance liquid chromatography, that isomerization produces predominantly the 4Z, 15E isomer from the natural 4Z, 15Z isomer (Table I). There is as yet no explanation for this.

Table I

Configurational isomers of bilirubin IX-a after 12 hours of phototherapy

Site of isomerization	Notation	Relative amount present
None	4Z, 15Z	80%
C15	4Z, 15E	20%
C4	4E, 15Z	Negligible
C4 and C15	4E, 15E	Negligible

The importance of photoisomerization of bilirubin is that the 4Z, 15E-bilirubin IX-*a* isomer (photobilirubin) is much more soluble than the naturally produced isomer. This increased solubility has two very important consequences:

1. The soluble isomer is much less toxic:
2. Excretion of bilirubin without conjugation is now possible.

The effect on solubility brought about by photoisomerization can be explained on the basis of the intramolecular H-bonding in the acid-form of the bilirubin molecule. The 180-degree rotation disrupts this intramolecular H-binding and in the process exposes the NH and 0 groups of the terminal porphyrin ring to the solvent, thus rendering the molcule polar and permitting formation of H-bonds between water molecules and photobiolirubin (Figure 5; compae with 2b). The result is an increase in solubility.

Photoisomerization probably occurs in the extravascular tissue below the newborn's skin. The 4Z, 15E-bilirubin (photobilirubin) moves across the plasma membrane to be taken up by the blood and is replaced by the natural isomer, since the two are in dynamic equilibrium. In the blood bilirubin is bound to a carrier protein, usually albumin. This is very important since photobilirubin is less stable than the naturally produced bilirubin and will revert to the natural state with time. Binding to photobilirubin retards this process. Thus, albumin acts as a stabilizing protein.

On reachng the liver, the photobilirubin is sequested from the general circulation and secreted into the bile canaliculi. In the bile, the photo-

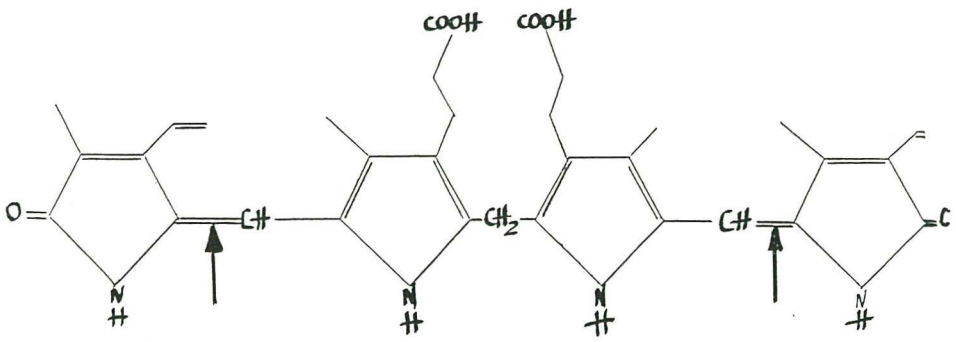


Figure 3: Bilirubin can Undergo Photoisomerization at two sites — C4 and C15 — which are indicated by Arrows.

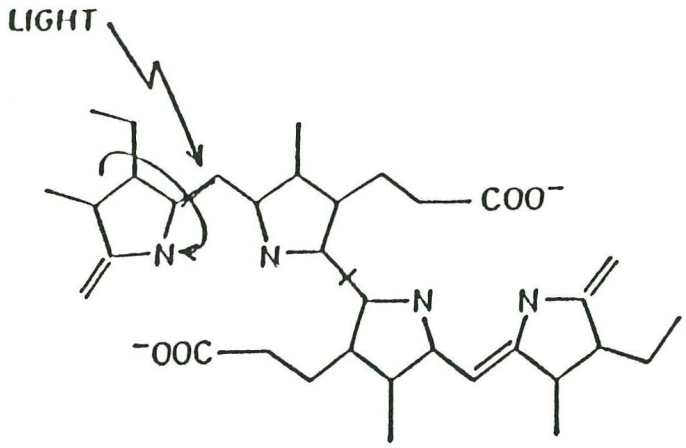


Figure 4: Photoisomerization at C4 by turning one of the Outer Pyrrol Rings at the Double Bond.

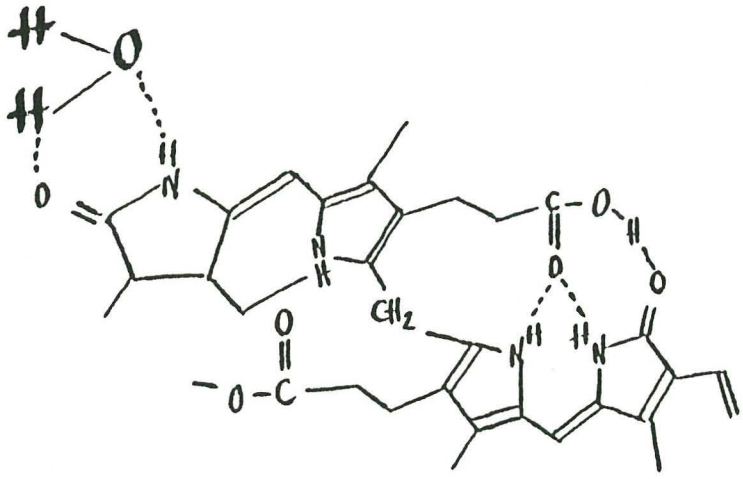
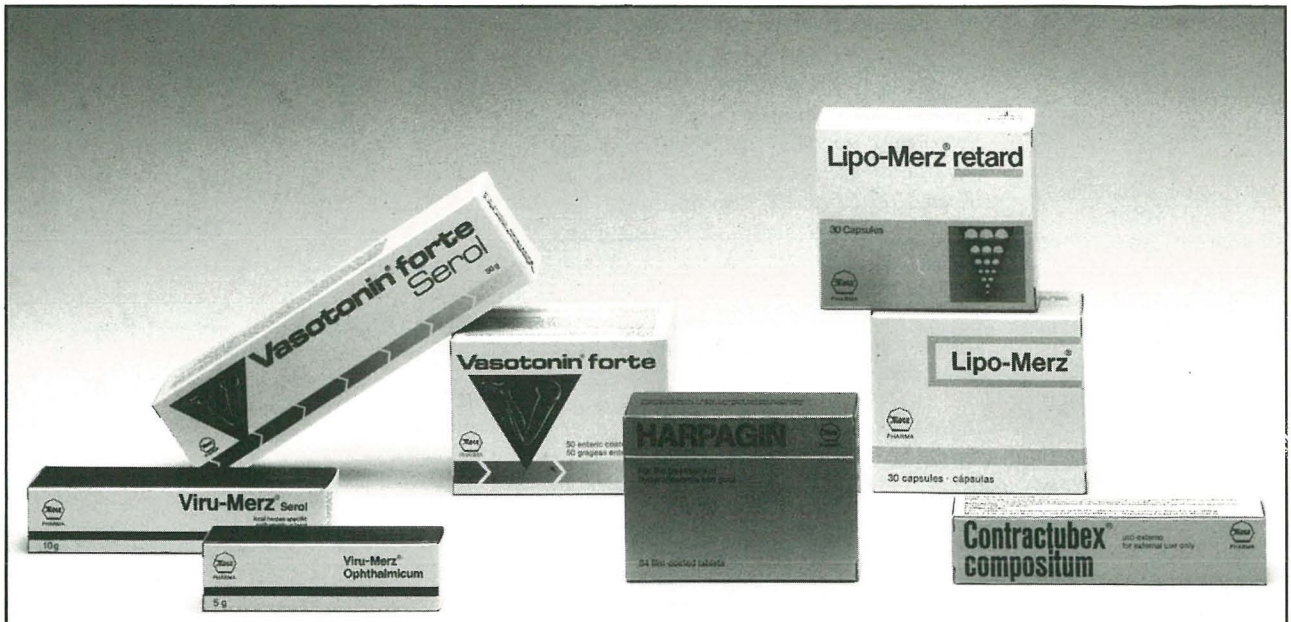


Figure 5: Photobilirubin which is able to form bonds with Water.



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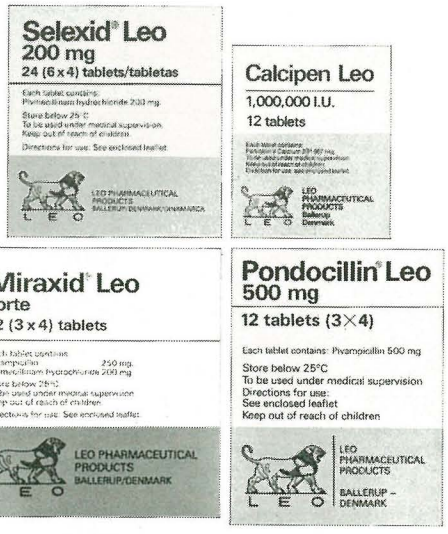

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bilirubin probably reverts to the natural isomer. From the gall bladder it enters the intestines and is either lost with indigestible food, or is reabsorbed. In the latter case, the overall effect of phototherapy will be reduced.

Because of the path followed by photobilirubin, the effect of phototherapy will be reduced if the newborn is suffering from liver dysfunction, biliary atrasia or cholestasis. It has been suggested that bilirubin reaching the intesines inhibits lactase, thus causing diarrhoea. This may, in fact, be beneficial since it causes a more rapid emptying of the intestinal contents and thus decreases the amount of bilirubin that can be reabsorbed.

Phototherapy has been considered by many to be useful only in mild cases of hyperbilirubinemia where no real danger for the neonate exists. Acute cases have been treated using exchange transfusion. There is an increasing awareness of the benefits of phototherapy especially since phototherapy has not been shown to have adverse side effects provided that the following rules are observed:

(a) To enhance effectiveness of therapy, use "intensive phototherapy" with light placed above and below mattress.
(b) Shield baby's eyes to prevent any damage to retina.
(c) During visiting hours allow visual contact between parent and baby.
(d) During therapy, use a yellow trasnparent acetate sheet in order to filter most of the blue radiation thus avoiding distressing visual effects, headache and nausea experienced by the staff.

Its use is now more common especially in view of the risks associated with exchange transfusion. These are:

1. Acid-base and electrolyte disturbances.
   eg. hypokalaemia
2. Metabolic disturbances.
   eg. hypothermia
3. Mechanical damage.
   eg. umbilical vein perforation
4. Infections.
   eg. hepatitis
5. Thromboembolic episodes.
6. Cardiac disturbances.
   eg. volume overload
7. Hematologic disturbances.
   eg. thrombocytopenia
8. Others.
   eg. hydrothorax

Summary

Phototherapy which is being increasingly used to treat neonatal jaundice, brings about the photoisomerization of bilirubin. The photobilirubin thus formed is less toxic and more soluble than the natural isomer of bilirubin and can be excreted without prior conjugation to glucuronic acid.

References

1. Bonnett R, Davies J.E. and Hursthous M.B. (1976): Structure of Bilirubin. Nature. 262: 326-328.
2. Broaderson R. (1980): Bilirubin transport in the newborn infant, reviewed with relation to kernicterus. J. Pediatr. 96:349-356.
3. Lucey J.F. (1982): Bilirubin and brain damage: a Real Mess. Pediatrics. 69:381.
4. McDonagh A.F. (1981): Phototherapy — A new twist to bilirubin. J. Pediatr. 99:909-911.
5. McDonagh A.F. and Lightner D.A. (1985): "Like a shrivelled blood orange" — Bilirubin, Jaundice and Phototherapy. Pediatrics. 75: 443-455.
6. McDonagh A.F., Palma L.A. and Lightner D.A. (1980): Blue light and Bilirubin Excretion. Science. 208:145-150.
7. Zenone E.A., Stoll M.S. and Ostrow J.D. (1977): Mechanism of excretion of unconjugated bilirubin during phototherapy. Gastroenterology. 72:1180.

THE DEAFENING SMELL OF POLLUTION

We've all by now grown used to the idea that excessive noise can cause deafness. Avove a certain threshold it is very nearly a product of amplitude and duration. But of all the factors likely to induce hearing loss, airborne pollution hasn't up till now been a front runner.

Disturbing experiments conducted at Johns Hopkins University in the USA and at two Japanese institutions show that, in rats, noise and atmospheric carbon monoxide levels have an additive effect. Laurence Fechter, Associate Professor of Environmental Health Sciences, has produced data to show that the danger threshold level for noise is considerably lowered in the presence of carbon monoxide. Moreover, noise levels and carbon monoxide concentrations (500ppm), harmless on their own, can cause permanent ear damage when combined.

Although there's no direct means of proving that the same is true for humans, Fechter is convince that the risk is a very real one. This is especially so in view of the tendency of high ambient noise levels to occur in the same situations as high carbon monoxide levels. Examples that come to mind include smokers in discos, furnace operators and transport workers. Smokers have carbon monoxide levels in their lungs of around 350ppm — not much below the level that causes serious problems for rats.

Providing conclusive proof of a risk to human health will not of course be easy. But if it does emerge, it will be immensely complicating for occupational health legislators. No longer will it be reasonable, for example, to specify blanket intensity/time limits on noise in all environments. And of course the famous orange warning light, bane of concert promoters, could well in future need to have a second input ... from a gas detector.

ZAPPED BY MICROWAVES

A little knowledge of RF can be a dangerous thing, at least to judge from a nationwide survey conducted by Cambridge University safety adviser, John Williams. Following informed rumours about accidents involving microwave ovens in laboratories, Williams decided to find out for himself. A questionnaire sent to members of the University Safety Association has now been analysed and the results published in *Laboratory News*, 31.10.88.

The microwave oven, it appears, is now being used indiscriminately as a sort of up-market bunsen burner. But no-one is reading the instructions — at least not many. 14% of those returning questionnaires said that they could recall a damaging incident of some kind. Worse still, thirteen universities had experienced explosions or accidents that were actual or potential causes of serious injury. In two such incidents microwave ovens had their doors blow clean off.

Of some wry satisfaction to well-educated engineers is the fact that all thirteen of the serious accidents took place in biology (sorry, life sciences) laboratories. They involved heating closed containers of liquids, leaving metal clips on glassware and failing to allow time for superheated liquids to cool down.

I can only surmise that either they've changed the 'O' level physics syllabus since my day or else that they've resurrected the old lady who warmed up a cold bath with the aid of a suitably immersed one-bar electric fire.

HALITOSIS

Some Dental, Oral and Systemic Aspects

DR. C.J. BOFFA, BCHD, BPHARM, FICD, PHD.

Consultant Dental Surgeon, and
Part-Time Lecturer
Department of Health

The mouth and teeth are the first functioning part of the gastro-intestinal tract. Oral tissues are sensitive to various conditions, diseases and drugs and liable to various symptoms. Over the years, I have become increasingly conscious of the changes, including Halitosis (bad breath — mouth odour) brought about by certain diseases and other factors. Halitosis is sometimes mild, not so obvious and of a temporary nature but in other cases severe, prolonged and very unpleasant to the patient and relatives alike. The raison d'etre of this paper is mainly to help us in diagnosing Halitosis as part of the dental or medical picture. Limits of space have necessitated condensation and the exclusion of other details that could have been advantageously added.

The mouth is a highly organized, highly specialised, delicately balanced and subtly motivated apparatus made up of tissues, muscles, teeth, bones, nerves, blood vessels, salivary glands, etc., intimately connected, correlated and co-ordinated. An intricately functioning mechanism, it contains within its confines a continuous salivary flow which is vital. Down the long concourse of human experience has come an intense appreciation of the fundamental importance of keeping mouth tissues and teeth as healthy as possible.

The normal output of saliva is approximately 1 to 1.5 liters in 24 hours. The parotid glands produce serous saliva, the submaxillary produce serous saliva and some mucous type, while the sublingual produce mostly mucous saliva and some serous type. Saliva is related to dental-oral health and also affects mouth odour. Its functions are: (a) Lubrication; (b) Solvent action; (c) Cleansing action; (d) Emollient and demulcent (soothing) properties; (e) Moistening and softening; (f) Diluting action; (g) Antibacterial and bacteriostatic functions; (h) Mastication and deglutition; (i) Digestive functions; (j) Aids in speech.

Saliva is made up of water (about 99%), oxygen, carbon dioxide, phosphates of magnesium, calcium and potassium, carbonates of sodium, potassium and calcium, sodium bicarbonate and sodium chloride, glucose, ptyalin, amylase, globulin, etc.; all contributing to various processes and reactions. To give an example, carbon dioxide plays an important part in calculus formation. When the amount of carbon dioxide is too small, the saliva becomes more alkaline on reaching the mouth and calcium salts from the saliva precipitate out.

Halitosis should not be considered as a disease but a symptom of various conditions. However patients with halitosis sometimes live under a social handicap and are cautious not to be very near to people, because of the bad impression which they can give. Since several of the causes of this condition are due to poor oral hygiene, I feel that both medical and dental practitioners should be familiar with the factors responsible for this unpleasant condition.

When poor oral hygiene is the main cause, the breath odour is generally worse in the morning than later in the day, partly caused by the accumulation and putrefaction of epithelial and food debris in the mouth. The decreased salivary flow during sleep also favours putrefaction of the saliva. In practice we find that those people who have an intense papillary coating on the tongue tend to have a more intense odour.

The principles of oral hygiene apply also to wearers of acrylic base dentures - both full and partial ones, otherwise a bad breath may ensue.

It is desirable to brush the denture after each meal or at least be washed in running water. The denture or orthodontic appliance can be cleansed effectively with good denture dentifrice. I wish to emphasize an important point: Dentures should be removed at night. This rests the supporting tissues and also eliminates the risk of dislodgment and hence the possibility of swallowing it. Although patients are told not to wear their dentures at night, many still keep them on.

Heavy smoking contributes to the development of a bad breath. Notwithstanding health education campaigns which point out the hazards of smoking and our efforts, a large number still smoke a lot. Regular toothbrushing and smokers' toothpaste help appreciably to lessen halitosis.

Halitosis of a rather sour type may occur in simplex parodontal disease or chronic gingivitis. The gingivae bleed, particularly on cleaning the teeth and are congested and soft. Calculus is generally present, both the supra-gingival and subgingival varieties, the latter being detected by a probe. Pocket formation gradually develops when no treatment is carried out and the bad breath tends to get worse. In untreated cases pus can sometimes be expressed from the pockets on pressure with the finger. This condition is also sometimes seen in uncontrolled diabetic patients.

It seems that mouth odour has troubled man since ancient times. Dr. R. David, lecturer at Manchester

University and a team of specialists have been carrying out a fullscale examination and analysis of some Egyptian mummies. Using modern medical techniques, scans, X-Rays, endoscopes and chemical tests, they found that certain ancient Egyptians-probably members of Royal families or ruling classes, suffered from serious lung disease, bone conditions, hydatid cysts, bilharzia and very bad breath.

Bad breath secondary to diseases of the sinuses, the respiratory passages or the lungs is much less common than that resulting from dental and oral causes. If the breath odour arises from the lungs, this can generally be detected by having the patient seal his lips and blow through the nose. If the odour is not perceived during this test, it probably comes from within the mouth. If we are still in doubt, we can ask the individual to close his nares and exhale gently through the mouth.

The diagnosis of acute sinusitis will almost always be correct in the patient with nasal discharge, foul breath and cough that has persisted longer than about ten days.

Disturbance of mouth physiology may give rise to an unpleasant breath. Patients on a mainly liquid diet, such as those with gastric ulcers — who consume a lot of milk and cream tend to suffer from halitosis.

A percentage of elderly people also tend to get halitosis and this condition cannot be controlled in all cases. Aging is often complicated by an interaction of factors such as chronic diseases, metabolic disorders and psychosocial aspects. Dental and mouth changes are related to the interacting processes responsible for general systemic changes. I have also noticed that even minor dehydration (for example in very hot weather) tends to increase halitosis among elderly sick and bedridden. It is advisable to remind the elderly to drink fluids more often especially in summer and also to rinse their mouth regularly all the year round.

In a senile organism the metabolism and oxidation processes are greatly reduced and slowed down; this leads to a scarification of the tissue and toxic and unwanted products tend to stagnate in the tissue. Other causes of halitosis include: High temperature, anaemia, leukaemia, cachexia, pulmonary tubercolosis, diabetes, lung abscess and lung gangrene, purulent bronchitis, diphtheria, pneumonia, avitaminosis, actinomycosis, ulcerative stomatitis, gastritis, atrophy of the liver, empyema, necrotic carcinoma in the mouth, larynx, pharynx, oesophagus and stomach. In these serious conditions, thorough mouth hygiene and deodorant or antiseptic rinses are beneficial but can achieve only a short-term relief. In some countries types of chlorophyll tablets are sometimes used with a view to bring about a feeling of freshness in the mouth, but again this is a temporary relief.

About one out of every six Maltese over the age of 45 are estimated to be suffering from mild or advanced diabetes mellitus. During my undergraduate years, we used to be taught that elderly patients with uncontrolled diabetes usually suffer from a typical unpleasant acetone breath. This is a fact but I have noticed that this acetone breath is less common in practice. However many elderly diabetics tend to suffer from halitosis in varying degrees.

It is well known that the resistance of diabetics to infection is appreciably less than in healthy individuals. In a large percentage of patients with uncontrolled diabetes, a gradual progressive loss of supporting tissues around teeth occurs over the years, with degeneration of the periodontal membrane and atrophy in varying degrees of adjacent bone structures. This can be seen macroscopically and microscopically and obviously with the help of radiographs. Atrophy is more marked in the mandible of elderly patients.

The aetiology of periodontal disease is complex. Neglect of oral hygiene, dental plaque and formation of supra or subgingival calculus play a part in its causation. However the soft tissues of the mouth are influenced considerably by systemic factors such as hormonal, dietary and other factors which are implicated in the causation of or predisposition to periodontal disease, or in altering the oral tissues' response to trauma or infection. In my opinion, a high proportion of Maltese diabetics are predisposed to periodontal disease which is the major cause of tooth loss.

Plaque initially forms at the tooth-gum junction, between the teeth and in the crevices (fissures) on the tooth biting surfaces. It consists of bacteria caught up and growing within the matrix of soft material (intercellular matrix) formed partly from saliva and partly from products of the bacteria themselves.

Calculus (tartar), the position or crowding of teeth, ledges on old fillings and old partial dentures which do not fit properly on the contours of the gums and teeth increase the severity of periodontal disease. As periodontal disease progresses, the gum separates from the tooth forming a periodontal pocket and more fermentation of food debris and bacteria goes on — sometimes initiating halitosis. These pockets also retain plaque and are not easy to clean, particularly when calculus forms within them, so aggravating the whole process.

The substances responsible for producing periodontal inflammation are mainly the products of the bacteria within the dental plaque. However, the affects of these substances on the tissues can be modified by the state of those tissues themselves so altering or modifying the clinical picture of the disease. For example, hormonal changes associated with pregnancy may increase the severity of a pre-existing gingivitis, although the effect is generally transient. During pregnancy or menstruation, certain women tend to suffer from a mild form of halitosis. Pregnant women should all be advised to have dental and gum check-ups.

Within a relatively short time after teeth are brushed with a toothbrush a bacteria free pellicle forms on the surface. This is known as acquired pellicle and is less than 0.4 mm thick. This pellicle is closely related to plaque. Plaque contains very large numbers of microorganisms and a lot of interbacterial substances. Initially this layer is not very harmful as the bacteria present are usually gram-positive ones and some spirochaetes. However if the plaque is left undisturbed more bacteria show up and increase fairly quickly in numbers including more harmful strains such as gram-negative ones, fusiform, Lactobacilli, vibrios and small rods. Other constituents of plaque are salivary mucins, carbohydrates, sucrose, toxins and bacterial by-products.

Teeth, especially when there is a crowded arch favour the accumulation of deposits. The warmth, humidity, presence of food debris, microorganisms, fermenting particles and desquamated epithelial cells all play a part in the chain reaction — one end result being a bad smell.

Due to similarities that exist in the salivary matrix, it is believed that the glycoproteins of the plaque matrix are derived from salivary glycoproteins.

Calculus consists of plaque which has become calcified over a long period of time and we classify it as supra and sub-

gingival. Calculus is composed of approximately 70% inorganic salts and 30% organic material. The hard deposits on teeth consist mainly of calculus. The exact composition differs from one person to another and is influenced appreciably by diet. The main constituents are calcium hydroxyapatite, calcium carbonate, calcium whitelockite, magnesium and octacalcium phosphate. It also contains traces of sodium carbonate.

The microorganisms found on the surface of calculus are more or less similar to those of mature plaque with predominantly gram-negative cocci, bacilli and filamentous organisms. Deeper down, gram-positive filamentous organisms predominate, but the centre of calculus may be sterile.

Periodontal disease develops slowly. Some warning signs are: (a) Bleeding gums when brushing; (b) Red, tender or swollen gums; (c) Gums that are rather detached from the teeth; (d) Pus comes out from the periodontal pockets when gums are pressed; (e) Permanent teeth that are a little loose in their sockets; (f) Bad breath. In advanced periodontal disease, bacterial breeding grounds are entrenched in the pockets and cleaning alone cannot reverse the gum condition. It's nearly impossible for patients to keep such pockets free of plaque and bacteria. Surgery is sometimes indicated to remove calculus from deep pockets, to reduce the pockets, to arrange the tissue into a shape that will be easier to keep fairly healthy and remove stagnation pockets. Gingivectomy or flap surgery can be of great benefit to certain patients.

Hygiene techniques are aimed at removing plaque from the teeth. With regard to periodontal disease the effectiveness of brushing is more ill-fitting old dentures, crowding of teeth and periodontal pockets which make plaque removal difficult is the responsibility of the dental surgeon. Similarly, calculus or tartar which may all cause some degree of halitosis needs to be removed by meticulous scaling and polishing by the dentist or dental hygienist.

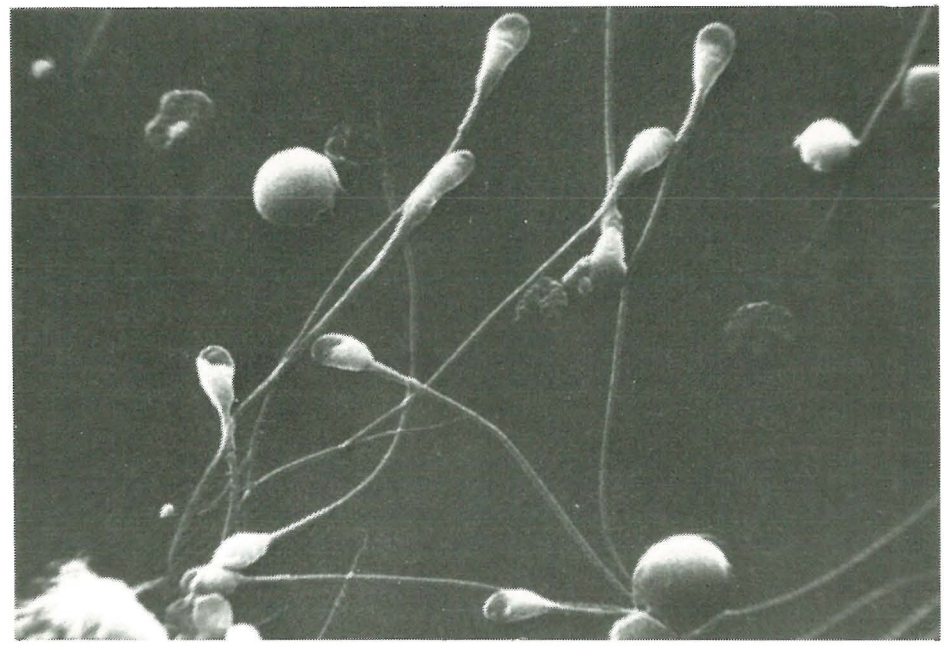
Dentrifices have been used since early times and therapeutic claims for them have long been promoted. A lot of laudable research has been going on in various countries to improve the properties of toothpastes. There are some very good brands of toothpastes on the market. It is clear that toothbrushing alone is not the only factor in promoting oral hygiene and controlling halitosis, as without dentrifice, people would fail to clean their teeth properly.

MALE SUBFERTILITY

Therapeutic Approaches

C. SAVONA VENTURA

Extensive clinical studies have been reported for the management of male subfertility. The results of such therapy have often proved to be inconclusive and controversial mainly because of variation in diagnostic criteria. Therapy can only be successfully initiated after establishing the correct diagnosis, and treatment must be planned according to the findings of the semen analysis (Table 3.1). There are at present only a few standardized therapeutic measures available for the management of male subfertility including medical and hormonal therapy, surgical measures, and therapeutic insemination. Non-specific measures may also help improve the semen analysis.



Non-specific measures

Spermatogenesis is affected by a number of physical factors which can influence fertility. Several experimental studies have shown that scrotal hyperthermia has a rapid detrimental effect on testicular function through arrest of sperm maturation. Removal of the hyperthermia results in a return to normal levels. Tight underclothes could have the same effect and in men with oligospermia, a change to looser fitting undercloths may improve fertility. Personal habits such as smoking, alcohol or drug use should be discussed with the patient since these may influence the semen analysis.

Medical therapy

A number of hormones, vitamins and pharmacological drugs have been used for the treatment of male subfertility. The use of these agents has often been empirical and of controversial value in the management of male subfertility. Extensive long-term research and clinical trials utilizing common protocol and standardized diagnostic techniques have to be conducted. Some causes of an abnormal semen analysis may be amenable to specific therapy.

Male subfertility secondary to infectious disease may improve after specific therapy of the primary condition. The course of therapy must be long enough if pregnancy is to occur. The appropriate antibiotic against *Chlamydia* or *U. urelyticum* in non-specific urethritis is tetracycline. Penicillin and tetracycline are the appropriate treatment for *Neisseria gonorrhoea*. If the patient has a pathogenic organism such as *E. coli*, trimethoprim — sulphamethoxazole should be used. The patient's partner would also require therapy to prevent possible re-infection.

Medical therapy also appears to be promising in the management of semen analysis abnormalities associated with immunological disorders. Early reports of the use of ACTH or prednisone as immunosuppressive therapy for antisperm antibodies were disappointing. However recent studies have shown that prednisone therapy may be helpful. In men with immunological hypospermatogenesis causing azospermia or oligospermia where cellular immunity is operative and where irreversible testicular changes have not occurred, relative long-term prednisone therapy may be helpful. Prednisone 15mg daily for 3 to 12 months appears to be effective. The most consistently successful therapy for normospermic men with antisperm antibodies involves a regimen of cyclical very high dose corticosteroid administration. In this approach, methylprednisolone is given to the male in a dosage of up to 96mg daily for seven days on either days 1 to 7 or days 22 to 28 of the female's menstrual cycle.

Immunological infertility associated with antisperm antibodies may also occur in the female. The use of immunosuppression before ovulation (5-12 days) has also been advocated and there are anecdotal reports of lowered antibody levels and the occurrence of pregnancies. There have also been enthusiastic claims for the success of occlusion therapy where the male partner uses a condom for six to nine months. Great care must be exercised in the selection of patients for high dose steroid therapy and they

should be monitored closely for untoward effects and immunological efficacy.

Secondary hypogonadism resulting from hyper or hypothyrodism may also improve following control to the thyroid status. Retrograde ejaculation may be corrected by administering sympathicomimetic medication such as phenylpropanolamine. In uncurable cases, the fertility problem can be dealt with by homologous insemmination of semen obtained after bladder washings. The empirical use of Vitamin E and C, caffeine and kallikrein to improve spermatogenesis lacks scientific confirmation.

Hormonal therapy

Sex hormones in the management of male subfertility are generally misused. The wide use of synthetic steroids and other hormones might eventually create a variety of hitherto unknown problems because all reproductive phenomena are hormone-dependent and, therefore, sensitive to disturbances by exogenous compounds. The selection of the method of hormonal therapy for hypogonadism should be based on the levels of gonadotrophin and testosterone of the patient (Figure 3.1).

The administration of androgenic substances such as testosterone or mesterolone is indicated for the maintainance or development of secondary sexual characteristics. They have little effect on spermatogenesis and testosterone by interfering with gonadotrophin secretion probably has an inhibitory effect. Mesterolone has been reported to have little effect on the hypogonadal — pituitary function. By influencing the secondary sexual organ function, this drug may thus improve an abnormal semen analysis resulting from disease of the secondary sexual organs. Testosterone rebound therapy seems to be beneficial in certain types of patients. If spermatogenesis is depressed by testosterone administration, subsequent months show a "rebound" of the sperm count to levels higher than those before treatment. The length of time needed for an oligospermic male to achieve the maximum effect of the rebound phenomenon is about 2 years.

Hypogonadism due to hyperprolactinaemia can be successfully managed by treatment which lowers serum prolactin levels. Bromocriptine, a long-acting dopamine agonist, will reduce prolactin levels to normal even in men with pituitary tumours, resulting in a

TABLE 3.1
Management of Male Infertility
All parameters abnormal or predominance of single parameter.

SEMEN ANALYSIS	AETIOLOGY	TREATMENT
1. Abnormality of concentration — azospermia or oligospermia	a. Ductal obstruction	Surgical; AID
	b. Varicocoele	Surgical; AIH
	c. Endocrine	Hormonal; split AIH
2. Abnormality of motility and/or viability	a. Infection	appropriate Rx
	b. Immunological	condom, sperm washing, corticosteroids
	c. Early varicocoele	Surgical
	d. epididymal dysfunction	AID
3. Abnormality of volume	Disease of accessory glands	
	a. low volume 1. retrograde ejaculation	AIH after bladder washouts; sympathicomimetics
	2. hypoandrogenic	Hormonal
	b. high volume	split AIH
4. Abnormality of viscosity	c. hyperviscosity	amylase; mucolytics; mechanical disruption AIH
5. Abnormality of morphology	Usually transient and non-specific: Drugs, stress, heat etc.	Manage primary cause

TABLE 3.2
Indications for Artificial Insemination

TYPE OF INSEMINATION	INDICATIONS
A.I.H.	*small semen volume with normal sperm density *oligospermia with normal motility and morphology *impotence or refractory premature ejaculation *congenital or acquired anatomic anomalies preventing adequate cervical insemination: procidentia, hypospadias, retrograde ejaculation, vaginal anomalies *cervical hostility
AID.	*irreversible male infertility *husband with proven gene errors *Rh incompatibility: husband homozygous Rhesus positive with one or more hydropic fetuses.

rise in serum testosterone and improvement in sexual function. This treatment can also reduce the size of the tumour.

Spermatogenesis can only be induced by stimulating the testes with gonadotrophins. Clomiphene citrate has been used in the release of LH and to a lesser degree FSH in patients with a responsive pituitary gland and hypothalamus. Its effects appear to be dose related: higher doses reduce spermatogenesis while lower doses may improve sperm numbers and motility. The drug is usually given in doses of 25-50mg daily for 3 months. Although clomiphene appears to increase both LH and testosterone levels in most men, its effects on semen analysis are not predictable.

Induction of spermatogenesis may be achieved in about 85 percent of cases of hypogonadotrophic hypogonadism by using a combined regimen of HCG and HMG. HCG is given intramuscularly 2000 units once or twice weekly, the dose dependent on reaching a normal testosterone level checked initially after 3 and 5 days and then monthly. Semen analysis is doen every three months and if spermatogenesis is not fully restored in 6 months HMG is added, 75 units intramuscularly 2-5 times weekly. If gonadotrophin deficiency is due to impaired synthesis or secretion of GnRH, it seems logical to suggest the use of GnRH or its agonist analogues for treatment. This thereapy is still at the experimental stage and exact doses remain to be established.

Surgical procedures

Surgical procedures for male subfertility are limited in scope. They include the repair of penile and urethral disorders, orchidopexy, and varicocelectomy. Ductal obstruction may be corrected using microsurgical techniques performing vasovasostomy and epididymovasostomy.

Therapeutic insemination

Before considering the different aspects of artificial insemination, it is important to differentiate its two types - homologous or husband insemination (AIH) and donor insemination (AID). Somewhat less than 10% of couples with male infertility will be candidates for AIH (Table 3.2). This procedure is artificial in that all or part of the husband's ejaculate is placed in or around the wife's cervix without coitus. The goal is the concentration of what little the husband has to offer at the wife's cervical os. The subfertile ejeaculate is protected from further insults by the vaginal acidity and can exert its full potential in the reproductive process. Some subfertile males can improve their semen quality by collecting the firs portion (1-2cc) of a masturbation ejaculate. In this first half of the ejaculate both the motility and concentration are better then in the

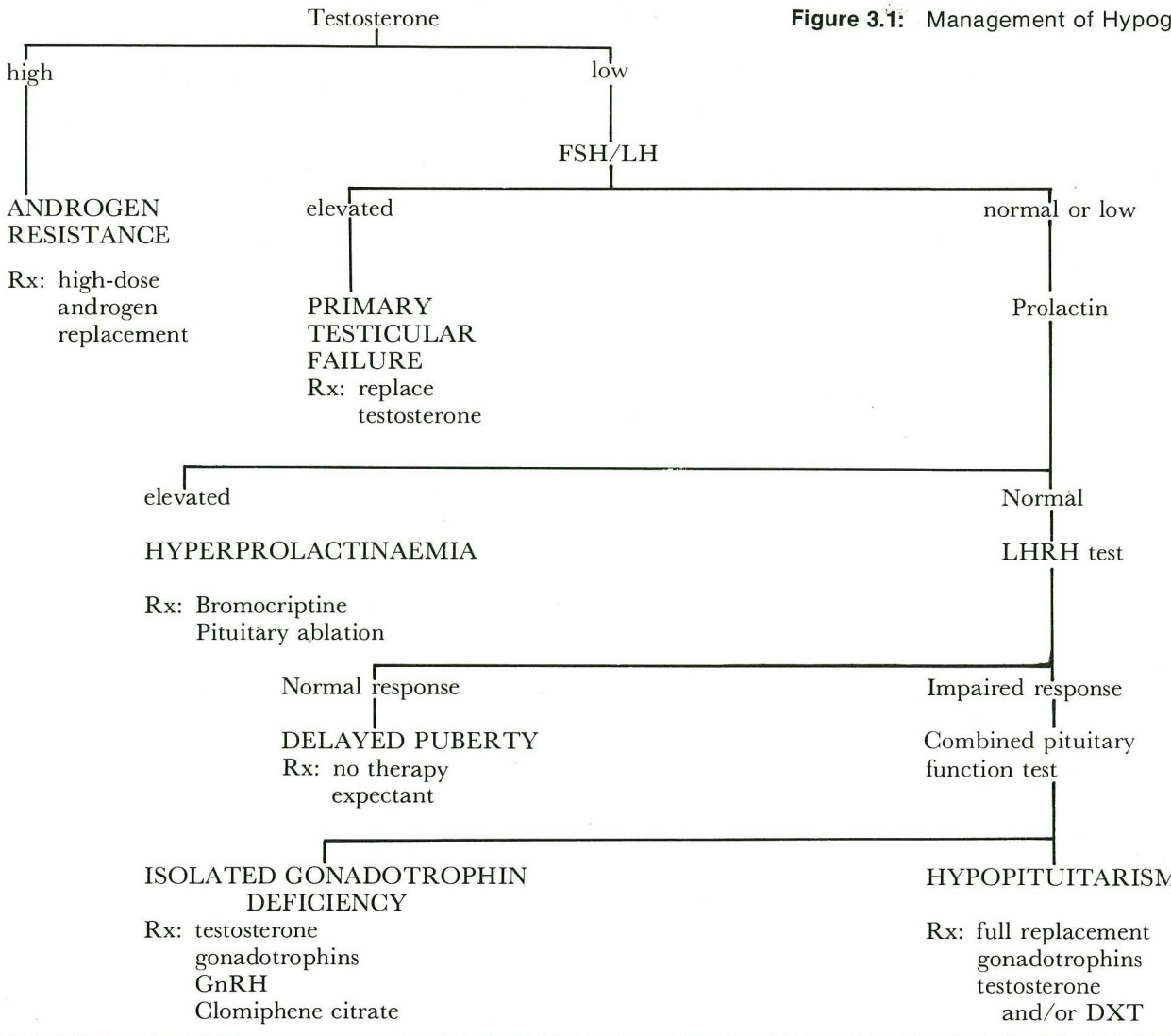


Figure 3.1: Management of Hypogonadism.

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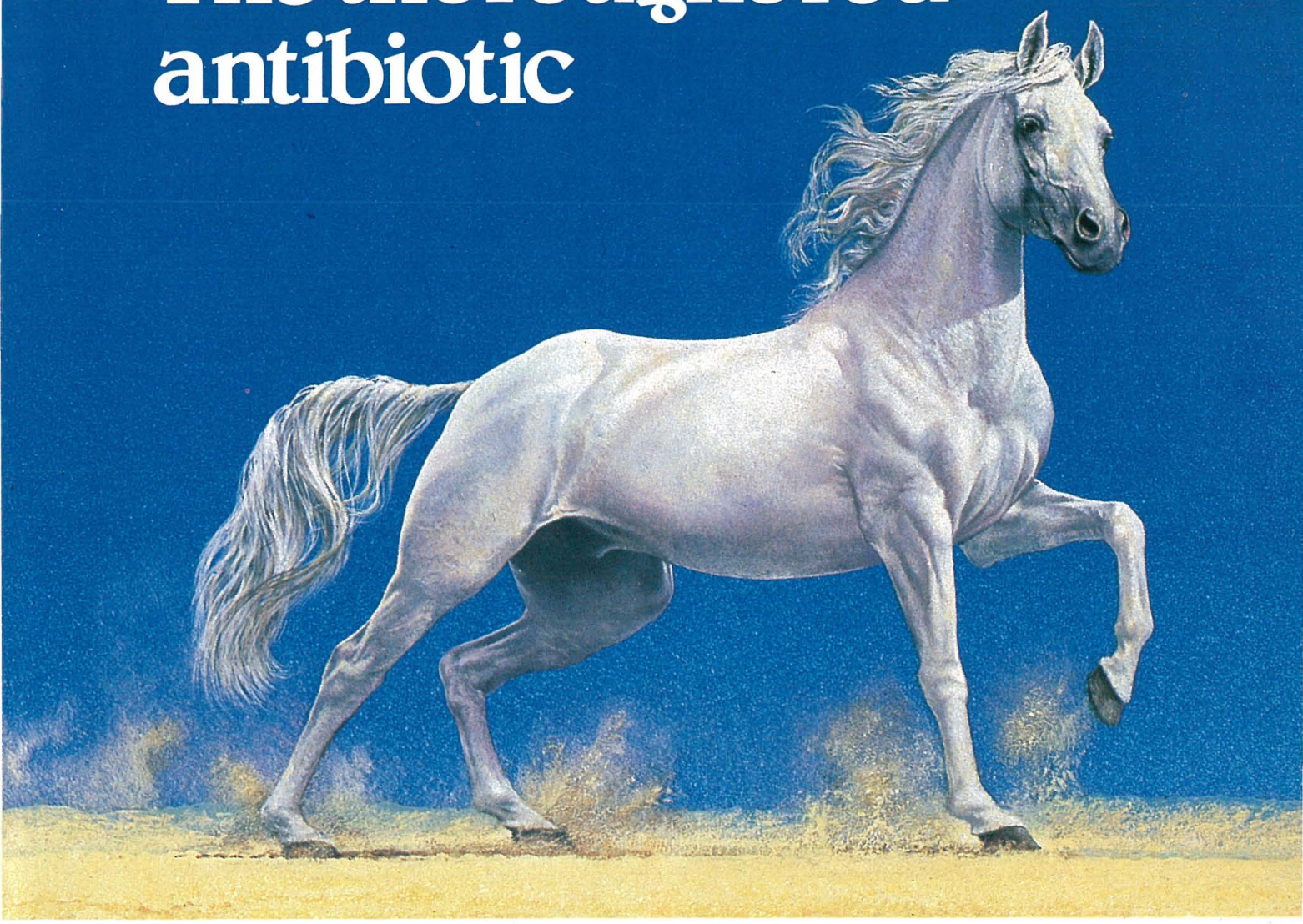

Prescribing Information

AMOXIL is a broad spectrum antibiotic suitable for a wide range of infections caused by susceptible organisms.

Indications
Respiratory, ENT, genito-urinary and skin and soft tissue infections.

Dosage
Children: Oral and injectable – up to 2 years: 62.5mg-125mg every 8 hours. 2-10 years: 125mg-250mg every 8 hours. Based on bodyweight (including neonates) 35-100mg/kg/day. Adults: Oral – 250mg-500mg every 8 hours. Injectable – I.M. 250-500mg every 8 hours or more frequently if necessary. I.V. 500mg-2g every 4-6 hours. (Doses in excess of 1g should be given by infusion over 30 minutes).

Presentations
Capsules: maroon and gold capsules, each containing 250mg or 500mg amoxycillin.
Syrup: 125mg amoxycillin per 5ml in 60ml or 100ml bottles.
Syrup Forte: 250mg amoxycillin per 5ml in 60ml or 100ml bottles.
Paediatric drops: 125mg amoxycillin per 1.25ml in 10ml bottles with calibrated dropper.
Injection: Vials containing 250mg or 500mg amoxycillin.

Precautions
Reduced dosage is required in patients with impaired renal function.

Contra-indications
Penicillin hypersensitivity.

Side-effects
Side-effects, as with other penicillins, are usually of a mild and transitory nature; they may include diarrhoea, indigestion or an occasional rash, which may be either urticarial or erythematous: in either case it is advisable to discontinue treatment.

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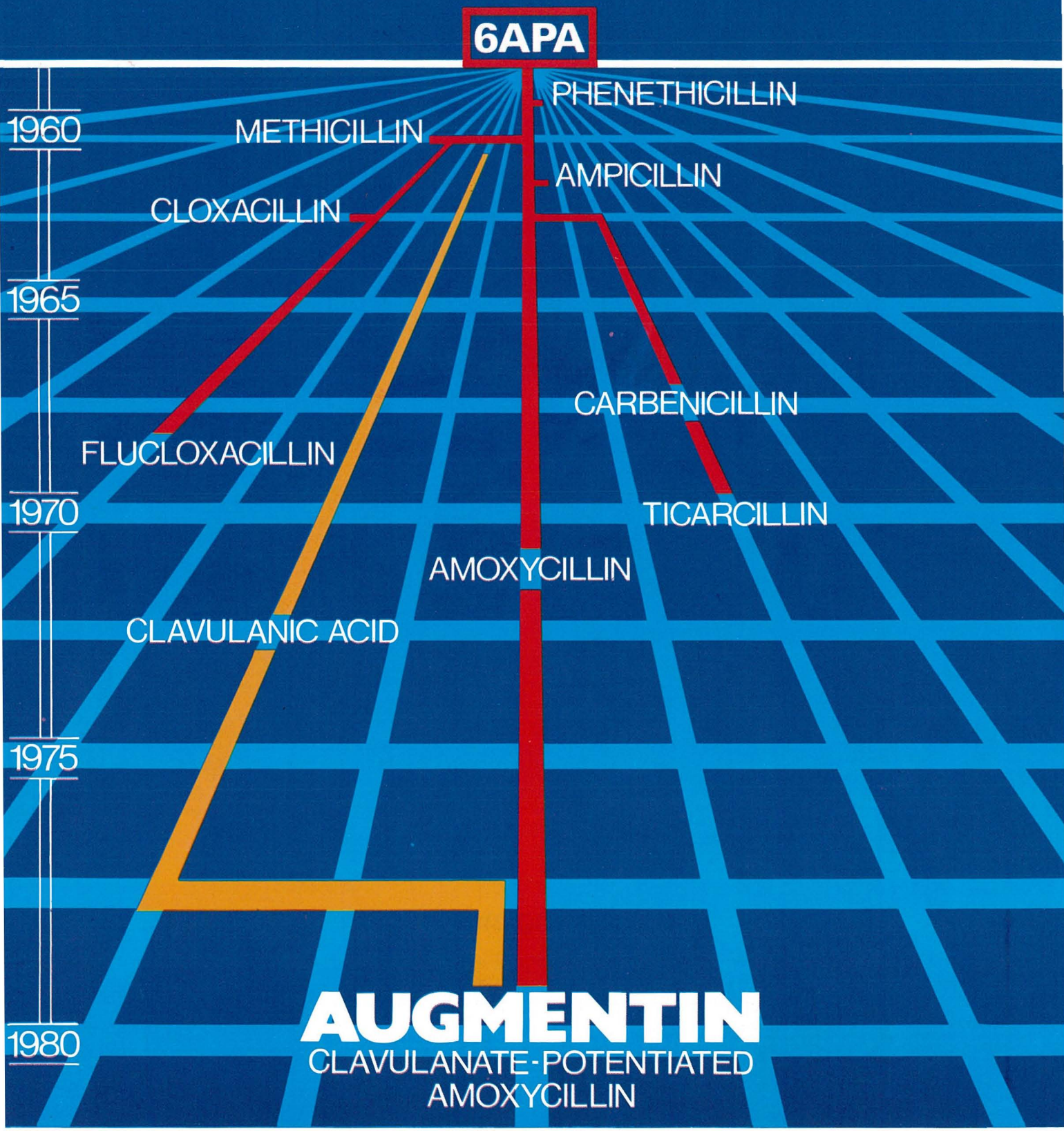

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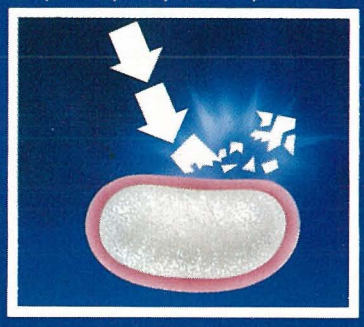

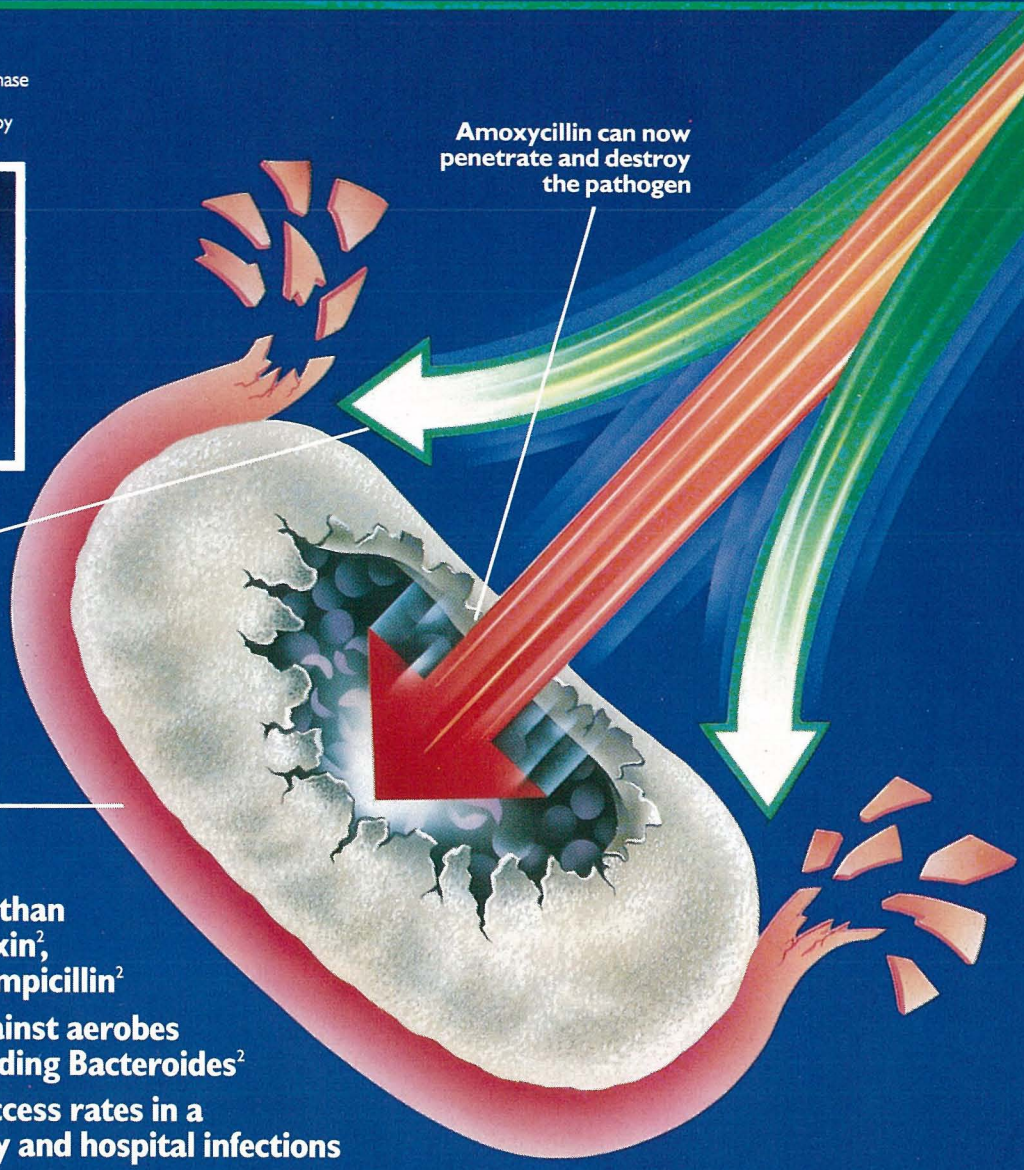

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Indications: Upper/lower respiratory tract infections: sinusitis, tonsillitis, otitis media, acute and chronic bronchitis, pneumonia, empyema, lung abscess. Skin and soft tissue infections: boils/abscesses, cellulitis, wound infections, intra-abdominal sepsis. Genito-urinary tract infections: cystitis, urethritis, pyelonephritis, septic abortion, pelvic infections, chancroid, gonorrhoea. Osteomyelitis, septicaemia, peritonitis, surgical prophylaxis.
Oral dosage: Adults and children over 12 years: One tablet tds. Children 7-12 years: 10ml of 156mg syrup tds. Children 2-7 years: 5ml of 156mg syrup tds. Children 9 months-2 years: 2.5ml of 156mg syrup tds. Children below 9 months: No suitable presentation currently available. In severe infections the dosage may be doubled.
Intravenous dosage: Adults and children over 12 years 1.2g 6-8 hourly. Children 3 months-12 years 30mg/kg 6-8 hourly. Children below 3 months see pack insert leaflet. Surgical prophylaxis: Adults 1.2g at induction of anaesthesia. Procedures longer than 1 hour require subsequent doses (up to 4 in 24 hours). Treatment with AUGMENTIN should not be extended beyond 14 days without review.
Contra-indication: Penicillin hypersensitivity. **Precautions:** A number of studies at high dosages have shown AUGMENTIN to be free from teratogenicity in animals; however its safety in human pregnancy has not yet been established. There is no experience of AUGMENTIN I.V. in human pregnancy therefore its use in pregnancy cannot be recommended. Changes in liver function tests have been observed in some patients receiving intravenous AUGMENTIN. The clinical significance of these changes is uncertain but AUGMENTIN should be used with care in patients with evidence of severe hepatic dysfunction. Dosage for patients with moderate or severe renal impairment should be adjusted as described in the pack insert leaflet. **Side-effects:** Uncommon, mainly mild and transitory eg. diarrhoea, indigestion, nausea, vomiting, candidiasis. If gastro-intestinal side-effects occur with oral therapy they may be reduced by taking AUGMENTIN at the start of meals. In the event of an urticarial or morbilliform rash discontinue treatment. Phlebitis at the site of injection has been reported. As with some other antibacterial agents, a few cases of transient hepatitis and cholestatic jaundice have been reported.
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Storage and Stability: See pack insert leaflet.

References: 1. Med Int., (1984), **2,** (2), 41. 2. Excerpta Medica, (1980). **ICS 544,** 58.

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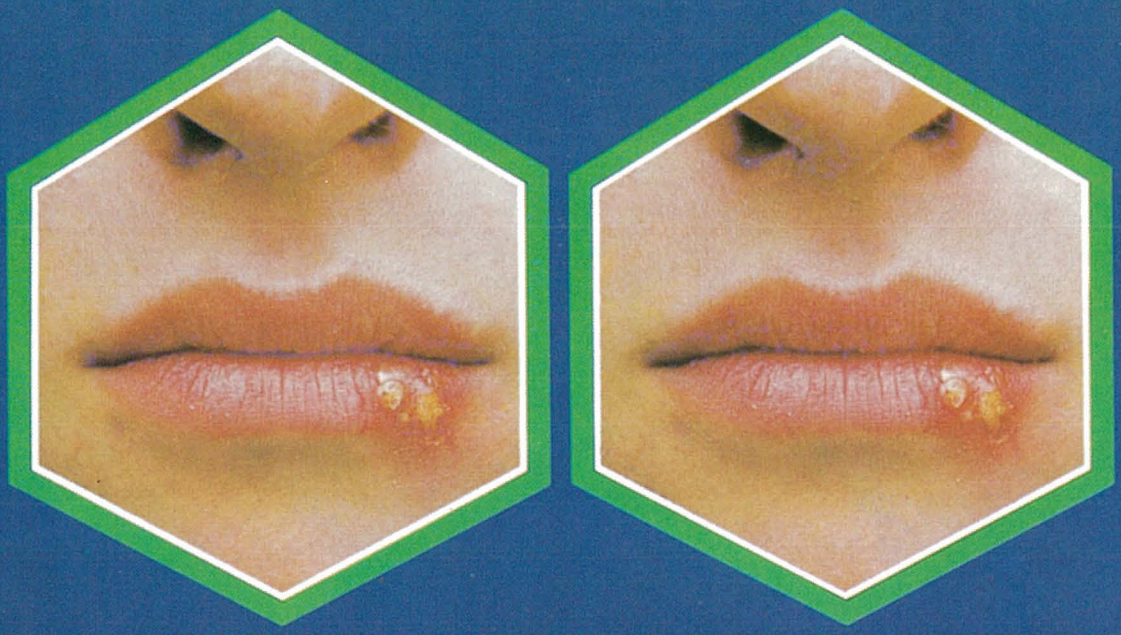

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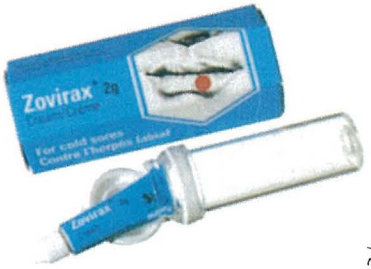

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unsplit ejaculate. Several attempts have been made to improve sperm motility in cases of asthenozoospermia, or to separate motile from immotile spermatozoa. Kallikrein, albumin or arginine have been used to improve sperm motility in the split ejaculate with variable reported success.

Unfortunately the vast majority of couples with male infertility cannot resort to AIH. In this situation of irreversible male infertility donor insemination is indicated. Other indications for AID include proven gene errors and Rhesus incompatibility. AID can provoke more anxieties than AIH because of the extra marital element. Careful conselling of the couple if essential. Potential donors need to be carefully screened particularly for venereally transmitted disease.

The biggest single factor in unsuccessful inseminations is the timing of ovulation. Because of the variable nature of a woman's day of ovulation even when using a basal body temperature chart, it is illogical to offer the patient only one insemination per cycle. It is beter to plan for a minimum of two inseminations per cycle: the second being scheduled for the predicted day of ovulation and the first two days earlier. In women with irregular cycles and inconsistent ovulation times, it may be necessary to induce ovulation medically. Insemination may be:

(1) intrauterine for those situations where there is cervical hostility;
(2) cervico-vaginal; or
(3) cervical cup technique.

The latter overcomes many of the deficiences of the other methods and gives better conception rates.

Another method of artificial insemination by husband sperm is in vitro fertilization. Snce less than one million spermatozoa are required for IVF, the technique has been offered to men with very low sperm counts for whom there is often no other form of effective treatment. IVF has also been used to overcome infertility resulting from cervical mucus hostility from antisperm antibodies.

AIDS, CRABS AND BANANAS

For decades now we've had electronic transducers that will convert most physical quantities into their electrical analogues. Temperature, pressure, light intensity, mass and nuclear radiation are just a few examples of quantities that are easily measurable with cheap and readily available transducers.

More recently, this list has begun to include detectors for chemical entities such as hydrocarbons, smoke particles, alcohol etc. But imagine the range of uses for a transducer that could generate an electrical output directly proportional to the concentration of AIDS virus....

So far, the development of entity-specific sensors has proceeded very slow indeed for a number of reasons, some practical and some to do with the chemical reactions on which they depend. The most obvious approach of coating a chemical reagent directly on to a silicon circuit element has proved disappointing because of corrosion or other interactions between the two.

Two interesting new approaches are, however, proving more successful. George Guilbault, a chemistry professor at New Orleans University is one of a number of researchers who are experimenting with monoclonal antibodies coated on piezo-electric transducers. Monoclonal antibodies, developed originally in Cambridge, are highly specific reagents that will bind chemically to individual complex chemicals. Thus it is possible to create a monoclonal antibody that will react only with one particular protein. When such an antibody is coated on a piezo-electric crystal the resonant frequency is critically determinbed by its mass. So if a protein comes along that binds to the antibody the mass will increase and the resonant frequency will decrease. Guilbault has so far employed such a system to make electronic detectors that are specific for cocaine and for various agricultural pesticides.

Another intriguing approach to biochemical sensing goes one stage beyond the use of biologically active substances. Garry Rechnitz of the University of Delaware is using bits of living creatures built into electrodes. In particular he's fitted lead-out wires to the antennae of blue crabs. When immersed in water the crab antennae act more-or-less as ready-made transducers, producing electrical nerve impulses in direct proportion to the concentration of certain toxic pollutants.

Plants, too, can be pressed into service as chemical sensors. Rechnitz has used oxygen-sensing electrode in conjunction with a slice of banana to detect an important brain chemical called dopamine. This 'bananatrode', as he calls it, produces an electrical signal that could, in theory at least, measure susceptibility to Parkinson's disease (due essentially to lack of dopamine).

Some of these experimental devices may seem somewhat whimsical, but there's a huge range of important applications awaiting biochemical sensors that are stable, reliable and resistant to the corrosive environment of the human body. Imagine, for example, a cure for diabetes in which an insulin pump were directly controlled by a feedback loop attached to a continuous-reading glucose sensor inside an artery.

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FACETS ON MEDICAL LIFE IN SENGLEA IN THE LATE 18th AND EARLY 19th CENTURIES

DR PAUL CASSAR MD B.SC DPM FRHIST. S D.LITT (HON. CAUSA).

Hon. Fellow of the University of Malta.

In 1662 four priests from Senglea founded the Congregation of the Oratorians of St. Philip Neri. They were given the use of a small house together with the oratory and the nearby church of *Marija tal-Portu Salv* which later on became known as the Church of St. Philip. In 1670[1] the priests carried out structural alterations in these buildings. Their successors rebuilt and enlarged them in 1744.

The Oratorians were never a numerous group and by the late 18th century there were only nine of them[2]. An insight into the communal life of these priests is provided by a register of accounts[3] kept by them between 1776 and 30th July 1825. This document records the expenses incurred for: (a) the purchases, from 1792 to 1822, of building materials, hire of boats and carts for the transport of stones, wood, etc and the wages paid to labourers engaged in carrying out structural alterations in houses in Senglea belonging to the Oratorians[4]; (b) the celebrations for the feast of St. Philip Neri and for decorating the church and the altar dedicated to the saint from 1777 to 1820 and for the feast of the Holy Trinity, etc from 1776 to 1809[5]; and (c) for saying Masses for the repose of the souls of deceased individuals between 1781 and 1821[6].

Apart from these items there are entries — scattered over many folios — of payments related to illnesses of various members of the congregation. It is proposed in this paper to deal with these snippets of medical interest.

Illnesses

Nine different names of priests are recorded as having been sick during the period 20th February 1777 to 30th July 1825 with a gap between April 1798 and the 10th July 1801. The nature of their ill-health is not specified except in three instances i.e. *infirmità d'occhi* (eye disease), *medicando il piede* (medicating the foot) and *piaghe dei piedi* (foot ulcers). In other cases the illness is referred to in such generic words as *malattia, infirmità* and *indisposizione.*

Medical personnel

Ten professional men are recorded as having rendered their medical services to the sick priests. In some instances only the surname of the practitioner is recorded but in every case a distinction is made into *medico, chirurgo* and *speziale* or *aromatario.* They were:

Physician *(medico)*
... Xicluna/Scicluna (1788 & 1789)
... Azzopardi (1820)
... Dimech (1822)

Surgeon *(chirurgo)*
Filippo ... (1784)
Stanislao Zammut (sic)/Sammut (1805, 1808, 1817 & 1818)
Francesco Caruana (1822)
Antonio Muscat (1824)
Antonino Cassar (1825)

Pharmacist *(speziale* or *aromatario)*
... Pisani (1788).

These practitioners never reached the highest rungs of the professional hierarchy and their lives influenced but a small circle of people in the restricted ambience of Senglea so much so that a search to identify them and trace their medical activities has not been very rewarding.

A Dr. Francesco Xicluna (Scicluna) was in practice in the late 18th century. After beginning his medical studies in Malta for a year, he went to Naples to continue his medical education graduating from the School of Salerno. He returned to Malta in July 1767 but before being allowed to exercise the medical profession he had to spend six years practising at the Holy Infirmary of Valletta[7].

A Dr. Luigi Dimech figures as a party in a lawsuit against a jeweller in April 1838[8] and as the author of a booklet, published in 1868, alleging that the British Consulate in Tunis was in league with the Bey's government "to deprive the numerous creditors (of the Bey), claiming their property, of ultimate justice"[9].

Antonio Muscat (1777-1847) was practising as assistant surgeon *(chirurgo pratico)* at the age of seventeen years on the galleys of the Order of St. John. During the rising of the Maltese against the French in 1798, he joined the insurgents and was posted to the Ta' Samra Battery serving as surgeon and also as a combatant. In the latter capacity he took part in attacks against the Cottonera Lines and Senglea. At the end of hostilities he was employed as surgeon at the Civil Hospital of Valletta and at the Lazzaretto. Some time after 1811 he obtained the Doctorate in medicine. He was active during the plague of 1813 and later engaged in private practice in the three cities. He served during the cholera epidemic of 1837 and in 1841 was appointed *medico dei poveri* (the equivalent of District Medical Officer) for Bormla[10].

There were two pharmacists with the Pisani surname in Senglea in the last quarter of the 18th century — Lorenzo, who in 1770 acquired the pharmacy shop of the deceased John Baptist Saliba[11] and who died by 1798; and Francesco, his son, who during the French occupation was accused of involvement in a conspiracy against the French in August 1798. He was tried and acquitted but was later re-arrested and shot on the 19th February 1799 following a search of his pharmacy shop by the French authorities and the

discovery of a sword in the shop at a time when the possession of weapons had been prohibited by the French[12]. It has not been possible to ascertain which of the two Pisanis is referred to in the manuscript.

An apothecary Ignatius Costù had a pharmacy in Senglea as shown by his signature *Ar. Ignatis Costù della Senglea* on the title-page of the *Farmacopoea* of L. Brugnatelli published in Venice in 1803[13].

There are entries in the account book of payments to a number of attendants on the sick corresponding to to-day's nurses. These are Francesco Caruana (1786) and Giovanni Farrugia (1825). Others are referred to anonymously as *guardiano* or *assistenza dell'uomo nella malattia* (1820) or *assistenza di due uomini* (1820).

Fees paid to physicians and surgeons

There is marked variation in the amounts paid as fees probably depending on the number of calls and the nature of treatment applied. The physician, on the whole, received a higher fee than the surgeon. Thus in the case of the former the fee varied from a minimum of 1 *scudo* and 3 *tari* in 1789 to a maximum of 15 *scudi* in 1822; the surgeon's minimum was 10 *tari* in 1784 up to 5 *scudi* in 1818. It is not possible to give their equivalent monetary value to-day owing to changes in currency and in cost of living during the past two hundred years. But as a very rough guide, one *scudo* would correspond to about eight cents; and one *tari* to six mils. By way of comparison it may be noted that the contemporary wage of the cook employed by the Oratorians was eight *scudi* a month.

Presumably the fees charged were in conformity with the tariff laid down by the code of laws promulgated in 1724 by Grand Master Antonio Manoel de Vilhena which established a rate of one *tari* for a day visit and four *tari* for a night call.

The prices of medicaments supplied by the pharmacist was fixed by the Chief Government Medical Officer *(Protomedico)*. The medical and surgical practitioners and the pharmacist were actually paid at the end of treatment or after the death of the patient[14].

Cost of illness

The payments incurred for the various illnesses are not always broken down into professional fees, cost of medication, etc but are shown globally under such terms as *per la malattia del Padre....* The minimum amount paid was 2 *scudi* and 10 *grani* (1783) and the maximum was 67 *scudi* 10 *tari* and 16 *grani* (1786) to cover a period of treatment of three months.

In some instances payments for the purchase of medicaments are given separately. The lowest amount paid was 8 *tari* (1784) and the highest 18 *scudi* and 1 *tari* (1788).

Under the date 20th April 1780 there is an entry to the effect that 5 *scudi* 15 *grani* were spent for buying a "book in which are noted the expenses of the medicaments and the cost of the illnesses" but this book has not, so far, come to light.

Medicaments bought

These are often referred to generically as *medicamenti presi* or *purga* (1787) except for a few items distinguished by their names:

Reobarbaro (1788)
Olio di mandorla dolce (1792)
Acqua rosacea (1822)
Camomilla (1822)
Spirito salmoniaco (1824)
Unguento rosato (1824)

Rhubarb, in the form of an infusion or of syrup, was prescribed as a purgative; Sweet Almond Oil was given as a mild aperient and as a cough mixture; Rose Water was prepared from the petals of *Rosa Centifolia* and taken as an astringent; chamomile was an infusion of the flowers of *Arthemis nobilis* and given as a febrifuge and for the relief of flatulence; *Spiritus ammoniae aromaticus* was a mixture of carbonate of ammonia and Oil of Nutmeg employed as a sudorific and expectorant; Ointment of Roses was a compound of crushed rose petals and fat for the dressing of ulcers[15].

Dietary regimen

This consisted in the administration of *siero* or whey (1784), *latte asinino* (asses' milk) (1804 and 1817), *latte di capra* (goats' milk) (1825), *galline* (chicken) (1825), *carne di vacca* (beef) (1825) and *vino di Malaga* (Malaga wine) (1825) which contained up to

16% of absolute alcohol by volume.

The *siero* or whey is the watery part of milk that remains when the rest forms curds. It was recommended in lung diseases. Asses' milk, being "lighter" than that of the goat and the cow, was prescribed for patients who could not "digest" the other types of milk[16].

The plague of 1813

The story of epidemiology in the Maltese Islands during the 19th century revolves mainly around the plague of 1813 and the outbreaks of cholera of 1837, 1850, 1865 and 1887.

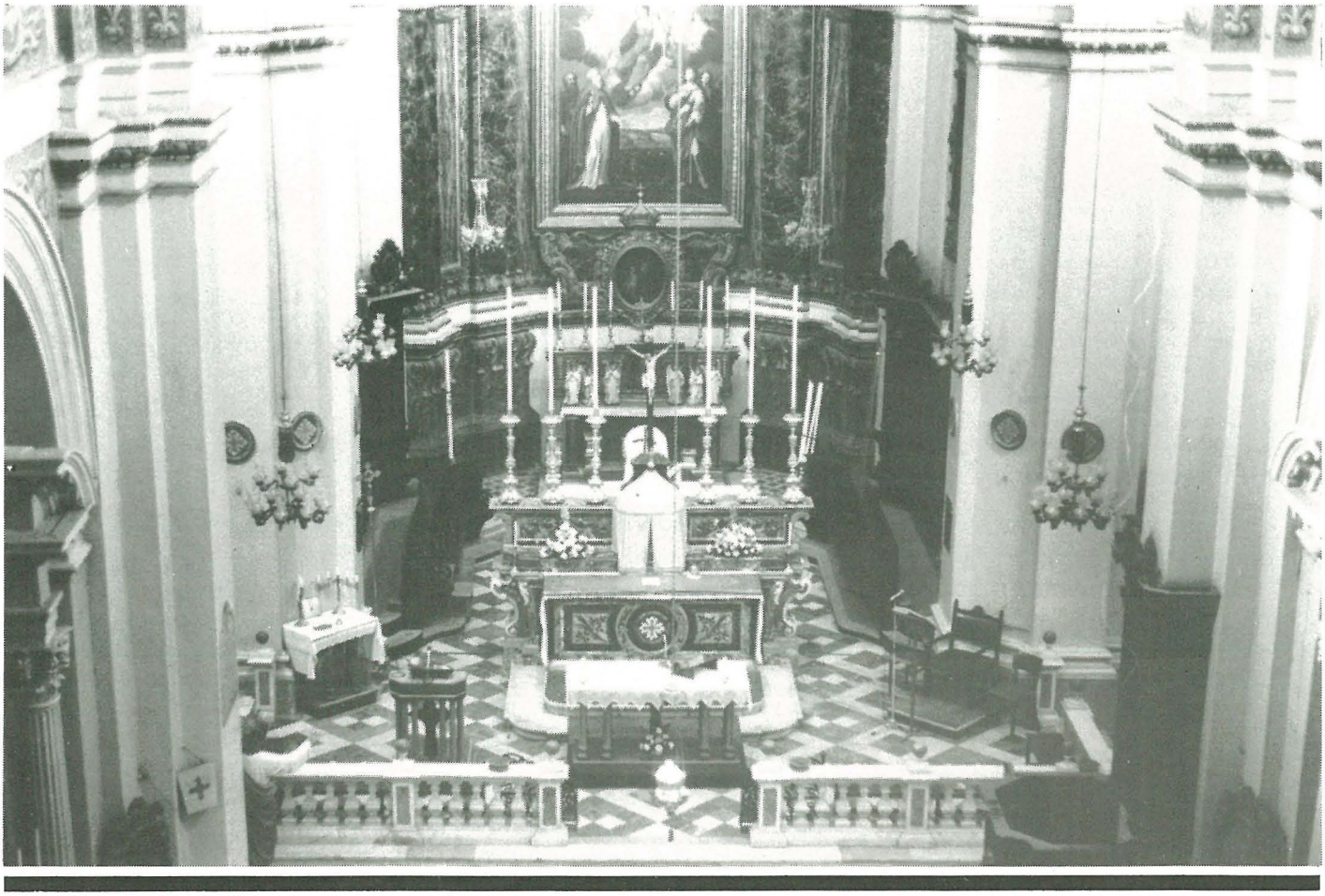
The appearance of plague caused a major disruption of the public health and of the economy of the Maltese Islands from early April 1813 to the beginning of September 1814. There was widespread mortality inspite of the sanitary measures enforced by the government. Senglea, however, claimed to have enjoyed a total exemption from the disease though this has been disputed[17]. This may be due to the fact that nowhere were the quarantine laws so scrupulously observed as in Senglea[18]. This freedom from plague may be the reason why the *Esiti* register makes no allusion to the epidemic though it has been stated that the Convent of St. Philip Neri was prepared as a temporary hospital for patients from the three cities[19]. There is an indirect reference to the plague in another of the Oratorians' manuscripts[20] to the effect that the High Masses that were due to be celebrated monthly at the altar of the *Santissimo Bambino* were not said from May to August as the Bishop had prohibited the people from gathering in churches with the aim of preventing the spread of the "contagion" of plague. These Masses founded by the Baroness Maria Depiro, were eventually celebrated in September.

The cholera of 1837

During the cholera epidemic of 1837 not only the convent but also the church were used as hospitals as is recorded in another register of *Memorie*[21].

Cholera broke out on the 9th June 1837 at the *Ospizio*, the old people's home, at Floriana spreading thence to other parts of Malta. Temporary hospitals were established in Valletta and in some of the villages and towns including Senglea[22].

The Oratorian chronicler wrote thus on the 20th June 1837: (Translation) "At a quarter to two in the afternoon, the page *(paggio)* of His Excellency Monsignor Bishop (Francesco Saverio Caruana) brought me a letter with the information that His Excellency Sir Henry Frederick Bouverie, our Governor, had found it necessary to use our oratory as a hospital for those stricken with the current illness of cholera; for this reason the Bishop asked me to make arrangements without any delay to prepare the oratory for this purpose but (directed me) to retain the church and the library in my custody. Accordingly I immediately began to make the necessary preparations by placing the furnishings and other objects of the oratory in the basement corridor and keeping them under lock and key. The sacred pictures were removed to the pantry and the library. The first patient to be received was a woman from Vittoriosa who died on the same day. Other patients were brought from the same town, Cospicua and Senglea[23]. On the 5th July the Fiscal (legal official) of the Bishop arrived at half-past nine in the morning with an order to evacuate the church completely because the government wanted to turn it into a hospital as the oratory proved to be too small; and to place the church furnishings in the



sacristy and to transfer the Blessed Sacrament to the Oratory. As soon as I began, with the help of a few men, to remove the furnishings, pictures, statues, etc., the church was filled with people who refused to have the church surrendered for the new purpose; in fact as soon as they saw me preparing to transfer the Blessed Sacrament to the Oratory many of them advanced towards me and not only restrained me but took away from me the key of the tabernacle. I went to the sacristy and stayed there trembling with fear at the sight of the tumult. In the meanwhile some of them ascended the church-steeple and started ringing the bells. As soon as I heard the sound of the bells I went to stop the ringing and sent various persons and the sacristan to bring down everyone from the belfry and lock its door securely as was in fact done. The people refused to leave the church and replaced everything that had been already removed by me. At last after many entreaties and pleadings we succeeded in clearing the people from the church and closing it after promising them that we would see the Governor about the matter. The lawyer (blank) went along with others to see the Governor but did not find him.

At 2 p.m. the Principal Intendent of the Police, Mr. Galland (?) arrived with a large troop of soldiers. They were posted around the church and oratory and in *Strada Reale* to ensure that the order issued in the morning was carried out. The Intendent asked me to explain to the people, in the Maltese language, that the church was being taken over for the public good but he told me not to refer to the Governor but to say that the church was being taken over by order of the Bishop. Following this (speech) we again cleared the church of its furnishings, statues, pictures of the *Via Crucis*, etc., and I removed the Blessed Sacrament to the oratory. The sick were transferred to the church and the soldiers were placed on guard on the parvis.

It was rumoured that if the people had attempted a riot the soldiers had been given order to shoot and even a cannon at (Fort) Sant' Angelo would have been brought into action. Thank God that no one attempted to ring the bells of the Parish Church (of Our Lady of Victories); fortunately the Archpriest was warned in time and he locked the door leading to the bell-tower.

Mass was celebrated in the oratory with recitation of the litany and benediction with the Blessed Sacrament; facilities were provided for the hearing of daily confessions for the convenience of the people but more than one thousand persons failed to attend Mass on feast days because they had been deprived of their church, because of the fear (of catching the disease) or because of other reasons.

On the following day, two Capuchin friars came at the instance of the Bishop to administer the Sacraments and assist the sick in the hospital after the death from cholera of the Rev. Vincenzo Pisani who had been giving spiritual assistance to the patients"[24].

After reaching its peak in July, the epidemic started to wane in August and ceased completely by the 11th October[25]. On the 28th of August the few patients that were still receiving treatment in the church were removed to "a spacious building situated in an airy spot" at Floriana[26]. During the period that the hospital was open, from the 20th June to the 2nd September, it received 685 patients of whom 350 died, 329 recovered and 6 were transferred to the Valletta hospital[27].

The library, the Main Hall *(sala)* and the sacristy remained in the hands of the Oratorian community during the whole time that the church was used as a hospital[28], but there is evidence that accommodation for patients was provided in another part of the convent besides the church and the oratory for

by early November 1837 the Oratorians incurred an expenditure of one *scudo*, one *tari* and eight *grani* for white-washing "the three rooms below the sacristy where several persons had died of cholera"[29].

The church and oratory were opened for public worship with a religious function at the end of which the celebrants were entertained to "refreshments and *rosolio*"[30]. On the 21st October a solemn Mass *de requiem* was said by order of the Bishop in the four cities and at the Cathedral for the repose of the souls of those who died during the epidemic. The same was done on the 27th in the parish churches of the countryside. In the following days a solemn Mass of thanksgiving with singing of the *Te Deum* was celebrated in the Cathedral and in all parish churches[31]. The last religious function at the Church of St. Philip Neri in connection with the cholera epidemic took place on the 1st January 1838 when High Mass was said in honour of the Virgin Mary of Porto Salvo in fulfilment of a vow, made during the epidemic, for deliverance from the disease[32].

Cholera epidemic of 1850

The role played by the Oratorian community in a further cholera epidemic that struck the island on the 9th June 1850 was a purely religious one. In fact according to *Il portafoglio maltese*[33], the government intended to set up a hospital for cholera patients in Senglea but this plan was met "with every imaginable opposition". The priests at the Convent of St. Philip Neri "did not want to surrender their place for this purpose". Another refusal came from the owner of the building housing the Government Primary School who made a formal protest to government against the latter's intention to establish a hospital in that school.

In late July a circular from the Bishop entreated the people to pray to the Holy Virgin, on the eve of the feast of the Annunciation, to deliver them from their calamity. On the 23rd July the statues of the Immaculate Conception and of St. Philip Neri were exposed to public veneration at the church of Porto Salvo. The people responded by crowding the church for the recitation of the litany and benediction and by lighting numerous candles before the above-named statues[34].

Public spirited individuals organised Soup Kitchens to feed the indigent[35]. On the 6th August, the committee charged with this task in Senglea asked the Oratorians to allow them the use of their kitchen to cook the meat and the soup. This request was granted and the distribution of this relief continued to be issued until the 30th September[36].

On the 23rd August the Bishop ordered the celebration of a requiem Mass for the repose of the souls of those who were dying of cholera. At the same time he recommended to parish priests and other members of the clergy to warn the people "to abstain from the consumption of noxious foods especially fruits" — which in those days were believed to be the cause of cholera.

From this point in time onwards, the archives of the Oratorians remain silent concerning the events of the epidemic which came to an end on the 13th October with 1736 reported deaths in Malta and Gozo[37].

There were two other major cholera epidemics in the Maltese Islands — in 1865 and in 1887 — in which Senglea was involved (99 cases and 17 cases respectively) but no records from the Oratorians have so far been met with regarding these two outbreaks[38].

Admittedly, these glimpses brief and incomplete as they are into the morbidity of a small religious community and into the behaviour of the people of Senglea when faced with medical emergencies, both individual and collective, do not reflect stirring events; yet they are none the less worthy of consideration. Indeed though these episodes just flit across the folios of the archives of the Oratorians, they never the less provide evidence of the concern of each passing day during the time of illness with its emotional, financial, social and religious overtones. They are also welcome because, apart from the patina given them by time, they resurrect, albeit in a minor key, various facets of the medical life of Senglea in the late 18th and the early half of the 19th centuries which would otherwise have remained unknown to the present generation. One hopes that further sources of information will come to light as other manuscripts dealing with the *historia domus* of the Oratorians are unearthed.

Acknowledgements

I am very grateful to Rev. Fr. Victor Xuereb S.J., Superior of the Residence of the Jesuits at the Oratory of St. Philip Neri, Senglea, for attracting my attention to these records and for allowing me to use them.

References

1. At about this time the population of Senglea was 4111 souls (1694). Between 1736 and 40 it had increased to 4896. Bonnici, A. *L'Isla fi grajjet il-Bazilika-Santwarju ta' Marija Bambina, Malta*, 1986, Vol. 2, p. 156; Cutajar, D. & Cassar, C. Malta's Role in Mediterranean Affairs 1530-1699, Mid-Med Bank Ltd., Report & Accounts 1984, Malta, 1985, p. 61.
2. The founder was Dun Xmun Schembri who died on August 12, 1723 at 89 years of age. Bonnici, A., op., cit., Vol. 2, pp. 156 and 375; 76-83, 108, 260, 280, 340, 372 & 373; Vol. 1 (1981), pp. 95 & 166.
3. *Esiti*. 1776-1825. The front and back covers and the spine are missing as are also the fly leaf, titlepage and folios 1 to 6. There are many blank folios. Some of the leaves are uniformly stained brown suggesting exposure to some substance (vinegar?) presumably for disinfecting purposes. The fear of catching the "contagion" of plague, etc., from handling paper was prevalent in the 18th century. It had not disappeared by 1834 so much so that letters reaching Malta from Gibraltar during the cholera epidemic of that year at the Rock were steeped in vinegar for disinfection before delivery by the Post Office in Malta to their recipients. *Vide* Cassar, P. *The Correspondence of a Senglea Merchant During the Plague of 1813, Hyphen*, 1980, Vol. 2, No. 4, p. 154.
4. *Esiti*, fols. 7 & 30t.
5. *Ibidem*, fols. 50-53, 100-103, 164 & 165t.
6. *Ibidem*, fol. 140.
7. Archives 1911, fol. 93, National Malta Library (NML).
8. *Malta Government Gazette* 4th April 1838, p. 134 and 18th April 1838, p. 155.
9. Dimech, L. *The British Consulate in Tunis. Critical Remarks*. Malta, 1868, p. 87.
10. *Il mediterraneo*, 26th May 1847, p. 12.
11. Cassar, P. Pharmacists and Politics in Malta in the 18th and 19th Centuries, *The St. Luke's Hospital Gazette*, 1970, Vol. 5, p. 37.
12. Cassar, P. *op., cit.*, p. 37; Testa, C. *Maz-Zewg Nahat tas-Swar*, Malta, 1979, Vol. 1, pp. 206-10 and Vol. 2, 1980, pp. 443, 446 and 471.
13. In the author's library.
14. Cassar, P. A Note on the Economics of Medical Practice in 18th Century Malta, *The St. Luke's Hospital Gazette*, 1974, Vol. 9, p. 166. By way of comparison it may be noted that at this point in time the wage of the cook of the Oratorians was 8 *scudi* a month. Vide Bonnici, A. *op., cit.*, Vol. 2, p. 304.
15. Orosi, G. *Farmacologia teorica e pratica or farmacia italiana*, Livorno, 1849, pp. 83, 130, 331, 357-60 and 477: Squire, P. Companion to the Latest Edition of the British Pharmacopoeia, London, 1882, pp. 39 & 43.
16. Orosi, G. *op., cit.*, pp. 297-301.
17. *Malta Government Gazette* 8th December 1813, p. 25.
18. Cassar, P. Medical History of Malta, London, 1965, p. 186.
19. Borg, T. *Malta u l-gwaj tal-pesta*, Malta, no date, p. 16.
20. *Libro messe 1768-1825*, fols. 269 and 276.
21. *Memorie diverse della Chiesa dell'Oratorio di San*

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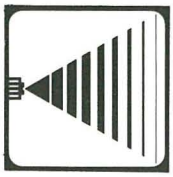

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Psychiatric Emergencies in the Casualty Department

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Psychiatric emergencies are difficult to define. The medical definition of psychiatric emergencies is situations in which, on account of an abnormal mental state or behaviour, the life of a patient, or someone else, is in jeopardy.

However this definition would exclude the commoner situations encountered in casualty which are characterised by severe dislocation in psychological or social functioning and often accompanied by their high nuisance value.

In order to remedy this limitation I shall also use the concept of "crisis" to include those situations when there is a reduction in coping ability to external stress.

Epidemiology

Only about twenty five per cent of "complaints" refer to psychiatric conditions in the conventional sense. This figure reflects the current social use of psychiatry. Sorrows and conflicts, many not caused by psychiatric illness, are brought to the Casualty Department and treatment demanded. This has expanded the boundaries of psychiatry and reflects the development of new views on mental health, the growth of a mental health industry in the welfare state and a loss of skills in handling emotions. Casualty departments cater for many who are not ill in the conventional sense. Perfunctory physical examinations and hurried discharges are not therefore sufficient; indeed they are counterproductive in that a population of "repeaters" may be created. On the other hand fifteen per cent of psychiatric emergencies may be accompanied by unknown severe physical disease.

Classification

Psychiatric emergencies may have:

(i) organic
(ii) functional
(iii) social causes.

The three are often found combined and are difficult to tease apart. I shall not present you an aetiological approach but rather a syndrome-orientated one which is more helpful in the prediction of management.

Acute Confusional State — Organic (ACS)

"Clouding of the sensorium" is the primary psychological effect of acute brain insult. Hallucinations, paranoid ideations and emotional changes are often added. Delirium is the most florid state of acute confusional states.

ACS becomes an emergency when:

(i) onset is acute
(ii) aetiology is unknown on admission
(iii) there is the threat of loss of behavioural control.

In most cases the degree of emergency is that of the causative illness, whether neurological, metabolic, endocrinological, cardiovascular or iatrogenic in cause. Sometimes increased motor activity or lack of patient cooperation add to the seriousness of the case.

When clouding, i.e. disorientation is absent, the cause may still be organic.

The following characteristics may be helpful identifying signs:

— abrupt personality change when there is good premorbid social functioning and family support.
— fluctuation in behaviour and mental state such as worsening in the evenings.
— catastrophic reactions; that is irritability, inability to recover from stress, lowered adaptive capacity, aggressive or violent behaviour in situations of ordinary stress may also be indicative of hidden organic pathology.

Management

— Sedation must be withheld until clearly indicated, as this may mask or distort neurological signs.
— Nursing care is the most important first line of treatment; therefore a well illuminated side room is required as well as reassurance during lucid intervals by the same staff if possible.
— If sedation is required (eg. patient becomes aggressive, suicidal, paranoid, pulls out drip etc.) phenothiazines are the drug of choice. If hypotension, hypothermia or marked sedation are severe, thioridazine or haloperidol may be used instead of chlorpromazine. Benzodiazepines may increase confusion by reducing the level of arousal, but may be used in status epilepticus.

Once the decision to medicate is taken, adequate doses should be prescribed regularly and not prn which is disorientating and upsetting. Dystonia or pseudoparkinsonian side effects may be controlled with procyclidine (Kemadin) 10mg iv.

If the patient demands discharge or tries to leave the pertinent sections of the Mental Health Act may be used to keep him in hospital provided that his mental state warrants such action. The Act may not be used to treat physical illness alone.

Functional Psychiatric Emergencies

(i) Excitement
(ii) Stupor
(iii) Panic Attack
(iv) Hysterical Fugue
(v) Destructive behaviour towards others
(vi) Destructive behaviour towards self

(i) Excitement

This is characterized by motor

hyperactivity accompanied by disturbance of though, perception, mood and insight. Some Acute confusional states may be considered as organic excitements.

Functional excitements are of various types:

(i) Catatonic (rare)
(ii) Manic
(iii) Paranoid
(iv) Non psychotic: hysterical acting out personality disorders insufficient behavioural control drug intoxications

Catatonic excitement is rare, dramatic, unmotivated and may threaten life as in "lethal catatonia". Insight is lost and patients need restraining and sedation.

Manic excitement is meaningful, less progressive in onset and develops in the context of contagious jollity, pressure of speech, flight of ideas and grandiosity. Occasionally it is punctiated by dysphoria, irritational aggression and an overbearing quality. Mixed states may be found with both hyperactivity and angry despondency. Rarely, secondary mania may develop in the wake of physical disease or drugs.

Paranoid excitements show disorganised and frightened behaviour. This may be sporadically replaced by defensive aggression, as delusional beliefs and persecutory ideas are acted out.

Hysterical excitement results from deficient behavioural control and episodic disorganisation of emotional and cognitive behaviour. Because of the secondary gain involved it is self perpetuating.

Personality disorders of the explosive or aggressive type when under pressure may develop states of disorganisation, incoherence, terror or aggression. This sudden release, often sensitized by alcohol or drugs of so-called psychopathic tension may generate marked antisocial behaviour.

Management

Catatonic excitement responds to high doses of intramuscular haloperidol (30-50mg). As it has a long half life, two injections daily are usually sufficient. Electroconvulsive therapy (ECT) is indicated in patients nearing exhaustion and who are not responsive to drugs.

Mania and Paranoid excitement respond to large doses of neuroleptics but ECT may also be indicated.

Hysterical and psychopathic excitements respond well to benzodiazepines and supportive psychotherapy.

(ii) Stupor

There are both neurological and psychiatric stupors. Twenty per cent of these are organic.

Therefore psychiatric stupor should only be diagnosed if tests for the function of the cerebral hemispheres and brain stem are normal and caloric tests produce nystagmus and not tonic deviation of the eyes. An EEG should also be carried out.

Psychiatric stupor is of three main types:

(i) catatonic
(ii) depressive
(iii) hysterical

Management

Functional stupor compromises life by interfering with eating, drinking and defaection. Those resulting from psychotic illness respond well to ECT. Hysterical stupors respond to any treatment but determined efforts should be made to identify their meaning and secondary gain. Patients only abandon this sympton if provided with an alternative means of coping.

(iii) Panic Attacks

These are characterised by a sudden increase in free floating anxiety with or without signs of autonomic overstimulation. There may or may not be accompanying fears of death or impending disasters including themselves or others. Such panic attacks are common in patients with agoraphobia, anxiety states and obsessional illnesses.

Panic attacks are also seen in organic states such as SLE, thyrotoxicosis, phaeochromocytoma, hypoglycaemic states, carcinoid syndrome, acute intermittant porphyria or acute schizophrenia.

Management

This should be of the underlying disease. Situational panic attacks settle down in the casualty room as do many other psychiatric disorders. This does not mean that they are "hysterical" or "unimportant".

Panic attacks are often prolonged by the hyperventilation paraesthesia and tetanic response which feed the patient's fears.

If all relevant medical investigations are found to be negative, benzodiazepines eg. diazepam 10mg iv may be administered and psychiatric referral organized — not necessarily as an emergency.

(iv) Hysterical Fugues

This is a dissociation produced by a stressful situation and consists of a "motivated" or "psychogenic" loss of memory. Organic states account-for amnesia must be ruled out.

Management

Admission to St. Luke's Psychiatric Unit or Mount Carmel Hospital is advisable in order to organize management and protect the patient from potentiated danger.

(v) Destructive Behaviour Against Others

Anyone who during a crisis breaks the television set, attacks another person without motive, or demonstrates some other sort of destructive behaviour is likely to be brought to the Casualty Department. The incident must be assessed in terms of its circumstances, the patient's premorbid personality and contributing factors such as alcohol, drugs, mental illness and organic confusion. It must be decided whether aggression is alien to the aggressor, when organic or serious psychotic causes may be important, or if it is a feature of his subculture or personality disorder.

Sometimes violent behaviour may continue in hospital and it serves no good purpose to be heroic. The police should be called even if the patient eventually proves to be a psychiatric case.

In the case of assaultive behaviour due to alcohol intoxication, do not interview the patient alone, approach slowly and carefully in a firm and reassuring manner and talk down. If sedation is required use only benzodiazepines, phenothiazines and haloperidol.

Always be on the look out for an unsuspected subdural haemorrage.

(vi) Destructive Acts Towards Self

Suicide and parasuicidal behaviour are a common psychiatric emergency. Patients who have made genuine suicidal attempts are usually admitted to a psychiatric ward as about ninety-three percent of these suffer from mental illness.

The parasuicidal patient requires psychiatric help and social worker support of a different kind.

Cont. on page 27

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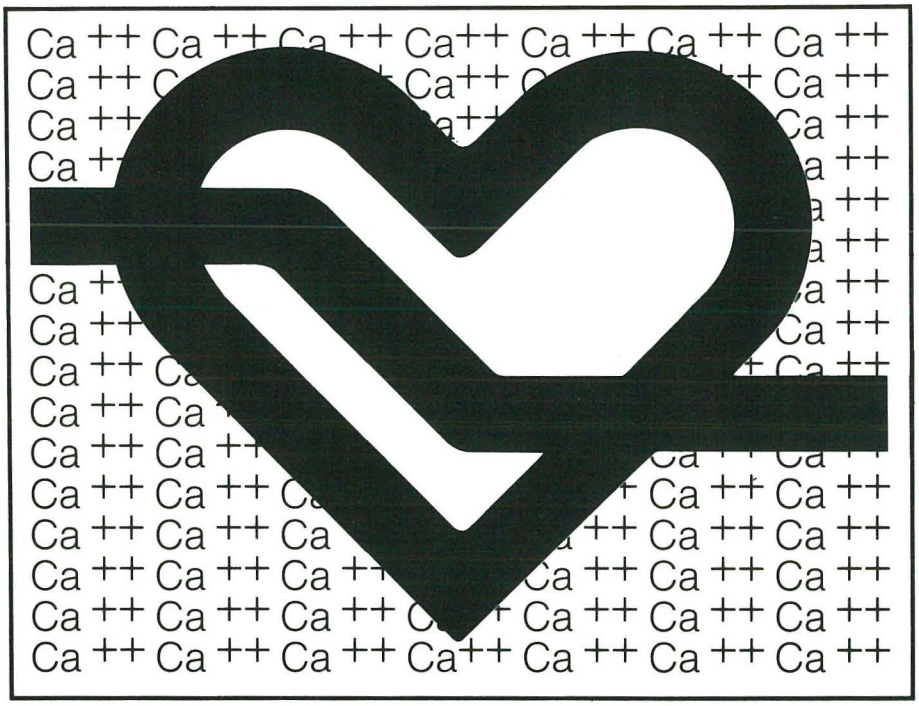

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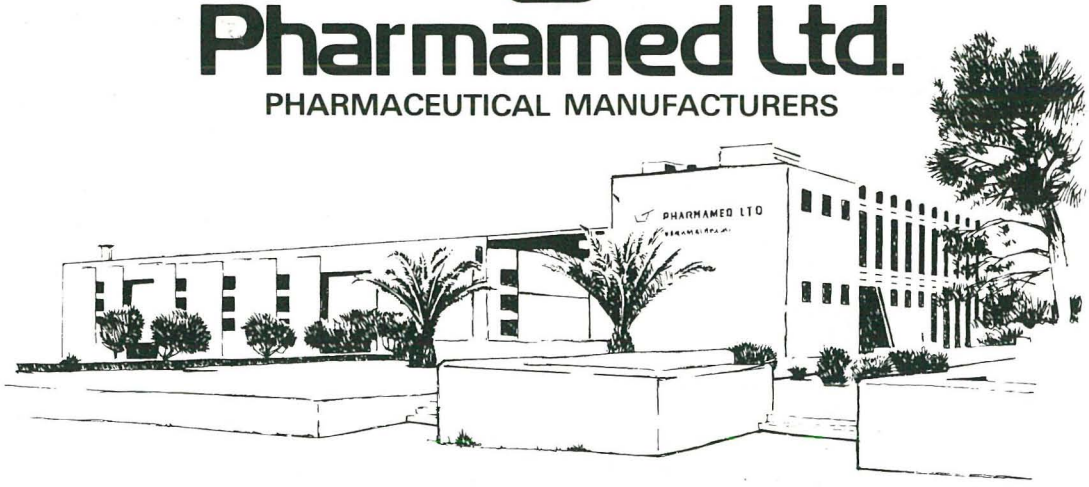

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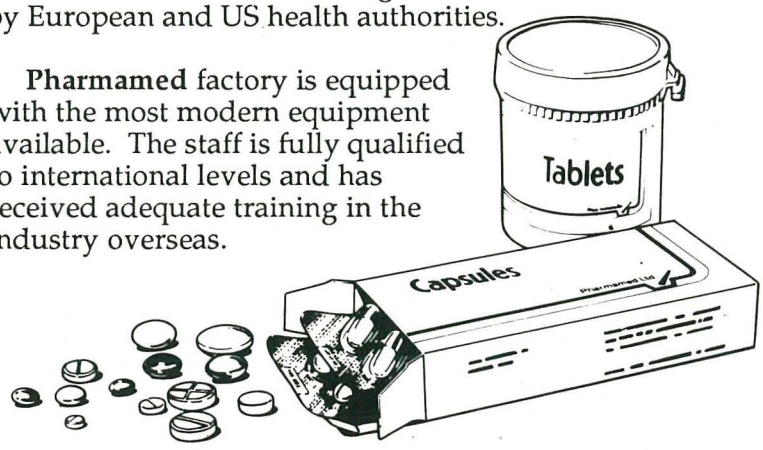

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The Change-Over To Insulin U-100

DR J. AZZOPARDI M.D. MRCP (UK)
Consultant Diabetologist SLH

DR CHRISTINE VELLA M.D.
House Physician Surgeon, SLH

Insulin was first used in the treatment of diabetic keto-acidocis in a diabetic patient in January 1922. Since then, especially in the last ten years, remarkable progress has been made in the types of Insulin and their mode of administration to the patient. One advance has been the change-over to Insulin U-100 strength which has already taken place in the UK, USA, Canada, Australia and New Zealand and is now being introduced in Malta as from August 1988.

Insulin strengths previously available included:

Insulin U-20 i.e. 20U insulin/ml
Insulin U-40 i.e. 40U insulin/ml
Insulin U-80 i.e. 80U insulin/ml.

Insulin strengths that are currently used are Insulin U-100, and in cases of Insulin resistance, Insulin U-500 or U-5000.

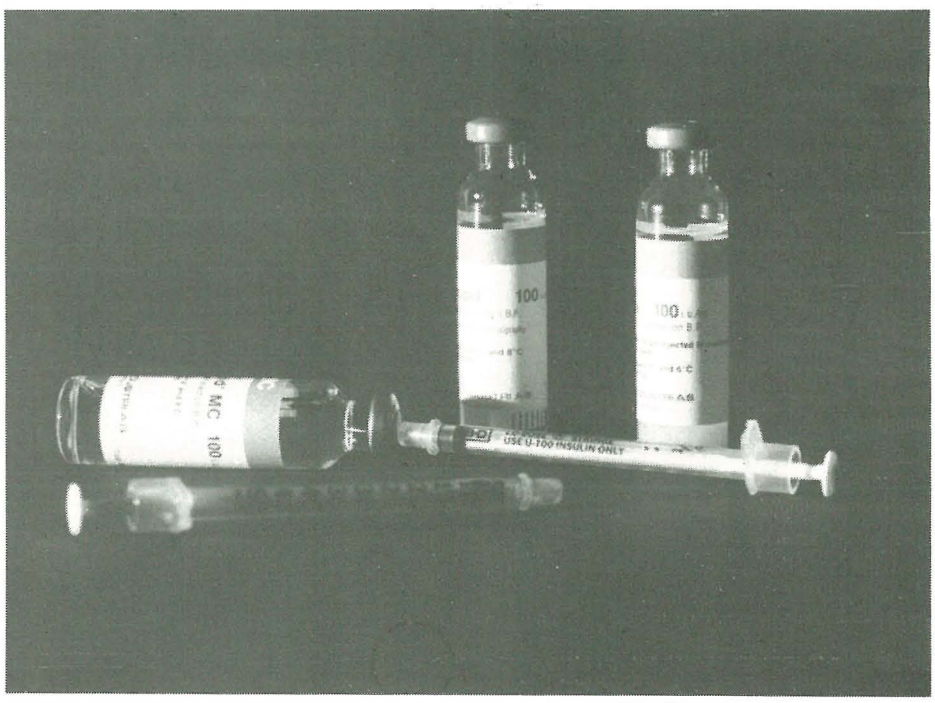
Considering Insulin U-100 further, one must first note that Insulin U-100 is not a new type of Insulin. It is merely a more concentrated form with each ml containing a larger number of units of Insulin i.e. 100U per ml as compared to the other Insulin strengths previously in use namely the Insulin U-40 and U-80. Yet one unit of Insulin U-100 is equivalent to one unit of U-40 and one unit of U-80. Thus Insulin U-100 allows one to inject a smaller volume of Insulin to obtain the same dosage of Insulin and same effect on blood glucose; generally speaking, the smaller the volume of Insulin injected, the lesser the discomfort at the injection site. In addition, the use of only one strength of Insulin allows standardization of Insulin treatment minimizing the risk of dosage errors as may have previously occurred with the availability of Insulin of varying strengths, e.g. using U-80 Insulin instead of U-40 possibly leading to hypoglycaemia or using U-40 Insulin instead of U-80 leading to hyperglycaemia.

Furthermore with Insulin U-100, one measures the dose of Insulin required directly in units of Insulin as opposed to previous methods of measuring Insulin in cc or ml which resulted in greater variation of dosage especially if different strengths of Insulin were used.

Insulin U-100 is administered in U-100 syringes only. These are available in 0.5 ml (50U) or 1ml (100U) sizes. They have minimal dead space allowing accurate measurement of low doses and less wastage of Insulin. They are disposable, plastic syringe — needle units packaged to preserve sterility. Although disposable, they can safely be used up to 6 times on the same patient and then discarded.

It is envisaged that by March 1989 the change over will be completed. A national campaign was organised to make sure that all interested individuals be properly informed about Insulin U-100. Lectures and meetings with medical and paramedical staff were held to inform them of the proposed change. Programmes were also transmitted on the radio and television media. Two leaflets — "Getting Started with U-100 Insulin" by Better Diabetes Care and "Changing to Novo U-100 Insulin" by Novo, the latter in English and Maltese, were distributed to all medical doctors and diabetic patients on Insulin treatment. In addition, diabetic patients on Insulin received individual explanations on U-100 Insulin and mode of delivery with U-100 syringes from the staff at the Diabetic Clinic, SLH. An expert from Novo was brought over to Malta to advise on the process.

Summarising, the changeover to Insulin U-100 has made Insulin injections more simple, more safe and more comfortable for the Insulin-dependent diabetic patients.



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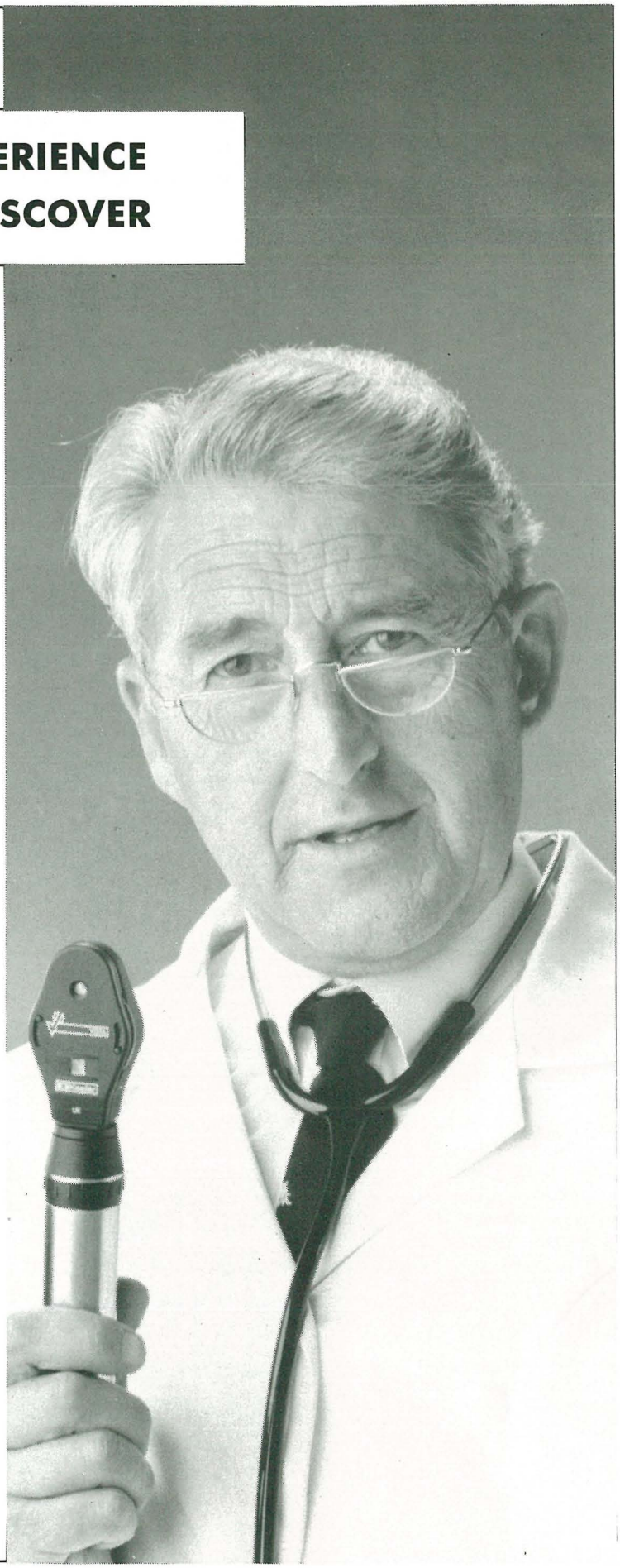

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PSYCHIATRIC EMERGENCIES

Cont. from page 22

Social Psychiatric Emergency

These are behavioural disturbances resulting mainly from breakdowns in family communication which, in the absence of specialised crisis intervention services are dealt with as conventional psychiatric emergencies.

St. Luke's Psychiatric Unit functions also as a crisis intervention centre as psychiatrists, psychiatric social workers and psychologists are available. However the Centru Hidma Socjali coud be a more apporpriate source to refer to as this agency deals with such clients on the social model rather than a medical model.

A social worker is on call twenty four hours.

FACETS OF MEDICAL LIFE

(cont. from page 18)

Filippo Senglea dal 1831 al 31 Dic. 1845, Vol. 2.
22. Cassar, P. Medical History of Malta, London, 1965, pp. 192-6.
23. *Memorie diverse ecc.* fol. 43 *et seq.*
24. *Ibidem*, fol. 46.
25. Cassar, P. Medical History of Malta, London, 1965, pp. 197-8.
26. *Malta Government Gazette*, 21st June 1837, p. 220; 28th June, p. 233; 5th July, p. 237; 12th July, p. 247; 19th July, p. 260; 26th July, p. 268; 9th August, p. 283; 16th August p. 295; 23rd August, p. 304; 30th August, p. 312; 6th September, p. 320.
27. *Ibidem*, p. 320.
28. *Della chiesa dell'Oratorio, Luglio 1837 - 5 Gennaio 1854*, fol. 109. A number of the first folios are missing.
29. *Ibidem*, fol. 112.
30. *Memorie diverse* ecc, fol. 47. A drink made of alcohol, water, sugar and an essence of menta or vanilla.
31. *Ibidem*, fols. 47 & 48.
32. *Ibidem*, fol. 54.
33. *Il portafoglio maltese*, 1st August 1850, p. 5617.
34. *Memorie diverse ecc*, fols. 320 and 321.
35. Cassar, P. Medical History of Malta, London, 1965, p. 200.
36. The committee was composed of Padre Paolo Lebrun, Francesco Bonello and Guglielmo Castaldo (sic). *Il portafoglio maltese*, 8th August 1850, p. 5624.
37. Pisani, S.L. Report on the Cholera Epidemic in the Year 1887, Malta, 1888, p. 10.
38. *Ibidem*, pp. 4 & 15. Sutherland, J. Report on the Sanitary Conditions of Malta and Gozo with reference to the Epidemic Cholera in the Year 1865, London, 1887, p. 8.

GUIDELINES FOR AUTHORS

Authors are encouraged to submit material for publication in **Medi-Scope** hoping that the work is original and is not intended for publication elsewhere. All authors must give signed consent to publication. The Editor retains the customary right to style and, if necessary, to shorten material accepted for publication

Acceptable material includes review articles, reports of studies (mostly those carried out in Malta), case presentations, aides memories for students, articles on practical subjects not usually well discussed in standard text-books and quiz material. Manuscripts should not be lengthy: one may consider that three type-written pages on A4 size paper, with one inch margin on either side and double spacing will occupy one page in the journal.

The number of authors should be kept to one or two: further acknowledgements can be added to the text. The author's oppointments and qualifications at the time of writing the article should be given and the Editor informed of any change of appointment. It should be made clear on the manuscript which author is responsible for correcting gally proofs and answering queries and correspondence. His/her address and telephone number must be stated. Proof corrections must be kept to a minimum; sizeable alterations should be discussed with the Editor.

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Drugs should be given their approved name. Abbreviations may be used provided that what they signify is clearly expressed at least once, on their first appearance in the article. Scientific measurements should be given in SI units with traditional units in parenthesis if necessary.

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Articles in Journals:

Authors' names and initials; year of publication; title of article; title of journal; abbreviated to the style of *Index Medicus:* volume number; first and last page numbers e.g.:

Birth, C. (1910): Phlebotomus Fever in Malta and Crete. J. Royal Arym Med. Corp. p. 238-260.

Roberts, S.A. and Soothill, J.F. (1982): Provocation of Allergic Response by Supplementary Feeds of Cow's Milk. Arch. Dis. Child. 57: 127.

Articles in Books:

Author's names and initials; year of publication; title of article; Editor of book; title of book; publisher; place of publication; first and last page numbers. e.g.:

Feroze, R.M. (1981): Benign Tumours of the Uterus. Dewhurst, J. (ed): Integrated Obstetrics and Gynaecology for Postgraduates. Blackwell Scientific Publ., London. p. 698-703.

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Cuschieri, A., Giles, G.R. and Moossa, A.R. (1982): Essential Surgical Practice. Wright. PSG. Bristol. p3-14.

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Letters:

Letters to the Editor are welcome, particularly those which take up points from material published in the journal. They should not normally exceed one type-written page in length and may include an illustration or table.

The Editorial Board would like to take this opportunity to thank all those who help in materialising each issue of **Medi-Scope** as well as those who by their kind words, constructive criticism and suggestions are helping in making this a fine journal. The Board will be pleased to discuss any problem or difficulties as may arise in connection with **Medi-Scope.**

International Committee of Medical Journal Editors. Uniform Requirements for Manuscripts Submitted to Biomedical Journals.
Br. Med. J. (1982) 284: 1766-70.
List of Journals Indexed - printed in the *Index Medicus.*

ERRATA CORRIGENDUM ISSUE No. 11, 1987

Page 10 Line 2:
'resulted' *should read* **'reported'**
Page 10 Line 6:
'pedical' *should read* **'pedicel'**
Page 17 Column 1 Line 2:
'westermost' *should read* **'westernmost'**
Page 17 Column 1 Line 29:
'dmf' *should read* **'DMF'**
Page 33 Column 1 Line 23:
'performance' *should read* **'preference'**
Page 33 Column 2 Line 5:
'heathers' *should read* **'heaters'**
Page 33 Column 2 Line 16:
'gesitional' *should read* **'gestational'.**

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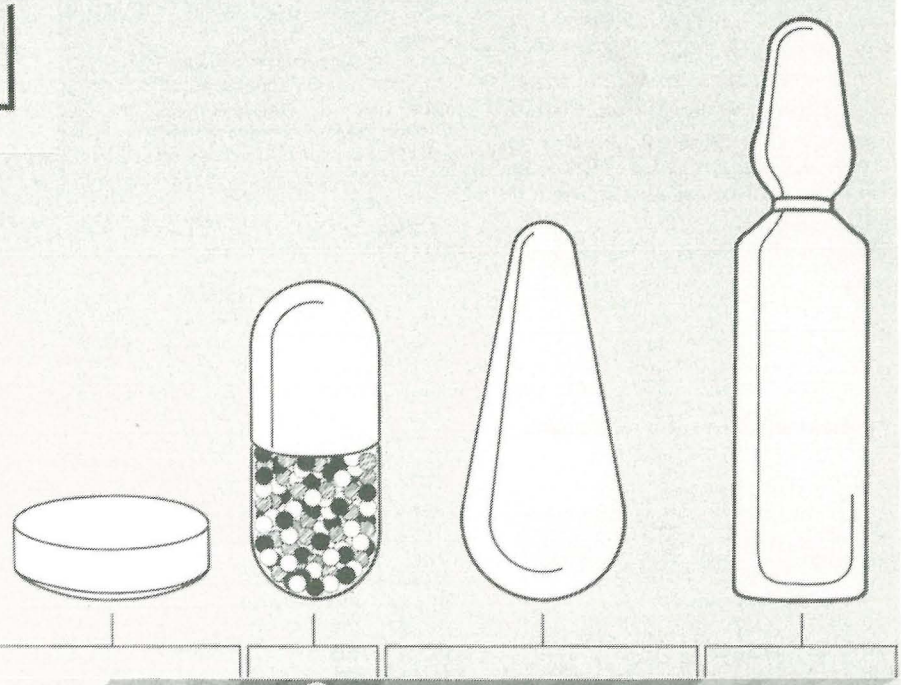

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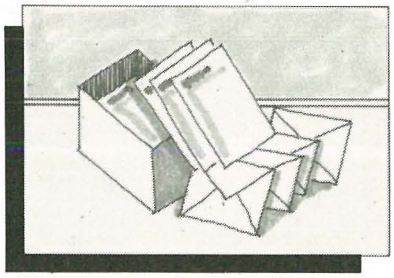

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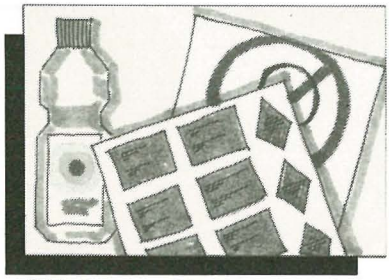

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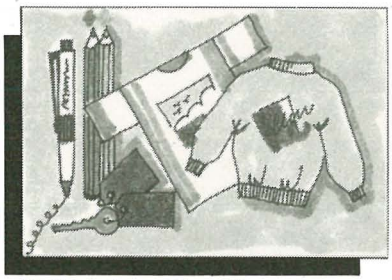

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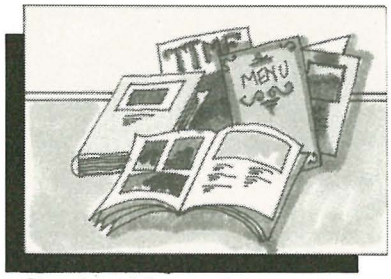

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1. Proceedings of Int. Symp. Excerpta Medica 1984, 54-67.

2. Roy. Soc. Med. Int. Cong. and Symp. Series **80**, 173-180.

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Indications Acute primary bacterial skin infections, e.g. impetigo and folliculitis.

Dosage and Administration Adults and children: BACTROBAN ointment should be applied to the affected area up to three times a day, for up to 10 days. The area may be covered with a dressing or occluded if desired.

Precautions When BACTROBAN ointment is used on the face care should be taken to avoid the eyes. Polyethylene glycol can be absorbed from open wounds and damaged skin and is excreted by the kidneys. In common with other polyethylene glycol based ointments, BACTROBAN ointment should be used with caution if there is evidence of moderate or severe renal impairment. Use in Pregnancy: Studies in experimental animals have shown mupirocin to be without teratogenic effects. However, there is inadequate evidence of safety to recommend the use of BACTROBAN during pregnancy.

Contra-indications Hypersensitivity to BACTROBAN or other ointments containing polyethylene glycols. BACTROBAN ointment formulation is not suitable for ophthalmic or intra-nasal use.

Side Effects During clinical studies some minor adverse effects, localised to the area of application, were seen such as burning, stinging and itching.

Further information is available on request from

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