INFORMATION CIRCULAR

Date	Classification	Serial No.
June 1970	Public Health	17

NEWS AND VIEWS FROM THE JOURNALS

This circular contains extracts from recent medical journals, selected for their relevance to regional conditions and problems by Dr A. Guinea, SPC Medical Officer. The six extracts comprise:

1) Tetanus, Betamethasone in its Treatment.
2) New Lead in Diabetes.
3) Eosinophilic Meningitis, Present Status of Angiostrongylus Cantonensis Infection.
4) Family Planning and the Population Explosion - One Point of View.
5) Thiabendazole, its Indications and Limits.
6) Treatment of Injuries by Stonefish (Family Synancejidae).

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1. TETANUS, BETAMETHASONE* IN ITS TREATMENT

Corticosteroids have been used in the treatment of established tetanus with varying reports of success. However, in the area of this study a preliminary trial with oral and injected betamethasone resulted in a drop in overall tetanus mortality from 61% to 18.5%. As there is a natural seasonal variation in tetanus mortality in the area, a full year's clinical trial was undertaken and is now reported.

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* Betamethasone BP, USNF, (Betnesol).

/Views expressed are the authors' and not necessarily those of the South Pacific Commission/

The study comprised 362 consecutive cases of tetanus observed in two years. 170 patients in the first year constituted a control group and received the usual routine treatment for tetanus while the remainder, 192, were given the same treatment with the addition of betamethasone - the clinical trial group.

Routine Treatment:

Routine treatment consisted of the administration of sedatives ATS and supportive therapy. The sedative mainly used was prochlorperazine*, supplemented with phenobarbital or paraldehyde. Morphine sulphate used with good results in the control group was seldom used in patients on betamethasone as over-sedation occurred too easily.

ATS was given in a dosage of 10,000 units per day in the control group on commencement. In the course of the year, this was reduced to 1,500 units per day without change in mortality. Among 148 consecutive patients, mortality was 62% (52/84) on the higher dose, and 64% (41/64) on the lower. (The clinical trial group received ATS at the lower dosage level.)

Supportive therapy included raising the foot of the bed by 20 - 30 cm. and intramuscular penicillin to prevent respiratory complications.

Treatment with Betamethasone:

In the clinical trial series, betamethasone was given both orally and parenterally (intravenously in adults, intramuscularly in infants and young children). Two oral dosage schedules were used, one group being given 2 - 4 mg. daily, another 6 - 12 mg. daily. In both groups, parenteral amounts were given as required.

It was found that adults receiving an average daily oral dose of 8 mg. also required a daily average of 14.3 mg. intravenously; those receiving a daily oral dose of 3.1 mg. required 13.7 mg. intravenously. In children, a similar pattern was found; those on an average dose of 6.9 mg. daily required 16.3 mg. parenterally; those on 2 - 4 mg. 13.3 mg. parenterally. In other words, more than doubling the amount given by mouth did not decrease the parenteral requirement. It was found, in

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* "Sparine"

addition, that there was a significantly higher mortality among those on high oral dosage - 57% (21/37) compared with 44% (7/16) on low oral dose.

The average parenteral amount of betamethasone given daily for the first ten days to surviving adults in the high mortality group was 13.8 mg. per day, lower dosage being required for a further eight days on average. Surviving children required an average of 14.6 mg. over the first ten days with subsequent lower doses for further five days on average.

Complications:

Only two complications attributable to betamethasone were experienced - haemorrhage and oedema of the head. Six cases of non-gastric haemorrhage occurred in the betamethasone group, mostly oral and nasal and mostly in children. Routine administration of Vitamins C and K were with out effect but bleeding stopped when dosage was lowered. Oedema of the head occurred in 6 cases, 3 of which were associated with haemorrhage. Three died but the addition of potassium chloride reduced the incidence of this complication.

Results:

The use of betamethasone was followed by a highly significant reduction of mortality from 61% (103/170) in the control series to 37% (70/192) in the clinical trial series. In the "high mortality" cases, there was a reduction in mortality from 80% (66/82) to 50% (53/106). In addition, betamethasone greatly increased the safety margin in the general management of tetanus patients. The level of sedation has been reduced with resulting better respiratory function and patient co-operation; feeding, hydration and nursing care have been easier and safer. Not the least benefit has been the ability to get a new acute case under control quickly and betamethasone 8 mg., with promethazine 50 mg. are given intravenously together with 1,500 units ATS immediately on arrival.

Betamethasone probably acts in three ways, its antihistaminic action resulting in reduction of pericellular oedema around motor cells and ganglions (in support of this supposition is observed effectiveness of betamethasone in cerebral contusion, eclampsia and cerebral malaria), its anticholinergic effect supporting a failing suprarenal gland and meeting a very high and prolonged demand for corticosteroids and, lastly, its antitoxic effect acting in the same manner as that exerted in other infective toxaemias.

SANDERS, R.K.M., et al. "The Treatment of Tetanus with Special Reference to Betamethasone".
Trans. roy. Soc. **trop.** Med. Hyg., Vol. 63 No. 6 pp746-754, 1969.

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2. A NEW LEAD IN DIABETES

Although insulin and certain oral drugs play an important role in ameliorating diabetes, the disease continues to take a heavy toll. Medical researchers believe that better control is most likely to result from an understanding of basic body processes involved in the condition.

A team from Monash University (Australia) led by Professor Joseph Bornstein has made a discovery that could lead to a new approach to the clinical treatment of diabetes.

An important early discovery was that the majority of diabetics do in fact secrete insulin. It was found that the blood of such people contains a substance that interferes with the function of the hormone, so that additional insulin must be given to promote normal use of sugar in the body. A possible clue to the nature of the unknown substance was provided when medical scientists elsewhere found that injection of growth hormone normally present in small amounts in the body produced a rise in blood sugar level analogous to that of diabetes. Even more intriguing was the fact that a temporary fall in blood sugar preceded the rise.

Professor Bornstein and his colleagues last year announced the isolation of two breakdown products of growth hormone that could account for the fall-and-rise effect. By interfering with critical biochemical stages in the use of blood sugar and its conversion to fat in the body, one of them (polypeptide "ACG") could account for the lowering of blood sugar immediately after injection of growth hormone, and the other (polypeptide "ING") for its later sustained rise to diabetic levels. Further, these two substances could be responsible for all the effects of growth hormone on the use of carbohydrates and fats in the body.

These products of the breakdown of growth hormone are apparently in balance in the healthy individual and imbalance could possibly lead to diabetes. Treatment with ACG might overcome the imbalance and restore the normal rate of breakdown and use of sugar in the body.

The treatment of experimental animals with ACG confirmed this suggestion. The results were so impressive that clinical tests of the purified and sterilized material were carried out on five volunteer diabetes patients at the Alfred Hospital. In all five cases the administration of ACG resulted in a sustained fall in blood sugar, and so confirmed the potential value of the new drug in the treatment of important diabetic conditions, including insulin resistance. It is possible that large

groups of diabetics capable of secreting insulin in response to variations in blood sugar levels might tolerate a normal diet if insulin antagonism could be suppressed by ACG.

From "Monash, What's New In Education, Research and Community Service", 1st March, 1969.

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3. EOSINOPHILIC MENINGITIS, PRESENT STATUS OF ANGIOSTRONGYLUS CANTONENSIS INFECTION

Angiostrongylus cantonensis is at present regarded as the infective agent of the common form of eosinophilic meningitis in the Pacific and South-East Asia and the purpose of this paper is to summarise what is known at present on the biology, distribution, mode of infection and disposal of the organism as reported by various investigators.

Rodents, of which only certain species are known to serve as final hosts for A. cantonensis become infected as a result of ingesting infective third stage larvae present in molluscs which serve as intermediate hosts. These rodents include those of the genera Rattus Melomys and Bandicota. Several species of molluscs (snails and slugs) serve as intermediate hosts. Land planarians and crustaceans (crabs and freshwater prawns) serve as carrier hosts.

Within the tropical belt, the parasite has been reported from some islands near East Africa, South and East Asia and many areas of the Pacific, the outermost localities including Okinawa, Australia (Queensland), Madagascar and Tahiti. In the Pacific, reports of the occurrence of A. cantonensis are as follows:

		Reported as Present	Not Found:
A.	Eastern Pacific (Polynesia)	Hawaiian Islands	Tokelau Islands:
		Cook Islands, Rarotonga	Atafu
		Society Islands:	Fakaofo
		Bora Bora	Nukunono
		Huahine	Samoan Islands:
		Moorea	Savaii
		Raiatea	Upolu
		Tohaa	Tutuila
		Tahiti	Tongan Islands:
			Tongatapu

	Reported as Present	Not Found
B. Central Pacific (Micronesia)	Caroline Islands: Babelthuap Koror Moen Pingalap Ponape Mariana Islands: Guam Rota Saipan Tinian	Marshall Islands: Majuro
C. Western Pacific (Melanesia)	Loyalty Islands: Lifou New Caledonia New Hebrides: Espiritu Santo Solomon Islands: Guadalcanal	Wallis Islands: Uvea Fiji Islands: Viti Levu

Human angiostrongyloidosis is associated with, and usually acquired in areas where the infection is present among rodents and the intermediate or carrier hosts. Infection is acquired by the ingestion of raw or improperly cooked intermediate or carrier hosts such as the juices of uncooked freshwater prawns (the "taioro" or "mitihue" of Tahiti), accidental ingestion of land planarians with raw vegetables (New Caledonia) and some species of mangrove crab (Micronesia). The incidence of infection is often related to local eating habits.

Methods which may assist in the control of human infection consist of:

(a) public awareness as to cause and source of infection;
(b) proper cooking or freezing of crustaceans;
(c) proper washing and inspection to remove molluscs and land planarians from vegetables to be eaten raw;
(d) avoidance of drinking from open pools;
(e) control of rodents

All evidence indicates that during the present century human angiostronogylosis has spread eastwards in the tropics, originating in Madagascar and extending to Southern and Eastern Asia, eventually to all parts of the Pacific over the last two hundred years. Any measure which

will prevent the exportation of infected rodents or intermediate hosts from epidemic to nonepidemic areas is extremely desirable in preventing further dispersal of the parasite.

ALICATA, J.E. "Present Status of Angiostrongylus cantonensis Infection in Man and Animals in the Tropics."
J. trop. Med. Hyg., Vol. 72, No. 3, pp.53-63, 1969.

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4. BE FRUITFUL AND STARVE, FAMILY PLANNING AND THE POPULATION EXPLOSION - ONE POINT OF VIEW

In a review of Family Planning in relation to control of the population explosion and other demographic factors, this article points out that the implicit assumption of family planning programmes is that people would have fewer children than they do if adequate means of contraception were freely available to them. The possibility that family planning programmes are largely irrelevant to demographic plans is indicated by illustrating the decline in the birth rate in the 19th Century as a consequence of the industrial revolution and the changing economic and social conditions in Europe. Recent studies have shown that in countries such as Taiwan and South Korea which are often upheld as models of what a family planning programme can achieve, it is hard to be sure that the programme has contributed more than marginally to a decline in birthrate which would have occurred anyway. Further studies have shown that, when analysis is made, family size among the poor and uneducated may be a consequence of their lack of access to family planning but many of the poor in the United States for example have ample access to such advice but have not chosen to take it. It would appear that there are many other factors which must be considered besides the influence of family planning programmes. These include not only traditional and religious attitudes to child-bearing, but the whole range of social and economic incentives which each society has developed in order to ensure its own continuity. One such incentive, of course, is the payment of family benefit or family allowance. This leads the writer to conclude that in the absence of more drastic and more effective methods which might be necessary to control population size, family planning programmes are comparatively innocuous to political and religious sentiments and that they permit the impression that something is being done to contain the population explosion without the need for traumatic social changes. It is considered that the development of new methods of contraception such as the "Morning After" pill or a pill for men may indeed provide a fillip for family planning programmes in various areas of the

world, but it would be perilous to suppose that these or any other advances can provide a scientific solution to what is essentially a sociological and political problem. While the International Federation for Planned Parenthood has every right to take pride in the growing number of countries which support or permit family planning activities, the fact remains that no government yet has a programme to reduce the desired family size. Nor even is there evidence that, if family planning programmes were fully successful in their objectives, there is any guarantee that the relational behaviour of individual families would lead to a containment of the population explosion. It is naive to hope that individuals can be induced to regulate their family size in the best interest of society by persuasion alone and not by legislation.

NATURE, Vol. 223, No. 5209, pp. 877-878, 1969.

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5. THIABENDAZOLE, ITS INDICATIONS AND LIMITS

Having proved its efficacy in veterinary medicine, thiabendazole has been used in the treatment of human helminthiasis since 1961 and its wide spectrum of action has given it special importance in the commonly occurring multiple infestations of tropical people.

In order to define its efficacy and its acceptability, the results of its use in 253 patients as well as results reported by other workers is reviewed with the following conclusions:

Acceptability and Toxity:

Thiabendazole, used as crushed 500 mg. tablets is one of the best antihelminthic drugs known. In this form, it has an agreeable taste and, even without crushing, it is easily taken. Secondary effects are minimal provided that it is taken after meals and provided it is given in two divided doses at a level of not more than 50 mg/kg/day. Treatment in this way can be ambulatory and toxic effects are negligible.

Results:

1. Thiabendazole is the best treatment for strongyloidosis giving excellent results (90-95% cure) with 4 doses of 15 mg/kg in 48 hours, 2 doses of 25 mg/kg at 12 hour intervals or a single dose of 25-50 mg/kg.

2. Results are good in oxyuriasis (79.5%), ascariasis (70.1%) and in ankylostomiasis (58.9%). Improvement is constant, often important and failure to respond very rare. A single dose of 25-50 mg/kg is often adequate in ascariasis and oxyuriasis but is insufficient in ankylostomiasis. It is best to divide the dose into two and to repear it in 2 - 3 days.

3. Results are mediocre in trichuris (34.6%) where failure to respond is as frequent as cure.

4. Results are poor in taeniasis, protozoosis and filarasis.

5. It is the medicament of choice in affections resulting from the migration of nematodal larvae - in trichinosis and in visceral larva migrans.

6. In eosinophilic meningitis, it has little effect on the clinical signs and symptoms or on the duration of the illness.

7. Because of its effectivity against the different nematodes it can be utilised with effect in tropical eosinophilias especially when there is no response to diethyl carbamizine.

8. It is useful as a local application in superficial mycosis.

From THOMAS, J., et al. "Le Thiabendazole, Antihelminthique à large spectre, ses indications et ses limites".
Méd. Trop. Vol. 29 No. 1 pp. 7-36 1969

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6. TREATMENT OF INJURIES BY STONEFISH (FAMILY SYNANCEJIDAE)

I. TREATMENT

Methods of treatment vary widely but the basic principles and aims are directed towards destroying or reducing the venom locally, delaying its diffusion throughout the body, neutralising the effects of venom absorbed, relieving pain and reducing wound breakdown with later infection.

(a) Dealing with the venom locally and preventing diffusion:

Direct mechanical removal by excision (when possible), vigorous sucking and thorough washing can be useful and can be applied easily at the

time of injury. This should be followed by immersion of the foot in water as hot as the victim can bear and as soon as practicable as the venom is thermolabile. The placement of a tourniquet, not too tight, proximal to the injury will reduce or slow down diffusion of the venom to the rest of the body.

(b) Neutralisation of the effects of the venom generally:

Specific therapy in the form of "Stonefish Antivenine" (Commonwealth Serum Laboratories, Australia) should be given in a dose of 2 ml. intramuscularly as soon as possible after injury. Heparin, 500 mg. in 500 ml. glucose saline, given intravenously daily and synthetic antihistamines have both been used with advantage in the absence of the specific antivenine. In collapse, intravenous neosynephrine may be given.

(c) Relief of pain:

General analgesics of all types may be used but none has particular advantage and that used will depend on availability. Relief can be obtained by injecting round the injury either 0.5 to 1 ml. of 1% potassium permanganate solution, 0.5 to 1 ml. of emetine hydrochloride solution (60 mg. in 1 ml.) or local anaesthetic 1%. Of these, probably the most efficacious is emetine hydrochloride solution.

(d) Reduction of wound breakdown and later infection:

Where necrosis of the wound occurs, wide excision of dead tissue must be carried out and careful antiseptic wound toilet is essential. Generally healing takes place by granulation but skin grafting may be required.

It may be advisable to give antibiotics and tetanus antitoxin to prevent the development of local or general infection but this will largely depend on the circumstances of the injury.

In general, the sooner that treatment is commenced, the better will be the results.

II. PREVENTION

All who enter shallow water should wear foot protection and, if handling rocks or fishing, hand protection. Such protection must be reasonably substantial as the spines of the stonefish have been known to penetrate the sole of a conventional tennis shoe. As not all will be persuaded to accept this precaution, it is advisable to have antivenine,

intravenous neosynephine, emetine hydrochloride solution and analgesics as well as suitable administration equipment available in remote locations where these injuries are liable to occur.

FROM:

1. BAGNIS, R. "Apropos de 51 cas de piqûres venimeuses par la "rascasse" tropicale Synanceja verrucosa dans les îles de la Société et des Tuamotu".
Méd. Trop., Vol. 28, No. 5, pp. 612-620, 1968.

2. Literature, Commonwealth Serum Laboratories, Melbourne, Australia.

3. MANSON-BAHR, P.H. "Manson's Tropical Diseases".
Publisher - Baillière, Tindall and Cassell, London, 1966.

4. MILLS, A.R. "Poisonous Fish in the South Pacific". J. trop. Med. Hyg., Vol. 59, No. 5, pp. 99-103, 1956.

5. WHITLEY, G.P. "Poisonous and Harmful Fishes". Council for Scientific and Industrial Research Bulletin No. 159 (Australia).

6. PHELPS, D.R. "Stonefish Poisoning".
Med. J. Aust., Vol. 1, No. 8, pp. 293, 1960.

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Original Text: English

ISSUED IN THIS SERIES

		Classification
1.	Annual Conference of O.I.E. held in Paris 13 - 18 May 1968, Report of SPC Observer. September 1968	Livestock Production and Health
2.	South Pacific Commission Publications' Series - Recent Developments. October 1968	Publication
3.	Free Diving Without Breathing Apparatus - Its Accidents. March 1969	Public Health
4.	"A" Level: Australia's Notification on Bovine Pleuropneumonia Regulations. March 1969	Plant and Animal Quarantine
5.	Study Tour to Noumea, Brisbane, Territory of Papua and New Guinea and British Solomon Islands Protectorate. March 1969	Tropical Crops
6.	"A" Level: Agricultural Education - Bulletin No. 1. April 1969	Agricultural Education
7.	Introduction and Spread of Culicoides and Other Insect Species by Aircraft. May 1969	Public Health
8.	Diarrhoeal Diseases in Adults. May 1969	Public Health
9.	"A" Level: Agricultural Education - Bulletin No. 2. May 1969	Agricultural Education and Extension
10.	"A" Level: Agricultural Education - Bulletin No. 3. November 1969	Agricultural Education and Extension
11.	Agricultural Extension Workshop - Western Samoa - November 1969	Agricultural Education and Extension
12.	Asian - Pacific Weed Science Society. December 1969	Tropical Crops
13.	The Status and Potential of the Chilli Industry in the Solomon Islands. December 1969	Tropical Crops
14.	Manpower Planning in the South Pacific. March 1970	All
15.	Fibreglass Water Tanks. April 1970	Public Health Engineering
16.	U.N. World Youth Assembly. May 1970	Social Welfare and Youth
17.	News and Views from the Journals. June 1970	Public Health
18.	Acute Rheumatism and Chronic Rheumatic Carditis in Fiji. June 1970	Public Health

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