

# The Pacific Pathology Training Centre 1996—2021

*Philip Wakem and Ron Mackenzie*

The Trustees and staff of the Pacific Pathology Training Centre (PPTC) take pleasure in extending congratulations to the New Zealand Institute of Medical Laboratory Science (NZIMLS) on the occasion of its 75<sup>th</sup> anniversary. The PPTC acknowledges with thanks the long and special partnership it has enjoyed with the Institute since the PPTC was first established on the Wellington Hospital Campus some 40 years ago.

The PPTC is recognised internationally as a centre of excellence and a Collaborating Centre of the World Health Organization (WHO). In this role, the PPTC delivers relevant and efficient support for regional health laboratory training and quality assurance, and is proud to be a small but significant part of the New Zealand Overseas Development Aid Programme.

With ongoing assistance from the NZIMLS, the New Zealand Government's Overseas Development Programme, New Zealand Red Cross, and the Norman Kirk Memorial Trust, the PPTC fulfils a function which is not available through any other regional organisation or institution. Its programmes are both effective and unique and are an important element in strengthening the Pacific and South East Asian clinical, public health and blood transfusion services. The narrative which follows gives an account of PPTC activities during the years 1996 - 2021.

## **PPTC EQA Programme**

The PPTC External Quality Assessment (EQA) programme has provided its quality service to the laboratories of the Asian – Pacific region for over 30 years. Since 1990, the PPTC has been recognised by WHO as a Collaborating Centre in its role as an EQA provider and driver of quality improvement initiatives. By 2002 the PPTC's EQA programme had become a major activity in the Pacific region with 21 laboratories participating, 19 of which were National Laboratories whose participation at this time was supported by WHO. Laboratories at Lae (PNG) and Qui Nhon Provincial Hospital (Vietnam) were sponsored by private arrangement.

In 2002, the PPTC became involved in reviewing smears for tuberculosis (TB) sent from laboratories in Samoa, Kiribati, and Tonga. This activity was the outcome of a review carried out by WHO and SPC (Pacific Community) of the TB laboratory services in these countries and had the aim of further developing TB diagnostic and treatment services in line with WHO's Directly Observed Treatment Short Course (DOTS) Programme. In 2002, the PPTC was recognised by WHO and SPC as a reference laboratory for TB EQA and given official responsibility for monitoring the laboratory TB work in Samoa, Tonga, Kiribati, Niue, Tuvalu and the Cooks.

As the years rolled by the PPTC's EQA programme not only expanded in the number of registered Pacific Island laboratory participants, but also in the diversity of quality assurance coverage for the main medical laboratory disciplines. Haematology, biochemistry, microbiology, blood transfusion, and infectious disease serology were the major disciplines covered within the EQA programme up until 2018 after which, anatomic pathology (2019) and molecular COVID 19 (2020) extended the programme even further.

In 2005 the PPTC EQA programme expanded to 27 laboratories. In 2008, 35 laboratories registered and participated. This further increased in 2014 to 40 registered laboratories and continued to climb to 65 laboratories in 2015 Pacific wide. By 2019 the total number of laboratories on the PPTC's EQA programme rose to 101 and plateaued back to 86 in

2020/2021 as a result of reduced funding for specific Cambodian laboratories.

In 2003 the Centre was approached by the South Pacific office of WHO in Suva to prepare and deliver a trial course through its newly set-up distance learning website, Pacific Open Learning Health Net (POLHN). A course was developed in the "Laboratory Diagnosis of Bacterial Diarrhea" and delivered in mid-2004 to laboratory personnel from various Pacific Islands. Following the success of this initial course, the Centre was again contracted by WHO to deliver a second course in June 2005. This second course was an introductory course in clinical biochemistry and there were 33 laboratory staff registered for it.

For a number of years the PPTC staff and Board were concerned about the lack of basic training in medical laboratory science available to the majority of staff working in health laboratories of Pacific Island countries. With the advent of POLHN, a system became available to commence addressing this shortcoming. As a result, discussions were held with WHO that led to the PPTC developing and delivering a "Diploma" course covering the basic medical laboratory sciences; microbiology, biochemistry, haematology, transfusion science, and immunology. Modules were developed in these five sciences and this POLHN programme has continued since its introduction in 2006.

In 2010, as a result of ongoing evaluation, it was proposed by the PPTC and accepted by WHO, that the Diploma programme be revised in terms of both its theoretical and practical component, with the introduction of log books as a means towards the extension of practical skill and a measure of practical competence. At the beginning of 2011 a series of enhancements were introduced. The theoretical content of each of the modules underwent a comprehensive review, with curricula expansion and updates applied to each of these modules in order to reflect recent medical advances.

The immunology module that featured in the initial Diploma (pre-2011) was discontinued and instead its contents incorporated into both the microbiology and transfusion science modules. This made room for the development of a laboratory technology module which became its replacement and was considered by the PPTC to be an essential addition to the programme in order to address the need for a base understanding of the fundamental principles of the biological, chemical, and physical sciences on which the medical laboratory sciences are built.

A second major change to the programme was the addition of an accompanying log book to the modules of haematology, biochemistry, microbiology and transfusion science, each of which required signoff by the Charge Technician or Head of Department once completed. As a result of this, instead of a six-week completion time for each module studied as had been the case in the past, each module now would take three to four months to complete. Each log book not only details the practical tasks to be carried out, but also contains a great deal of valuable information associated with each routine procedure. Delivery of this revised teaching programme commenced in 2011 as a two-year study programme, the completion of which was scheduled for the end of 2012. The number of students who registered for the various five POLHN modules in this 2011 -2012 cycle totalled 96, with 30 students progressing towards the completion of the Diploma, while the remaining 66 registered for individual modules only, as a professional development exercise. Also in 2011, the Fiji School of Medicine (FSM) gave recognition to the PPTC Diploma granting credits for selected units in its BMLSc programme.

In early 2012, the Diploma was renamed the Diploma in Medical Laboratory Science (PPTC) from the existing Diploma in Medical Laboratory Technology (PPTC). A second cycle of the revised Diploma was launched in March, 2013, and completed at the conclusion of 2014. In 2013, the PPTC proposed a further change to the scope of the Diploma with the addition of a laboratory quality management systems (LQMS) module. This increased the number of modules offered in the DipMLS (PPTC) to six, with the new LQMS module offered as the final module in the Diploma programme in year two. The Diploma currently consists of 6 modules:

1. Laboratory Technology
2. Haematology
3. Biochemistry
4. Microbiology
5. Transfusion Science
6. Laboratory Quality Management

The final review of the Diploma Programme took place in 2013 with the introduction of two examinations, Part 1 and Part 2. Part 1 examines the first three disciplines (laboratory technology, haematology, and biochemistry) and Part 2 examines the second three disciplines (microbiology, blood transfusion, and laboratory quality management).

The course, is designed to nurture and guide students through the program beginning at the very basic level of theoretical content, graduating through an intermediate level and finally onto advanced achievement, enabling them to reach levels of excellence in competence and performance as laboratory professionals. From 2013, and the years that have followed, the PPTC's Diploma, which is now funded in its entirety by the New Zealand Government at no cost to the student, continues to be a valued educational experience for Pacific students throughout the region. To date, 115 students have graduated with the PPTC Diploma of Medical Laboratory Science.

### PPTC Centre Based Courses

Centre based courses that were provided at the PPTC in Wellington over the last 25 years for visiting students from both the Pacific and the South-East Asian region varied in terms of discipline. Blood bank was offered each year while biochemistry, haematology, microbiology, quality management, and infectious diseases alternated. Between 1996 and 2011 an average of two to three courses were offered each year and in the years to follow this was increased to an average of five to six courses per year until the beginning of 2020, when the impact of the COVID pandemic became a reality and prevented overseas students from studying in New Zealand. The number of students who attended classes in NZ between 1996 and 2019 totalled 416.



### In Country Training

Apart from New Zealand based courses, the PPTC's provision of training courses held in specific countries and in specific disciplines has been an integral component of its Pacific commitment since its inception in 1980. These in-country training programmes have been funded by various bilateral and multilateral agencies including the New Zealand Ministry of Foreign Affairs and Trade, the NZ Red Cross, WHO, SPC, UNDP (United Nations Development Programme), NZ Vietnam Health Trust, NZIMLS, and PIHOA (Pacific Island Health Officers Association).



Other funders and support groups include the Pacific Ministries of Health, the Norman Kirk Memorial Trust, the New Zealand Blood Service, the Royal College of Pathologists of Australasia, the University of Otago, NZIMLS, and Southern Community Laboratories. PPTC consultants have carried out numerous training assignments in countries such as Papua New Guinea, Federated States of Micronesia, Marshall Islands, Fiji, Niue, Tonga, Vanuatu, Kiribati, Timor-Leste, Samoa, Cook Islands, Solomons, Cambodia, Philippines, Vietnam, India, Nepal, Bhutan, Mongolia, American Samoa, Tokelau, Tuvalu, Nauru, and Palau. Over the last 25 years, teaching and training activity in - country has focused very much on TB diagnostic procedures and surveillance, external quality assurance, laboratory quality management, discipline related strengthening, blood transfusion services, infectious disease diagnosis and monitoring, international accreditation, Pacific laboratory capability and capacity building, and portable laboratory construction. Dedicated PPTC staff, voluntary tutors, and external consultants who have contributed tirelessly to achieve the PPTC's mission since its inception in 1980 are to be credited with the continued success the PPTC carries as a development partner and the recognition bestowed upon it as a "Centre of Excellence" as a provider of education and training in the Medical Laboratory Sciences.





### A time line of changes to the PPTC over the last 25 years

**1997:** The PPTC building is relocated on the Wellington Hospital campus.

**2000:** Mike Lynch retired from the PPTC after 15 years as tutor coordinator. John Elliot was appointed as his successor.

**2005:** The PPTC celebrated 25 years of operation in the Pacific.

**2008:** Phil Wakem joined the PPTC as Programme Manager for all teaching and training programmes.

**2010:** PPTC celebrated 30 years of operation in the Pacific.

**2011:** Alterations to expand the PPTC laboratory were completed. Dr Ron Mackenzie retired as Board Chairman after 30 years of service to this position. Mike Lynch is elected Board Chairman of the PPTC.

**2012:** After completing 11+ years as Director of the PPTC, John Elliot retired on the 3<sup>rd</sup> February. Phil Wakem was appointed Manager of the PPTC. Ruth Reeve (Medical Laboratory Scientist) was appointed to the PPTC Board. Russell Cole and Navin Karan were employed as permanent PPTC consultant staff.

**2013:** Christine Story retired from the PPTC as Administrative Manager on 17<sup>th</sup> May after 30 years of service. The PPTC Board of Management welcomed Filipino Faiga as its newly appointed co-opted Board member.

**2014:** Marilyn Eales retired from PPTC as a Board Member. The PPTC Board of Management welcomed John Elliot as a PPTC Board member. Phil Wakem was re-designated as Chief Executive Officer of the PPTC.

**2015:** Clare Murphy retired from her position as PPTC EQA Consultant for biochemistry.

**2016:** The PPTC was awarded a five year grant funding agreement with the New Zealand Ministry of Foreign Affairs and Trade. Ruth Reeve retired from the PPTC as Board member. Filipino Faiga was appointed permanent staff member and biochemistry Technical Specialist to the PPTC.

**2017:** The PPTC Board of Governance, as it was now known, welcomed Angela Brounts and Marion Clarke as Board members.

**2018:** Launch of Dr Ron Mackenzie's book "PPTC - The first 30 years, 1980 – 2010", Mike Lynch retires from the position of PPTC Board Chairman. John Elliot elected as PPTC Board Chairman. Vichet Khieng was appointed permanent staff member as medical laboratory and IT specialist to the PPTC and to the Pacific.

**2019:** The PPTC changed from an Incorporated Society to a Charitable Trust and changed its name to the Pacific Pathology Training Centre from the PPTC.

**2020:** Angela Brounts and Mike Lynch retired as Trustees of the PPTC Board. Vichet Khieng resigned from the PPTC. The PPTC Trustees welcomed Dr Vladimir Osipov and Dr Dianne Sika-Paotonu as Trustees.

### International meetings



Between the years of 1996 and 2019, staff of the PPTC travelled extensively on the International circuit and attended numerous conferences involving such organisations as Red Cross, WHO (Geneva), PPHSN (The **Pacific Public Health Surveillance Network**) (Noumea), PIHOA, SPC, the Pasteur Institute (Noumea), WHO CDC (The **Center** for Disease Control and Prevention) (France), WHO (Manila), WHO (Fiji), WHO (Vietnam).

At the request of Red Cross in 1999, both Dr Ron Mackenzie and Mike Lynch presented papers at the Pacific regional blood banking seminar in Port Moresby Papua New Guinea, and in the same year, Ron spoke at the International Society of Blood Transfusion conference in Lucknow, India, and Mike Lynch spoke at a WHO meeting of WHO Quality Assurance providers at WHO Headquarters in Geneva.

In 2000 the PPTC was invited to participate in the inaugural meeting of the PPHSN held at the SPC headquarters in Noumea and in 2006, John Elliot and Christine Story attended an SPC / WHO/ Pasteur Institute five day workshop in Noumea to discuss and clarify the technical aspects of laboratory testing currently available for the diseases targeted by the PPHSN. (typhoid fever, cholera, influenza, dengue, leptospirosis and measles)

In November 2007, the PPTC was asked to join the NZ Ministry of Foreign Affairs and Trade's 2007 Pacific Island Mission. The delegation, headed by the Minister of Foreign Affairs, Winston Peters, was made up of Parliamentary members, Ministry officials, academics, representatives from NGO's, and journalists. Associate Professor Rob Siebers represented the PPTC and the event was considered very valuable in terms of public relations and networking.

In 2008 John Elliot was invited to attend a WHO-CDC conference in Lyon, France, the focus of which was health quality systems. This gave an excellent opportunity for John to speak on the PPTC's REQA programme in the Pacific region. In the same year, SPC and WHO held a joint meeting in Pago Pago, American Samoa to review the laboratory diagnosis of HIV and other STI's (sexually transmitted infections). John Elliot attended this meeting as a technical advisor and was appointed to the working group which would complete the review and make recommendations on improving the reliability and efficiency of STI and HIV testing especially. Following this meeting, John Elliot, once again as technical advisor / rapporteur, was requested by WHO to join an international team in Hanoi which was developing guidelines for HIV laboratory testing in the Western Pacific region. Towards the end of 2008 John Elliot attended a WHO meeting as a technical advisor to review a strategy document entitled "Asia Pacific Strategy for Strengthening Health Laboratory Services 2011-2015".

In 2010 WHO convened a meeting in Suva to finalise a document giving guidelines for the development of a National Laboratory Policy and Plan. This meeting was attended by representatives from most Pacific Island countries as well as PPTC consultants, including Phil Wakem and John Elliot. Representatives also from the NZ Ministry of Foreign Affairs and Trade, SPC, PIHOA, NRL (National Serology Reference Laboratory), and CDC Atlanta were present. A second document written by the PPTC, proposing a set of standards based on the international ISO15189 standard but applicable to the region was also introduced and discussed. In the same year, John Elliot attended a meeting convened by the Fiji School of Medicine to review the education and professional development of the medical laboratory workforce in the Pacific. Along with the PPTC and the Fiji School of Medicine, SPC and PIHOA were also in attendance. Following this meeting, a Memorandum of Understanding was signed between the Fiji School of Medicine and the PPTC, recognising the PPTC Diploma, and granting credits for selected units in their established BMLSc programme.

In 2011 John Elliot and Phil Wakem attended a WHO meeting held in Fiji from 14<sup>th</sup> to 17<sup>th</sup> September. Attendees included representatives from most Pacific Island countries and in addition observers from NZAID, SPC, PIHOA, NRL and CDC, were also present. The aim of this forum was to assist Pacific countries draw up national plans and policies for laboratories. In 2013 WHO invited Russell Cole, the PPTC's senior consulting microbiologist, to participate in an international technical workshop, the focus of which centered on antimicrobial resistance surveillance in the Western Pacific Region.

In 2014 Phil Wakem visited Manila to attend an international forum of the WHO Collaborating Centres for which he was asked to present an update on the PPTC's work and its contribution to Pacific health within the region. Over 200 participants from 124 WHO Collaborating Centres located in the Western Pacific Region attended this forum.

In 2015 Navin Karan, as Manager of the PPTC's EQA Programme, attended a training workshop provided by WHO in Nadi, Fiji which addressed shipping requirements for all potentially infectious substances, focusing particularly on highly infectious materials.

The 2<sup>nd</sup> WHO Collaborating Forum meeting, held in Manila, Philippines in November 2016, built on the gains of the first forum by further developing inter-professional approaches to collaboration and partnerships to help countries meet the sustainable development goals (SDGs). 260 delegates were invited to attend and Phil Wakem and Navin Karan who represented the PPTC were asked to provide a presentation on the PPTC and its distance learning programme through POLHN, which was well received.

A WHO initiated meeting was conducted in Manila, Philippines in June 2018, the objective of which was to discuss current status and issues involving viral hepatitis laboratory services in the Western Pacific Region with the development of recommendations for improving quality of laboratory services in Pacific countries. This meeting was also responsible for "terms

of reference" development of the regional viral hepatitis laboratory network, including roles and responsibilities of Regional/National Reference laboratories. Blood safety was also addressed. The PPTC was invited as an advisor to present on its EQA Program and the laboratory support it provides to resource limited countries. Navin Karan, the PPTC's programme manager and microbiology consultant represented the PPTC at this meeting and contributed to the presentation of specific aspects of EQA in the Pacific.

As part of the CDC support in strengthening influenza testing and surveillance in the Pacific, SPC invited the PPTC to attend a one-week training workshop on influenza like illness and hospital-based severe acute respiratory illness surveillance in Suva, Fiji in August 2018. Navin Karan represented the PPTC at this meeting and presented to those in attendance, the use of the Gene Expert in Pacific Island laboratories as well as a comprehensive overview of laboratory quality management systems. Also in 2018 Phil Wakem was invited to participate in the inaugural meeting for the Pacific Islands Society of Pathologists held in Suva, Fiji during September. The meeting was jointly sponsored by SPC and the Fiji National University (FNU, previously Fiji School of Medicine) and consisted of presentations from participating Pacific Islands countries and external agencies as well as group work.

Towards the end 2018 Phil Wakem was invited to attend the 3<sup>rd</sup> WHO Collaborating Forum, but on this occasion, Ho Chi Minh City, Vietnam was the nominated host country. The focus of this meeting was to (1) share good practices and reflect on progress since the second forum in 2016, (2) strengthen and promote innovative collaboration and networking mechanisms and (3) identify opportunities to maximize contribution of WHO Collaborating Centres towards WHO support at the country level.

In 2019 Phil Wakem and Navin Karan attended the 6<sup>th</sup> Association of USAPI ( United States affiliated Pacific Islands) Laboratories, and PIHOA LabNet meeting in Guam. The theme "In pursuit of excellence in quality USAPI laboratory services" provided the basis for both Navin and Phil to present "Updates on medical lab workforce development, EQA and LQMS in the Pacific". In the same year Russell Cole and Navin Karan were both invited to the PPHSN's regional meeting held in Nadi, Fiji in June, the theme of which was "Linking up the initiatives and scaling up the actions". The conference gave the delegates present the chance to share views, successes and challenges on laboratory matters likely to hinder disease surveillance.

During the conference, Russell as chairperson of the LabNet Technical Working Body, was given the opportunity to update on progress made through LabNet, as well as present on the PPTC's "Laboratory Service/Accreditation Development programme".

## **2020 to the present**

COVID 19 continues to threaten the Pacific

The global pandemic has had a serious impact on PPTC operations, causing a sizable disruption to our overseas in-country training programmes, and to the Wellington centre based courses, due to international border closures. It was, however, fortunate that both the PPTC's EQA Programme and the Diploma programme continued to be delivered relatively uninterrupted.

With the virus spreading globally, all efforts are being made to ensure that countries are prepared and ready to respond, in situations where COVID infection has been detected. In the Pacific, countries are increasing their efforts to ensure that their health services have reached an acceptable level of preparedness to rapidly detect and respond to the threats of COVID-19. The PPTC is continuously assisting in Pacific preparedness against COVID-19 and is currently working with WHO, New Zealand Ministry of Foreign Affairs and Trade, Pacific Ministries of Health, SPC, and the Australian Department of Foreign Affairs and Trade, and the Doherty Institute in Melbourne to establish COVID-19 diagnostic and treatment facilities in Pacific countries, the majority of which would face the devastating effects of COVID-19 in the event of community spread.

In response to a request by the Niuean Government, WHO commissioned the PPTC to design and oversee the construction of a mobile/container laboratory that would deliver a comprehensive medical laboratory testing service, a service that would increase clinical diagnostic capacity, capability and sustainability through the provision of a broad spectrum of diagnostic testing addressing both non-communicable and communicable diseases, including COVID-19, to Niue's Fook Hospital. The PPTC through its specialist expertise, extensive experience and organisational skills accepted the commissioning by WHO and provided a container laboratory system that had a sufficiently large footprint to provide services, including phlebotomy, biochemistry, haematology, microbiology, serology, molecular analysis, blood transfusion and biosafety, across two facilities. Added to this responsibility was the selection, purchase, installation, validation, and verification of appropriate items of diagnostic instrumentation and associated laboratory consumables that would construct the required testing scope the laboratory would provide.

The New Zealand Ministry of Foreign Affairs and Trade granted the PPTC ongoing opportunities to develop new skills in terms of laboratory refurbishment and container laboratory construction. Not only did the Ministry provide the funding to the PPTC to upgrade the Samoa hospital laboratory (2019) in Apia in response to the measles outbreak there, but also for the construction and complete refurbishment of a portable laboratory container system for the Tokelau's (2020) for which the PPTC again was commissioned. Following this, the PPTC was further commissioned by the Ministry to assist in the construction of a container laboratory system for Kiribati (2020) and the setup of an existing laboratory in the Cook Islands (2021), both for COVID-19 testing.



Exterior of the container laboratory commissioned for Niue

In 2021, preparedness against COVID-19 infection and community transmission was addressed by the Ministry of Health & Medical Services of Fiji (MOHMS) in their request for the construction of a mobile/container laboratory to be established in Nadi, capable of RT-PCR testing and a range of other necessary tests near this port of entry. It was envisaged that this newly constructed laboratory would undertake up to 200 COVID-19 tests a day by RT-PCR. In response to this request, the PPTC was commissioned by WHO to oversee the design and construction of a mobile/container laboratory, with the implementation of appropriate validated/verified equipment to deliver the required testing menus, relevant training of staff, and the provision of reagents and kits on a regular basis to deliver the medical laboratory service for Nadi.

The recent measles outbreak in Samoa and the current COVID-19 pandemic have highlighted many deficiencies in the health sector, particularly laboratory diagnostic services within the Pacific region. The PPTC's expertise in general laboratory strengthening and medical laboratory diagnostic services is more relevant than ever to the regional health status, especially to help protect the region from infectious disease outbreaks and to enable early detection of chronic diseases.

## CONCLUSION

In essence, the training and quality improvement programmes of the PPTC and its work on developing regional laboratory standards has proved highly relevant in strengthening the capacity of Pacific Island countries in the provision of clinical and public health laboratory services and align well with the WHO Asia Pacific strategy.

The PPTC has now entered its 4<sup>th</sup> decade and re-affirmed the basic principle on which it was founded "*The provision of appropriate affordable sustainable technical training and assistance for the medical laboratory and blood transfusion services of the Pacific Islands and South-East Asia*". With continuing and valued support of the NZIMLS, the PPTC looks forward to the new and different challenges the 4<sup>th</sup> decade will bring.

## AUTHOR INFORMATION

Philip Wakem, NZCS DipMLT MMLSc MNZIMLS, Chief Executive Officer  
Ron Mackenzie, QSO PhD FNZIMLS, Board Trustee

Pacific Pathology Training Centre, Wellington, New Zealand

**Correspondence:** Philip Wakem. Email: phil@pptc.org.nz