REPORT ON THE WIDESPREAD PROBLEM OF DENTAL DISEASE AND DENTAL PAIN AND A PROGRAM OF SOLUTIONS FOR THE PEOPLE OF THE KOKODA TRACK AND PAPUA NEW GUINEA

(This program of solutions is entitled: “Mouth Aid: Training, Education – School, Healthworker & Initiatives Program”)

by DR BARRY REED, BDS, MDS, FRACDS, Specialist Oral and Maxillofacial Surgeon;
Part time Clinical Lecturer, University of Newcastle, Australia;
and Australian Army Reserve dental team member for the Army Aboriginal Community Assistance Programs in 2007 at Doomadgee Qld and in 2011 at Fitzroy Crossing WA.

at the request of: THE KOKODA TRACK FOUNDATION

and at his request, a copy to: The Hon. Mr ROBERT YABARA, MP, Raicoast, and advisor to the Hon. Mr PETER O’NEILL, Prime Minister of Papua New Guinea. (email: robert.yabara@yahoo.com.au)

1. THE MOST COMMON DISEASE IN THE WORLD AND ITS CONTROL

Pain is a universal health issue and it has been said that relief from pain is now a fundamental human right. Dental disease (tooth decay and gum disease) is the single most common cause of chronic and acute pain in the world and dental disease is the most common disease in the world. Dental disease not only causes pain, it often decreases our ability to smile, speak properly, chew a healthy diet and can result in disability for adults to work effectively and for children to attend school, and so decreases our enjoyment and quality of life.

The relief of dental pain by both the control and prevention of dental disease is an increasing and important problem to solve for many nations of the world. From interviews with community workers of the Kokoda Track region, they all identified tooth decay as the number one health care problem in Oro Province*. For the communities of the Kokoda Track and for Papua New Guinea in general, the dental disease problem can be solved by starting and maintaining a straightforward but comprehensive dental health program that contains three crucial dental health components for success and a funding component. These three crucial components are:

1. A simple dental health prevention program for school children that involves toothbrushing with fluoride toothpaste weekly which requires donated fluoride toothpastes and toothbrushes (initially instituted at local community schools by health care workers and then supervised by teachers) and which will reduce tooth decay by up to approximately 50%;

2. The essential public dental health prevention measure of salt fluoridation, instituted at a national level, which needs PNG Government consideration and legislation to commence. Salt fluoridation will dramatically reduce tooth decay for the entire nation (salt fluoridation alone has decreased tooth decay in many nations of Central & South America & Europe by at least 50% to 65%) and thus reduce tooth pain from developing in the first place. The fluoridation of salt is simple and cheap.**
3. By providing simple dentistry (tooth extractions and basic World Health Organization type dental fillings) principally by recruiting and training local dental health workers to then work at their local villages, for people already suffering dental pain and dental disability. This can be augmented in the Kokoda region by visiting Australian volunteer dentists and supervised University students registered with the PNG Medical Board. For the training and salaries of PNG college trained dental health care workers and for the construction and equipment of the two Kokoda Track dental clinics that are recommended below, both the KTF via a dental donation fund (if a fund is approved & commenced by the Board of Directors) and the PNG Government may consider funding these dental clinics.

4. Funding for this dental health program be sought by advertising for donations (& news bulletins to the media to obtain national awareness of the appeal) from the dental industry in Australia and Japan, such as dental supply companies, the Colgate Palmolive Company, the Australian & Japanese Dental Associations, individual dentists & health workers; national mining companies, drug & health care companies, national companies investing in PNG, the Australian Defence Force & its contractors such as Aspen Health Care, & individual Australian & Japanese benefactors.

2. THE KOKODA TRACK VISIT 25TH AUGUST – 2ND SEPTEMBER 2012 by Barry Reed to commence the: “Mouth Aid: Training, Education – School, Healthworker & Initiatives Program” (M.A.T.E.S.H.I.P.)

2.1 DEFINING THE DENTAL PROBLEMS AND THEIR EXTENT AND SEVERITY

2.1.1 Survey of the dental problems and needs of the Kokoda communities (70 people surveyed at Isurava village, Alola village and Isurava battlesite community). The survey numbers were limited by the time available; however, the results speak for themselves as to the widespread extent already of dental disease and pain in villages that generally have a traditional diet, rather than a Western diet.

a. Survey of the proportion of community presently in pain from tooth decay and infection. 
   
   **37% of adults were currently in pain from their teeth.**

b. Survey of the proportion of the community with decayed teeth.
   
   **95% of adults had decayed teeth (36/38).**
   **63% of children had decayed teeth (20/32).**

c. Survey of the average number of decayed teeth per person. (age range 2 to 80 years old)
   
   **Adults 3.4 decayed teeth per person, average age 42.6 years.**
   **Children 1.8 decayed teeth per child, average age 7.3 years.**

d. Survey of the proportion of the community with severe gum disease.
   
   **18% of adults had severe gum disease. (7/38)**

e. Two (5% of 38) requested dentures due to complete or almost complete lack of teeth.
2.2 DISCUSSION WITH VILLAGE COMMUNITIES AND PROVISION OF INITIAL MEASURES

2.2.1 Provision by me of oral health education teacher aid books, oral health materials for schoolchildren and plastic teeth toothbrushing instruction models donated by the Colgate Palmolive Company to the local school teachers at Isurava, Alola and Abuari for teacher supervised toothbrushing instruction to reduce decay and similar oral health education materials was provided to the local health care worker at Abuari.

2.2.2 Discussions were held with community workers, school teachers and community leaders to ascertain their concerns about oral health needs and aspirations for improvement in oral health. They were very keen to introduce the school based weekly fluoride toothpaste and toothbrush tooth decay prevention program for schoolchildren which would be supervised by school teachers after initial instruction by health care workers. Fluoride toothpastes are widely available and sold in PNG by the Colgate Palmolive Company. They were also very keen to have a dental health worker based at Kokoda for provision of tooth extractions, simple fillings and dentures where people of the northern villages of the Kokoda Track and surrounding regions could trek to for dental treatment. It should be noted that these people regularly trek to Kokoda to do their shopping, so travel to Kokoda for dental treatment should present no significant difficulty.

2.2.3 I was informed that the Kokoda Hospital dental worker retired at least six months ago and has not been replaced (There is a modern two room dental clinic at Kokoda Hospital with two dental chairs). There is one dental worker only at Popondetta Hospital, 80 kilometres away from Kokoda, to provide dental care for the Popondetta population of 25,000 and now the Kokoda region of approximately 16,000 people as well. Of the 16,000 people of the Kokoda region, about 3,500 live around Kokoda itself and about 5,000 along the Kokoda Track. There are twelve nursing staff at Kokoda Hospital and no doctor. The entire Oro Province has a population of approximately 140,000 people, with a total of five medical doctors in the Province.

3. RECOMMENDATIONS FOR PRACTICAL SOLUTIONS FOR DENTAL DISEASE IN KOKODA VILLAGE COMMUNITIES AND FOR PAPUA NEW GUINEA

3.1 FOR THE ENTIRE POPULATION OF PAPUA NEW GUINEA BY THE INTRODUCTION OF SALT FLUORIDATION VIA PNG GOVERNMENT LEGISLATION.

Salt fluoridation has been recognised by the World Health Organization and the Pan American Health Organization as the most effective and practical strategy (and most egalitarian measure) for
the mass reduction of tooth decay in the world’s population and it has already improved the dental
health and reduced dental pain for millions of South Americans, Central Americans and Europeans.
Fluoridated table salt saves teeth from decay and keeps them healthy by both topical (that is on the
tooth surface) and systemic fluoride benefits (as occurs in water fluoridation). Salt fluoridation has
been found to be equally or more effective than water fluoridation and its use has become
widespread in countries where water fluoridation is not practical. Salt fluoridation is an equitable
public health measure that benefits all people, regardless of age, or socioeconomic status, or access
to dental care.

The use of fluoridated salt to prevent tooth decay is well documented by scientific research.
Fluoridated table salt is safe, effective and used in many countries around the world. Salt
fluoridation commenced in Switzerland in 1955 and in Columbia in 1965. Communities in Spain and
Hungary introduced salt fluoridation in the 1960s. National salt fluoridation programs have been
commenced in the period from 1987 to 1997 in Costa Rica, Jamaica, Bolivia, the Dominican
Republic, Honduras, Nicaragua, Panama, Venezuela, Belize, Ecuador, El Salvador, Guatemala,
Uruguay, Cuba, Peru and Paraguay.

For the last two decades, the health of hundreds of millions of South and Central Americans has
benefitted from much reduced tooth decay due to salt fluoridation alone. The industrial process of
adding fluoride to table salt is similar to that of adding iodide to salt (The iodization of table salt
eliminates iodine deficiency which is the leading preventable cause of mental retardation in the
world and iodine deficiency can also cause thyroid gland disease).

To commence salt fluoridation in Papua New Guinea will require action by the PNG Government in
three ways.

1. Firstly, legislation to introduce fluoridation of table salt (which is similar to the legislation required
for iodization of table salt). Table salt is already iodized in PNG. There is a legislative blueprint for use
by Governments of the world wishing to enact salt fluoridation contained in the book “Promoting
Oral Health: the Use of Salt Fluoridation to Prevent Dental Caries Book by the Pan American Health
Organization and Regional Office of the World Health Organization” chapter 9. This legislative
blueprint can be modified to suit a government’s particular circumstances.

2. Secondly, the PNG salt industry needs to be enlisted to participate in the government’s salt
fluoridation program and support it. From my survey of food shops while in PNG, two PNG
companies that package and sell table salt wholesale are: iodized salt packaged by Homestate Co-
Operation Limited at Lae (email: homestate@datec.net.pg) and ‘Jumbo’ iodized salt, made in India,
for Super Value Stores Ltd at Lae (email: sales@svs.com.pg). I have not yet ascertained if there is a local salt production or salt refining facility in PNG and it may be that all salt is imported and then packaged locally in PNG. The process of adding fluoride to salt is simple and cheap (refer to the book: “Promoting Oral Health: the Use of Salt Fluoridation to Prevent Dental Caries” chapters 5 and 6). If there is no current PNG salt production and refining facility, then imported salt would need to be required to be fluoridated by the PNG Government enacting legislation.

As one alternative to the importation of salt that is already fluoridated, the PNG Government or Australian aid organisations, such as AUSAID, may be interested in funding a national health improvement project with construction and initial support of a facility in PNG that would just add fluoride to imported refined salt. Chapter five of the book “Promoting Oral Health: the Use of Salt Fluoridation to Prevent Dental Caries” states that in 2005, a salt paddle mixer of 1 to 5 ton capacity, complete with motor, to add fluoride to salt by the simple “dry method”, may be built at a local workshop for US$3,000 to US$8,000. Funding for worker training and maintenance of safety standards would also be required. An additional benefit would be that an aid organisation that develops such a facility would then gain the expertise to introduce salt fluoridation to many other Pacific and Asian nations with dental decay problems. This would be a great and simple health improvement measure for the entire Asia – Pacific region.

As another alternative, if the PNG Government wishes to start a local factory that actually refines crude salt and which then fluoridates the salt produced, these have quite straightforward and cheap production methods and machinery (refer to: “Promoting Oral Health: the Use of Salt Fluoridation to Prevent Dental Caries Book” chapter 5). As one example, in Costa Rica, around 2005, the cost to produce refined salt, including fluoridation of the salt produced, was US$0.0016 per kilogram (15,000 tons was produced) and fluoridated salt production was profitable.

3. Thirdly, the PNG Government would need to set up several monitoring studies of the current fluoride concentration in water and a fluoride excretion study in several groups of children to evaluate current levels of exposure of the PNG population to fluoride and then the level of exposure after salt fluoridation is introduced (refer to “Promoting Oral Health: the Use of Salt Fluoridation to Prevent Dental Caries” chapters 7 and 10). These studies are quite straightforward and I imagine the School of Medicine and Health Sciences of the University of Papua New Guinea at Port Moresby would conduct these studies. I would be very happy to assist with these studies if given an honorary appointment with the University of Papua New Guinea.
3.2 PRACTICAL SOLUTIONS FOR KOKODA TRACK VILLAGE COMMUNITIES

3.2.1 As two very effective initial measures that can be very quickly commenced to relieve the current pain and suffering of the Kokoda Track people evident from the dental survey above, consideration may be given by the KTF to firstly recruit and fund a dental health worker, some equipment and supplies to be situated at Kokoda Hospital, which already has a two chair dental clinic established. Secondly, the KTF could organise Australian volunteer dentists and supervised dental students to make regular visits to the Kokoda Hospital dental clinic, if the Kokoda Hospital administrators support this measure.

In addition, later at Koko Village, after Koko College is built, the KTF may consider building and staffing a dental clinic attached to the College. The KTF may also consider commencing a college course to train dental health workers at a future date at Koko College, with training provided by a full time PNG dentist educator and volunteer Australian dentists. The dental students could be recruited from different regions of PNG and on graduation could then return to their local communities to work. Cecil, a Koko Village community leader, informed me that the leaders of Koko Village are keen to have a dental clinic established within the grounds of the new Koko College. For a general health worker, I was informed that the salary is about 300 Kina per fortnight, so I imagine a salary for a dental health worker may be similar.

3.2.2 There would also be an essential need to also establish and fund a dental health worker and construct a second dental health clinic for the central and the southern end of the Track for those villages too far from Kokoda, to ensure an equitable distribution of dental care for all the people of the Kokoda Track.***

3.2.3. I concluded that to provide a significant and useful amount of mobile dental treatment by travelling dentists at all the villages along the Track would be impractical, for several reasons, especially due to the difficulty of effective heat sterilisation of instruments, which is mandatory to prevent the transmission of diseases such as HIV and Hepatitis B.
3.2.4 Regular future treks along the Track by volunteer dentists and the two future local PNG dental health workers for oral educational purposes only (but not treatment) in order for:

a. instruction in how to carry out the weekly dental care program (specified on page one) for school children to local teachers for the all the villages along the Kokoda Track, together with regular provision of oral health education materials, fluoride toothpastes and toothbrushes for this program.

b. education for local general (i.e. non-dental) healthcare workers in the diagnosis of oral diseases and after this, education for these general healthcare workers in the emergency treatment of severe pain and infection from oral disease by antibiotics (“prescription dentistry”) until the person can reach a dental worker.

c. provision of a training booklet in oral health care and discussions of its contents with local healthcare workers at villages along the Kokoda Track. This could be adapted from the book “Where There is No Dentist” by Murray Dickson and published by the Hesperian Foundation (updated edition 2006) and which is available online as a free download.

d. provision of future dental health care workers with further training and instruments if requested. For example, the Popondetta Hospital dental worker could be asked to provide a “wish list” of their needs in regard to dental equipment and oral educational material which could be delivered by a visiting dentist who could also provide some mentoring in additional skills (such as use of luxators for easier tooth extractions) if desired by the dental worker.

e. Consideration be given by the KTF Board of Directors that volunteer dentists could donate a sufficient tax deductible amount to KTF, which would then pay for their travel and accommodation expenses, to allow this part of the program to be run at a surplus and make such volunteer work more attractive for Australian dentists by being tax deductible (this would be similar to the health and building project volunteer programs in Asia run by other charities such as Oxfam that are tax deductible for participants).

f. Australian volunteer dentists and Australian University dental undergraduate students supervised by these qualified dentists, could provide five days of dental treatment for local people at the current Kokoda Hospital dental clinic and with more dentists could expand into the adjacent general outpatient clinic rooms (when they are not being used) to be used as temporary dental clinics using portable dental equipment. These dentists and students could be accommodated in the guest units at Kokoda Hospital. The portable dental equipment and
supplies would need to be stored in secure lockable cabinets within the dental clinic when not in use. To make such dental aid visits more attractive for these dentists, they could if they wish, then complete a short Kokoda historical highlights minitrek of three days duration to the Isurava battlesite and then return back to Australia via Popondetta. This would be a great and unique opportunity for Australian dentists and dental students to learn about the PNG people, their culture and history. All dentists and supervised dental students providing treatment would require prior approval and temporary registration with the PNG Medical Board.

3.2.5 The high amount of dental decay in both children and adults with a generally traditional diet made me think about the possible causes. Coincidentally, as I had just completed a book about the Australian Army medical teams and PNG carrier teams of the Kokoda campaign and am seeking a publisher, I attended the Australian War Memorial Canberra conference on the Kokoda campaign on September 6-7, 2012, and very fortuitously, I discussed this tooth decay issue with Robyn Kienzle who lived for many years near Kokoda in the 1970s (her father in law was the famous Bert Kienzle of ANGAU). Robyn was closely involved in the health care of their plantation worker families and related that dental decay was quite rare back then. We realised that one plausible explanation for part of the current tooth decay problem, is that Kokoda track trekkers from Australia who over the years have given their sugar containing sweets as a treat to the local children, who mostly do not regularly brush their teeth, may be the two factors acting together that has contributed partly to the increased decay rate. It appears that a news announcement by the KTF to all the trekking companies asking them to inform their trekkers to avoid giving away sugar containing foods and especially sweets, would be a very helpful initial and easy measure to help reduce dental decay and subsequent pain for the local people. Healthy non-sugar containing food treats instead could be recommended for the trekkers to give away.

4. OBTAINING FUNDING FOR THE MATESHIP PROGRAM BY ADVERTISING FOR DONORS

If the KTF Board of Directors considers it appropriate, a media relations company could be approached to donate their time to compose and supervise an advertising program for donations from the dental and health industries and other potential Australian and Japanese company donors. Donations could be directed to a dedicated KTF dental health program account managed by the KTF Board of Directors. Social media such as Facebook and Twitter to spread the request for donations could also be considered by the KTF Board of Directors.
5. CONCLUSION

It is vital to realise that permanent success in greatly reducing dental disease and pain and improving the dental health of the people of the Kokoda Track and Papua New Guinea requires the establishment and maintenance of a close partnership between the PNG Government, the Kokoda Track Foundation, local general and dental health care workers, the PNG Health Department, school teachers, community leaders, hospital administrators, other aid organisations, benevolent donors and Australian volunteer dentists. Just as importantly, it requires implementation of all three components of the proposed dental health program (these being the school based fluoride toothpaste toothbrushing program for children; a national salt fluoridation program; and training and funding of sufficient local dental health workers and dental clinics) by these partners to achieve meaningful permanent reductions in dental disease and pain. Failure to implement all these three dental health measures together will most likely result in the usual “band aid” temporary improvements that may make aid workers, health workers, donors and governments “feel good” that something is being done, but historically have not resulted in permanent or great reductions in the levels of pain, suffering and loss of jaw function that result from the dental disease problem. I stand ready to continue to volunteer my time and efforts to be a part of this partnership in solving the dental disease problem for the people of the Kokoda Track and Papua New Guinea.

Notations:

* After tooth decay and pain, the other problems are: eye problems, malaria, pneumonia, tuberculosis and mental problems in young adults due to homebrew alcohol and marijuana use.


***In view of the historical wartime associations of the Track and the subsequent affinity of the Australian people to its military history and who may be potential donors, I suggest to the KTF Board of Directors that consideration be given to the naming the two oral health clinics if established, as the “Captain Geoffrey ‘Doc’ Vernon MC, Oral Health Clinic”, for the Koko Village Oral Health Clinic, in view of his great association with Kokoda in World War Two and in commemoration of his devoted care for the PNG carriers. For the Oral Health Clinic of the southern/central region of the Kokoda Track, if established, I suggest consideration be given to naming it the “Captain Alan O. Watson AM, Oral Health Clinic”, to commemorate Captain Alan Watson AM as the most significant Army dentist of the Kokoda Track campaign (and who was the anaesthetist for many operations for wounded soldiers and was the aerial medical evacuation supervisor) which will then attract much interest from potential Australian dental industry donors.