

# From policy to action: access to essential drugs for the treatment of hypertension in the Small Island States (SIS) of the South Pacific

BAILEY MCE.<sup>\*</sup>  
AZAM AA.<sup>\*\*</sup>  
GALEA, G.<sup>\*\*\*</sup>  
ROTEM A.<sup>\*\*\*\*</sup>

## Abstract

The existing acquisition cost for essential drugs in the Cook Islands, Kiribati, Marshall Islands, Nauru, Niue, Tuvalu, is sufficiently high to compromise equitable access to quality drug therapy. The difficulty of access is further compounded by problems of distance from drug manufacturers and suppliers, associated with inadequate transport and communication links. In some of the Small Island States of the Pacific, internal distribution challenges further reduce access to drugs for those people who live on the outer islands. Two management processes to address these problems which have successfully been used in the past, are the establishment of an essential drug list to guarantee consistent appropriate treatment, and the introduction of pooled or bulk purchasing in order to achieve economies of scale. The major non-communicable diseases (NCDs) in the South Pacific include diabetes, hypertension and cardiovascular disease. These diseases, in association with life-style factors of obesity and smoking result in significant morbidity and mortality. This paper demonstrates that collaboration in drug purchasing

**... collaboration in drug purchasing of a defined list of essential drugs for hypertension would be beneficial in the South Pacific ... the process is a model for achievement of rational drug treatment for NCDs ...**

of a defined list of essential drugs for hypertension would be beneficial in the South Pacific, and that the process is a model for achievement of rational drug treatment for NCDs in isolated small economies.

## Historical policy background

The existing acquisition cost for essential drugs in the Cook Islands, Marshall Islands, Tuvalu, Kiribati, Nauru, Niue is sufficiently high to compromise access to quality drug therapy. The difficulty of access is further compounded by problems of distance from drug manufacturers and suppliers, associated with inadequate transport and communication links. In some of the above Small Island States (SIS), internal distribution challenges further reduce access to drugs for those people who live on the outer islands.

The World Health Organisation (WHO) defines essential drugs as "those which satisfy the health care needs of the majority of the population; they should therefore be available at all times in adequate amounts and in appropriate dosage forms" but recognises that this is a flexible concept as the definition of exactly which drugs are essential remains an individual national responsibility.<sup>1</sup>

The World Health Organisation (WHO) has encouraged the concept of collaborative bulk-purchasing of drugs as the process for the island countries of the South Pacific to

achieve access to cheaper drugs of acceptable quality. This approach has not been greeted with universal agreement as the mechanisms have not been fully explored and insufficient policy analysis has been undertaken. It has seemed like a desirable approach but successive consultant reviews have been in insufficient depth to enable governments to give a firm commitment to the concept.

In 1995, Health Ministers and Permanent Secretaries meeting at Yanuca Island in Fiji, achieved greater awareness of some of the complexities involved. Primary, secondary and tertiary prevention can be beneficially influenced by consideration of a broader range of associated factors to drugs, rather than processes which merely focus on drug supply.<sup>(2)</sup> The Yanuca Island Declaration recognised the necessity of National Drug Policies (NDP) and rational drug

<sup>\*</sup>Senior Lecturer, Fiji School of Medicine, Suva, Fiji Islands.

<sup>\*\*</sup>Chief Pharmacist Ministry of Health, Fiji Islands. <sup>\*\*\*</sup>Medical Officer (Non-Communicable Diseases), Office of the WHO Representative for the South Pacific, Suva, Fiji Islands.

<sup>\*\*\*\*</sup>Professor and Head, School of Medical Education, University of NSW, Australia. Contact M Bailey, Fiji School of Medicine, Private Box, Suva, Fiji Islands.

use for all countries. The declaration proposed establishment of a multidisciplinary committee to further analyse the benefits of a bulk purchasing scheme for drugs.

In 1996, WHO funded a consultant to visit a selection of interested countries to prepare a report on options for collaboration. This report<sup>3</sup> canvassed four options and recommended pooled procurement of drugs with direct deliveries to participating countries. Both the WHO and the South Pacific Forum Secretariat (FS) have funded consultancies which have recommended some form of Bulk Purchase Scheme (BPS) for the SIS of the South Pacific.<sup>3,4,5</sup> It appears desirable to develop a partnership<sup>6</sup> with the existing Fiji BPS if that organisation has the capacity to service additional (government) customers.

The WHO plan has always been to utilise the existing national drug BPS in Fiji, but insufficient analysis has been undertaken of the capacity of that scheme to expand to service more than ten additional countries. No consideration has to date, been given to the complex issue of foreign exchange transfers and the effect on the Fiji national scheme if several countries as a result of financial difficulty, were to find themselves unable to pay for drugs provided through the Fiji scheme.

In 1997, again under the auspices of WHO, the same countries reaffirmed their intention to "*overcome obstacles to the implementation of bulk purchasing schemes for pharmaceuticals and other health supplies and to address related issues such as quality assurance and drug information exchange, through agreements between countries in the Pacific*".<sup>4</sup>

World-wide, considerable resources have been devoted to the provision of drug therapy for communicable diseases, and despite major advances, challenges still remain.<sup>7</sup> It is recognised that the peoples of the South Pacific have particular needs in relation to prevention and treatment of particularly diabetes, and other non-communicable diseases (NCDs).<sup>8</sup> It is also recognised that financial access to drugs does not necessarily guarantee correct use<sup>7</sup> and that there must be in addition, continuous education and support for capacity building in health care professionals, and for patients.<sup>9</sup>

## Essential drugs concepts and the Small Island States of the South Pacific

At the end of 1996 and again at the end of 1997, regional conferences for pharmacists in Pacific Island Countries

explored the issues and recommended information sharing along with the "*exploration of a liaison of Small Island States with Fiji, to purchase drugs and medical consumables from the Fiji National Drug Bulk Purchasing Scheme*".<sup>10,11</sup> The larger countries namely Tonga, Samoa, Solomon Islands and Papua New Guinea had decided to continue to expand their existing arrangements. Colonies and dependent territories (except for autonomous States in Free Association with New Zealand, that is Cook Islands and Niue) had not been involved in the discussions described above.

The actual drugs themselves in each EDL may vary depending on the prevalence of preventable and treatable diseases in each country. The selection of drugs for an essential drugs list is evidence-based, and includes only those with proven efficacy and safety. As the type of NCDs in the Pacific is consistent amongst Fiji and the SIS, it is considered that a common list of essential drugs to treat hypertension is achievable, if the use of those drugs were to be supported through the provision of unbiased information.

## Method

In June / July 1998 and separately in August / September 1998 a short visit was made to

each of the Small Island States (SIS) of the South Pacific. During the visit personnel in the customs, health, foreign affairs, finance, commerce and industry departments/ministries were interviewed and asked to provide relevant information concerning pharmaceuticals.

A follow-up visit to Fiji was made during the period 14<sup>th</sup> until 24<sup>th</sup> June 1999 to obtain specific information on the operation of the Fiji BPS, the existing interaction with the SIS, and the financial performance of the BPS.

Information on the prevalence of hypertension, and on other risk factors for cardiovascular disease was sought through literature search, from a direct approach to clinicians and researchers at the Fiji School of Medicine, and from a recent WHO NCD analysis for the region.

Three World Health Organisation documents were identified as a basis for construction of the NCD sample of anti-hypertensive drugs. These documents were The Use of Essential Drugs 8<sup>th</sup> Edn; The 1999 Guidelines for the Management of Hypertension, the Regional Plan for Integrated Prevention and Control of Cardiovascular Diseases and Diabetes for the Western Pacific Region 1998-2003. In addition, the Therapeutic Guidelines: Cardiovascular 1999-2000 3<sup>rd</sup> Edn publication was chosen as a completely current consultative, evidence-based, best-practice therapeutic guide for treatment of hypertension.

**It is also recognised that financial access to drugs does not necessarily guarantee correct use and that there must be in addition, continuous education and support for capacity building in health care professionals, and for patients.**

**Table 1. Country population, Gross National Product (GNP) and health indicator data**

Country	Population	GNP / Capita (US\$)	Life Expectancy	Infant Mortality / 1000 births
Cook Islands	18,500	15,646 (n/a)	70	25
Fiji	770,000	2,250 (2440)	78	21
Kiribati	78,000	740 (920)	58	55
Marshall Islands	54,000	1576 *	61.1*	n/a
Nauru	10,000	n/a (4,640)	78	26
Niue	2,321	n/a	66	12
Tuvalu	13,000	n/a (1223)	67	40

Source. *The World Guide (1997/98) [New Internationalist Publications] and ( ) Australian Agency for International Development (AusAID) Country Reports.*

\* These figures have been extracted from the *Pacific Human Development Report (1994) United Nations Development Programme.*

Landed costs of drugs were calculated through a consideration of price paid, freight costs and customs clearance charges. All costs were converted to Fiji Dollars for comparison based on the published Fiji Government exchange rate for June 1999. Prices have been listed in Fiji Dollars expressed to two decimal places.

The nature of this comparative study has meant that it was acquisition cost alone, which was compared between countries. In considering anti-hypertensive treatment, no adjustment was made for components such as adverse drug reaction costs nor for differences in comparative therapeutic benefits. Local management practices which resulted in excessive wastage leading to indirect but unquantified, increased cost, were specifically excluded from the cost analysis due to the inability to obtain accurate, unbiased measurements of wastage.

International prices were determined from the 1999 Management Sciences for Health *International Drug Price Indicator Guide* by utilising the listed average price. Prices quoted in this document are FOB (free on board) and they were therefore adjusted to include an estimated shipping component cost thus producing a calculated *landed cost* for comparison to the actual Fiji *landed cost*.

Costs for drug acquisition in the SIS countries were determined from most recent invoices paid. This information was generally not readily available and was determined

from a record search. These prices were FOB and were compared to the *landed cost* in Fiji with an increase of 2.5 percent to the latter cost, in order to accommodate a handling charge. It was unnecessary to calculate an adjusted shipping component for the SIS cost as such a charge would be experienced whether the drugs were to be obtained from existing suppliers or from the Fiji BPS. Due to the distances involved, it is likely that the shipping cost would be lower from Fiji than from other countries of current supply.

The costs for Fiji BPS drugs were determined from the published price list. This list is constantly updated based on the price paid for the last acquisition of that particular drug. The cost quoted incorporates the drug acquisition price and shipping cost calculated in Fiji Dollars at the Fiji Government exchange rate in operation at the time of drug arrival into Fiji, plus a 2.5% mark-up to cover handling. There is no storage or wastage component in the quoted Fiji cost.

## Results

Quality of drugs purchased by the BPS is controlled through a series of processes, which provide confidence in the product being procured. The quality assurance process is as follows:

- The process is a restricted tender from approved suppliers. If any supplier fails to meet quality, delivery or expiry

**Table 2. Comparison of Fiji BPS sale price with SIS current acquisition cost for a sample of antihypertensive drugs expressed in Fiji dollars (June 1999)**

Item	Fiji BPS Sale Price	Cook Islands	Kiribati	Marshall Islands	Nauru	Niue	Tuvalu
Frusamide 40mg 1000	7.90	22.69	9.90	13.96	62.44	69.78	17.13
Hydrochlorothiazide 50mg 1000	4.90	118.12	6.37	7.95	125.14	n/a	6.60
Methyldopa 250mg 1000	64.11	71.23	62.44	43.52	83.05	n/a	58.23
Propranolol 40mg 1000	6.12	29.46	8.82	9.37	83.26	85.89	n/a

**Table 3. Comparison of Fiji BPS landed cost for a sample of drugs to an average international cost, expressed in Fiji dollars (June 1999)**

Item	Size	BPS Landed Cost \$F	International Cost \$US	International Cost and Freight \$F
Fruzemide 40mg Tablets	500	7.90	3.15	8.16
Hydralazine 25mg Tablets	100	2.60	0.90	2.33
Hydrochlorothiazide 50mg Tablets	1000	4.90	17.90	46.39
Methyldopa 250mg Tablets	1000	64.11	36.70	95.12
Propranolol 40mg Tablets	1000	6.12	8.40	21.77

Note. The international cost comparison has been extracted from the International Drug Price Indicator Guide, 1996. Management Sciences for Health, Boston

requirements, that supplier is removed from the list of approved suppliers.

- The WHO Certification process is utilised to ensure that the product is registered on the local market in the country of manufacture and to ensure that the manufacturing facility and processes have been inspected and approved by the National Government organisation charged with that responsibility.
- On receipt, there is physical inspection of the drugs, which includes appropriate labelling and packaging, and visual confirmation that there has been no deterioration in transit.
- There is retrospective analysis of ten drugs per month on a rotating basis by the Therapeutic Goods Administration (TGA) in Australia.
- In addition, users of the BPS are encouraged to report any concern about drugs supplied, e.g. patients not responding to treatment, and such reports are fully investigated.
- Following enactment of the new Poisons and Therapeutic Goods Bill, a process of drug registration will be instituted to provide further assurance of quality.

In comparing the price of four indicator drugs which would be available from the Fiji BPS to the price currently paid for acquisition by the SIS (Table 2), two of twenty four purchase opportunities would be more expensive from the Fiji BPS. These are for methyldopa tablets, which are sourced by the Fiji BPS in foil packs, rather than in loose containers

of 1000, as is the case in the SIS. Twenty-two of the twenty-four purchase opportunities would be cheaper from the Fiji BPS.

In comparing the landed cost of five indicator drugs for the Fiji BPS to an average international acquisition price (see table 3), four of the drugs are acquired more cheaply by the Fiji BPS.

In comparing the sale price of five indicator drugs from the Fiji BPS to two private sector wholesalers in Fiji, four of the drugs are available at a cheaper price from the Fiji BPS. Methyldopa is more expensive from the Fiji BPS as it is sourced in foil packs, rather than in loose containers of 1000 which are supplied by the private sector wholesalers.

The list of essential drugs recommended for the treatment of hypertension in the SIS is provided in table 5.

## Discussion and conclusion

Interventions to improve drug use can be separated into categories of educational; managerial, financial; regulatory.<sup>(12)</sup> The concept of an essential drugs list which has been described above, is part of an overall managerial strategy. The limited list of drugs available provides a process which enables regular supply and guides the rational choice of drug therapy, presents an opportunity for control of drug quality where frequently there is no process of drug regis-

**Table 4. Comparison of wholesale prices for selected NCD drugs from the Fiji BPS and two local private sector wholesalers, in Fiji dollars (June 1999)**

Drug	Fiji BPS Price	Wholesaler A	Wholesaler B
Captopril 25mg	9.01 / 100	202.00 / 1000	10.00 / 100
Hydralazine 25mg	3.13 / 100	16.46 / 500	-
Hydrochlorothiazide 50mg	7.19 / 1000	-	10.00 / 1000
Methyldopa 250mg	68.70 / 1000 *	-	66.00 / 1000
Propranolol 40mg	9.98 / 1000	13.14 / 1000	15.00 / 1000

\*These are foil packaged rather than loose packed.

**Table 5. Recommended essential drugs for hypertension**

Drug class	Recommended drugs	Comments
Diuretics	Hydrochlorothiazide 25mg	Ineffective in renal impairment.
	Furosemide 40mg	Powerful loop diuretic.
$\beta$ -blockers	Atenolol 50mg	Selective $\beta_1$ blocker.
	Propranolol 40mg	Non-selective blocker.
$\alpha$ -blockers	Prazosin 2mg	May have an advantage in patients with dyslipidaemia.
ACE inhibitors	Captopril 12.5mg	Enalapril may be an alternative.
Calcium channel blockers	Nifedipine SR 20mg (or 30mg)	No adverse effect on cardiac activity.
	Verapamil 40mg	May cause bradycardia.
Other	Methyldopa 250mg	CNS side effects possible, but safe in pregnancy.
	Hydralazine 25mg	Tachycardia, sodium & water retention possible.

*Compiled from recommendations in the WHO Use of Essential Drugs 8<sup>th</sup> Report, Therapeutic Guidelines: Cardiovascular 3<sup>rd</sup> Edn. 1999, WHO Guidelines for the Management of Hypertension. 1999.*

tration, and enables prescribers to gain experience and expertise in the use of a small number of appropriate drugs.

Patients access drug supply through the private sector, the public sector, donor aid, or through NGO or church mission initiatives.<sup>13</sup> In Pacific Island Nations there is no, or only minimal private sector involvement in drug supply, whereas in other developing countries individual payment may account for up to 90 percent of drug acquisition. Whether there is a local pharmaceutical manufacturing industry or not, procurement of at least some drugs will have to be by importation.<sup>14</sup> It is in this area of procurement that countries can realise the greatest financial savings through efficient drug management, and indirectly through such savings, can then increase equitable access to drug therapy for their populations.

Experience indicates that the procurement process which first defines therapeutic needs and then sources drugs on a generic basis can result in significant savings.<sup>(14)</sup> International competitive bidding, provided that drug quality is controlled, then provides drugs at the best possible price. This system works well for large volumes as suppliers are prepared to bid competitively, but where the drug requirement is small due to rare utilisation or a low target population, it is frequently difficult for countries to obtain the required three comparative price quotations. The result can be a direct purchase from one supplier at a relatively high price.

It is considered that by bulking requirements, and purchasing in larger volumes, countries may be able to gain financial benefits through economies of scale. This concept has resulted in the establishment of bulk purchase schemes for pharmaceuticals which have been funded through initial donor finance or by government appropriation in order to establish a revolving fund for on-going drug purchase. The success of the system thus established, is dependent on

management efficiency and on the sale of drugs at community level in order to sustain the revolving fund through the profits achieved.

In order to survive, a revolving fund must sell the product and, through the sales revenue, generate sufficient funds to meet its cost recovery objectives. A revolving fund is an attractive concept because it is theoretically self-financing after the initial capital investment. As the revolving fund can be structured to use the public sector infrastructure and financing, it can serve remote markets with limited commercial appeal. A major disadvantage of this type of revolving fund is that those people, who are required to pay for medicines, are those who are least able to do so.

Examples of revolving drug funds, which have been established, are in Eastern Caribbean, Peru, Guatemala, India, Bolivia, Haiti, Senegal, Niger, Afghanistan, Mali, Indonesia, Thailand, Fiji and elsewhere. These have produced variable success.

As the demand for drugs is generated by the providers (prescribers) as well as by the consumers, the involvement of prescribers in the drug selection for the bulk purchase scheme is an important aspect.<sup>15</sup> Knowledge of how medical practitioners select drugs<sup>16</sup> based on their attitudes, personal experiences and external influences is also relevant. Calculation of operating costs should include salaries, facility costs, office and communication expenses, distribution costs, and importantly, an appropriate allowance for unavoidable wastage.<sup>15</sup> Projection of consumption figures can be consumption-based (where information already exists), service-based related to disease burden, or population-based.<sup>17</sup>

Almost half of all deaths globally result from the major NCDs and a large proportion of these deaths are premature. In the developing countries of the Pacific, NCD-related

mortality is a result of the high prevalence of risk factors such as smoking and obesity, and conditions such as hypertension, diabetes and impaired glucose tolerance.<sup>18</sup>

With the exception of the Marshall Islands where the main reported cause of death in adults is diabetes, and in Kiribati where general debility (unspecified) is listed as the main cause of death, the remaining four of the SIS and Fiji, all list circulatory disease as the main cause of death.<sup>19</sup>

Exact prevalence data on hypertension is not currently available for the SIS although studies have been undertaken in a wave of research which swept the Pacific in the late seventies through to the early nineties. The overall prevalence definitely exceeds 10%<sup>20</sup> and in study populations in Fiji the prevalence has ranged from 12% to 18% with the current estimate being 15%.<sup>21</sup>

As the relationship between cardiovascular risk and blood pressure is continuous, without a lower threshold, the goal of anti-hypertensive therapy is to restore blood pressure to levels defined as "normal" (<130/85) or "optimal" (<120/80) according to the WHO definitions.

The main drug classes used to lower blood pressure include.

- diuretics
- $\beta$ -adrenoceptor blocking drugs
- $\alpha$ -adrenoceptor blocking drugs
- calcium channel blockers
- angiotensin converting enzyme (ACE) inhibitors
- angiotensin II receptor antagonists

In some countries, centrally acting drugs such as reserpine and methyldopa are frequently used.

In general, all these drug classes have similar efficacy in reducing blood pressure in groups of patients with WHO category Grade 1 and Grade 2 hypertension but there are differences in the response of individuals. There are important differences in the side effect profile for each class of drugs. A health economic assessment indicates differences in treatment costs which is an important consideration for any medication which will be life-long treatment.

Whilst the economic objective of a pharmaceutical supply system is to ensure a supply of safe, effective, good quality drugs at the least possible cost to the people who need them,<sup>22</sup> it is necessary to appreciate that this paper does not canvas all possible modalities<sup>23</sup> for the procurement and distribution of drugs. The present focus is solely on the existing Fiji BPS and how that organisation could join with the SIS in a collaboration to improve access to best-practice essential drugs for hypertension. It is emphasised that price is not the sole determinant for eventual policy decisions,

and that full consideration must be given to the quality of drug therapy in order to guarantee safety for the population and efficacy in the pharmaceuticals which are purchased from the finite financial resources.

The SIS of the South Pacific have between them a population of approximately 175,800 (see table 1). If this population were to be provided with drugs from the Fiji BPS the increase in population served would be approximately twenty percent over the current client base in Fiji. The analysis undertaken indicates that the existing BPS staff could meet this new demand provided that there were to be no alteration or increase in the range of drugs to be available, nor any change to the existing operational procedures.

In relation to the quality of drugs available, the BPS incorporates a continuous quality management programme

which is supported by Government Pharmacy funded ongoing analysis at the Therapeutic Goods Administration in Australia. This guarantees compliance with standard/label and uniformity of content. It is not feasible for each SIS to ensure drug quality in this manner and they are at present, to a large extent reliant on manufacturers and purchasing agents to guarantee their drug quality.

Although drug purchasing procedures vary from country to country, an analysis of the prices paid for the sample of NCD drugs to the Fiji BPS price demonstrates that for frusemide 40mg, hydrochlorothiazide 50mg, propranolol 40mg oral dosage forms, considerable savings would be achieved through collaboration with Fiji (table 2). Methyldopa 250mg is the only drug from the sample which is currently available at a higher price through the BPS, but this fact needs to be interpreted in the knowledge that the BPS product is foil packed which ensures improved safety, hygiene and storage life over the loose container pack of 1000.

The comparison of Fiji BPS NCD prices to the international prices (table 3) indicates that the procurement process and management of the BPS are cost efficient.

Of four private sector wholesalers which were approached in Fiji, two were prepared to share their prices. These prices were compared to the Fiji BPS prices for NCD drugs which are common to the suppliers. Three of four drugs in the sample are cheaper from the BPS (table 4).

A core group of anti-hypertensive drugs has been defined for potential availability through the Fiji BPS (table 5). These ten drugs provide choice within drug groups for patients who fail to respond to initial treatment, but through rational use support the WHO concept of essential drugs. The drugs

**Whilst the economic objective of a pharmaceutical supply system is to ensure a supply of safe, effective, good quality drugs at the least possible cost to the people who need them ...**

are: atenolol 50mg; captopril 12.5mg (or enalapril), frusemide 40mg; hydralazine 25mg; hydrochlorothiazide 50mg; methyldopa 250mg; nifedipine SR 20mg (or 30mg); prazosin 2mg; propranolol 40mg; verapamil 40mg. All of these drugs, with the exception of prazosin, are currently available from the Fiji BPS. It is considered that the availability of angiotensin II receptor antagonists is not currently cost-effective for the SIS.

It is accepted that merely supplying drug therapy does not necessarily lead to improvement<sup>7</sup> in health. Education of medical practitioners in the utilisation of new drugs, along with guaranteed drug supply, and patient support so that medicines are taken according to directions, are also necessary.

All financial calculations in this research project have been based on the existing 2.5% mark-up on cost for drugs which are sold to the public sector and 20% mark-up on those drugs sold to the private sector in Fiji.

Linkage of this potential collaboration to a "before" and "after" epidemiological study on hypertension prevalence and sentinel site monitoring of drug availability would provide evidence of outcome success or not, and thus guide future gradual expansion of the collaboration. It is considered that further expansion of the collaboration in the South Pacific will occur. We propose that the process under development is a model worthy for consideration in other isolated small communities with limited economies seeking to positively influence optimal outcomes from the treatment of non-communicable diseases.

## Acknowledgements

This paper has arisen from a major research project completed as part of the requirements for the award of a Master of Public Health degree from the University of New South Wales for which Professor Rotem and Dr Galea were co-supervisors. Financial support from the School of Medical Education is gratefully acknowledged.

## References

1. The Use of Essential Drugs. 8<sup>th</sup> report of the WHO expert committee. World Health Organisation 1998.
2. The Yanuca Island Declaration. World Health Organisation. (1995).
3. Yeap Boon-Chye. WHO Mission Report after visits to six Pacific Island Countries: Cook Islands; Fiji; Papua New Guinea, Samoa; Tonga; Vanuatu. (1996).
4. The Raratonga Agreement: Towards Healthy Islands. World Health Organisation. (1997).
5. Bailey M. SIS Joint Bulk Purchasing Scheme for Pharmaceuticals. (1998) South Pacific Forum Secretariat.
6. Rotem A, Freeman P. Economic Development and Health: What Have we Learned? Promotion & Education Vol IV, 1997/3: 29 - 32
7. Pecoul B, Chirac P, Trouiller P, Pinel J. Access to Essential Drugs in Poor Countries - A Lost Battle? JAMA (1999) 281 No 4 361 - 367
8. WHO: WPR/HRH/HRH(1)/99.6 Discussion Paper on Control of Non-Communicable Diseases
9. WHO: WPR/HRH/HRH(1)/99.5(a) Discussion Paper on Pharmaceuticals
10. Pharmaceuticals in the Pacific: Problems and Prospects. Seminar Proceedings Nadi, Fiji (1996). Eds. Snell B., Dartnell J., Kaur S.R.
11. Report From the Regional Meeting of Pharmacists, Nadi Fiji. World Health Organisation. (1997)
12. Le Grand A, Hogerzeil HV, Haaijjer-Ruskamp FM. Intervention research in rational use of drugs: a review. Health Policy and Planning. 1999, 14(2): 89-102.
13. Vogel RJ, Stephens B. Availability of pharmaceuticals in Sub-Saharan Africa: roles of the public, private and church mission sectors. Soc. Sci. Med. 1989; 29(4): 479-486.
14. Foster S. Supply and use of essential drugs in Sub-Saharan Africa. some issues and possible solutions. Soc. Sci. Med. 1991; 32(11). 1201-1218.
15. Cross PN, Huff MA, Quick JD, Bates JA. Revolving drug funds: conducting business in the public sector. Soc. Sci. Med. 1986; 22(3): 335-343.
16. Denig P, Haaijjer-Ruskamp FM, Zijlsling DH. How physicians choose drugs. Soc. Sci. Med. 1988; 27(12): 1381- Sciences for Health 1386.
17. Quick JD, Rankin J, Laing RO et al, eds. The selection, procurement, distribution, and use of pharmaceuticals in primary health care. 2<sup>nd</sup> Edn. 1997. Management Sciences for Health, West Hartford. Kumarian Press.
18. Galea G. Discussion Paper on Prevention and Control of Noncommunicable Diseases. WHO Meeting of the Directors of Health for the Pacific Island Countries (WPR/HRH/HRH(1)/99.6) 1999.
19. Chip, WHO 1997 cited in 43 Ibid.
20. World Health Organisation. Regional Plan for Integrated Prevention and Control of Cardiovascular Diseases and Diabetes for the Western Pacific Region 1998-2003. WHO. Manila 1998: 1-31.
21. Ripley R, Imo M, Phillips D. The management of hypertension in Fiji: is current practice effective? Pacific Health Dialog. 1996, 3(1):47-49.
22. Sterky G, Tomson G, Diwan VK, Sachs L. Drug use and the role of patients and prescribers. J Clin Epidemiol 1991. 44 Suppl II: 675-725.
23. Avorn J, Chen M, Hartley R. Scientific versus commercial sources of influence on the prescribing behaviour of physicians. American Journal of Medicine 1982, 73: 4-8.