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PROJECT REPORT

Educating to improve population health outcomes in chronic disease: an innovative workforce initiative across remote, rural and Indigenous communities in northern Australia

J Dade Smith[1], K O'Dea[2], R McDermott[3], B Schmidt[4], C Connors[5]

[1]RhED Consulting Pty Ltd, NSW, Faculty of Medicine, Health and Molecular Sciences, James Cook University, Townsville, Queensland, Australia

[2]St Vincent Hospital campus, Melbourne University, Melbourne, Victoria, Australia

[3]University of South Australia, Adelaide, SA, Australia

[4]Department of Public Health and Tropical Medicine, James Cook University, Cairns, Queensland, Australia

[5]Preventable Chronic Disease Strategy, Northern Territory Department of Health and Community Services, Royal Darwin Hospital, Casuarina, Darwin, Northern Territory, Australia

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ABSTRACT

Introduction: Like Indigenous populations in other countries, an epidemic of chronic disease has swept across Australia's Indigenous communities in the past decade. The Northern Territory and Queensland health departments initiated preventable chronic disease strategies in 1999 and 2001, respectively. Yet finding innovative ways to translate this to the health workforce was challenging. Through support from the Australian Government, three universities, two health departments and two Indigenous organisations worked in partnership to improve workforce capacity in remote and rural communities through innovative education.
Methods: The methods included: (i) a training needs analysis consisting of 76 semi-structured interviews with key informants, and 35 surveys of remote staff; (ii) a literature and resource review; (iii) the development of a curriculum framework using: the existing competencies and standards across the health disciplines; the identified workforce needs; and what the workforce can impact upon;

(iv) a multidisciplinary workshop with 35 educators across northern Australia that resulted in the basis for agreement of the final curriculum content and framework; (v) the development of a chronic disease self-assessment tool that was piloted with remote health staff; (vi) an assisted integration process for key stakeholders. An evaluation framework was also developed, as a separate project, in conjunction with the project partners during this time.

Results: This project identified that a paradigm shift is required in the way in which we educate the entire health workforce to deal effectively with the impact of chronic disease across remote, rural and Indigenous populations. In particular a need was found to educate the educators in the chronic care model and in using a population health approach. The training needs analysis identified very little difference between the education and training needs across the rural and remote health disciplines; it was perceived that they managed chronic disease fairly well yet found prevention and early detection to be at the 'hard end'. The main barriers identified were the demands of acute care over chronic disease management, compounded by high workforce turnover in remote areas. The curriculum framework, in particular the domains of remote practice, is being used by several Australian universities, health departments and non-government organisations in adapting their existing or new education programs. The self-assessment tool was based on the curriculum outcomes and was piloted in 2005 and found to be very useful for pre- and post-training purposes and as a discussion starter for all disciplines and groups.

Conclusions: A practical curriculum framework now exists to integrate a population health approach for the prevention and early detection of chronic disease when educating the primary healthcare workforce. It is relevant to all health disciplines and is flexible in that it can be adapted, or adopted, depending on the educational needs of the disciplinary group. It is being imbedded into numerous undergraduate, postgraduate, and professional development programs in Australia. It includes: the core learning outcomes expected of any workforce, resources, and a self-assessment tool in chronic disease. These tools are assisting educators in the required paradigm shift required of the workforce to alter the single disease based practice model towards a comprehensive and integrated population based approach required for the workforce in the 21st century.

Key words: chronic disease, domains of remote practice, health workforce, innovative education, remote, rural and Indigenous communities.

Introduction

Chronic disease is currently responsible for sixty percent of the disease burden globally. This is expected to rise to eighty percent by the year 2020 and as the population ages[1]. It is therefore one of the greatest challenges facing healthcare systems throughout the world. Chronic disease is being labeled as that of lower socioeconomic groups and has reached epidemic proportions in Indigenous communities in the past decade[1]. This is particularly true for renal disease, with renal failure doubling every three to four years in some remote Australian states[2], while remaining the same in more urban southern states[3]. Aboriginal and Torres Strait Islander diabetes rates are also the highest in the world on some indicators[4]. However, while we have found that mortality levels have been dropping within most Indigenous populations in other first world countries in the past 20 years, Australia remains the striking exception[5].

In 1999 and 2001, the Northern Territory (NT) and Queensland (Qld), who have the second and third highest Australian Indigenous populations, developed chronic disease strategies[6,7]. The two strategies had a common three-point framework of prevention, early detection and best practice management based on the available evidence, however they differed in some of the diseases they prioritised.

Recent evidence now tells us that the use of a systematic population focused approach will have a greater effect on the patient's health outcomes, than individual care, and will be

far more financially efficient in the long run[1,8,9]. Therefore, in 2003 the Australian Government, through its Public Health Education and Research Program (PHERP), funded an innovative program to increase the workforce capacity across northern Australia. It involved seven partners – three universities, two health departments and two Indigenous organisations – Menzies School of Health Research, James Cook University, University of Queensland, Queensland Health, the Northern Territory Department of Health and Community Services, Apunipima Cape York Health Council and Aboriginal Medical Services Alliance of the Northern Territory.

The ultimate aim of the project was to reduce the impact of preventable chronic disease among high-risk populations in northern Australia, through improving the capacity of rural, remote and Indigenous health workforce and services[10]. It targeted all of the remote and rural health workforce - doctors, nurses, Indigenous health workers, allied health professionals and health centre managers - and those who educate them. This article provides a brief overview of the process, insights and results for others to consider as they also struggle with the challenges that chronic disease offers.

Project methodology

A training needs analysis was conducted in early 2004. A triangulated approach was used that included 76 semi-structured interviews with key informants, 35 surveys of remote staff across NT and north Qld, and literature and resources searching to support the work. There were a total of 111 participants. They included: NT and Qld Health staff, community controlled health organisations, policy makers, non-government education providers, clinicians, and remote health staff - nurses, doctors, Aboriginal and Torres Strait Islander health workers, health centre managers and allied health professionals - which gave the project great breadth. The interviews and survey differed slightly but elicited information regarding their: perceptions about early detection, prevention and chronic disease management; workforce training and support needs; access to information technology, resources, and preferred training methods.

The results of the training needs analysis and the existing competencies and standards of the various professions provided a platform for identifying the priorities for the development of the curriculum framework. A workshop of 35 educators was conducted in August 2004, which assisted in validating the draft curriculum framework, identifying the content and in re-orientating the educators to the chronic care and population health model. The core content provided the development of a self-assessment tool, which was piloted in 2005 (Appendix I). During 2005 and 2006 several universities and two health departments were assisted in a process to embed and integrate the framework into their existing and new programs. This provided an avenue to link and apply research to policy and practical implementation at the grassroots.

Project outcomes

Needs analysis

The consultation phase identified numerous challenges for those educating and preparing the rural and remote health workforce in the prevention, early detection and management of chronic disease. The main findings were that there was very little difference in the training needs identified between the disciplines - medicine, nursing, Indigenous health workers and allied health - and few practised in a population-based approach. There was a very strong focus on the management of chronic disease as opposed to the prevention and early detection, which were seen as the 'hard end'. While most people had heard of the chronic disease strategy, few could explain how they were implementing it in their communities. The main barrier to successful implementation was the demands of acute care over chronic disease management, which always prevailed. The staff perceived that they were poor in the prevention and early detection of chronic disease, but fairly good in the management of chronic disease.

The practitioners preferred learning though workshops in their own communities, accredited and disciplinary specific training and had poor access to the internet in remote

communities, particularly in the NT. The self-assessment tool was piloted with remote staff during 2005 and was found to be particularly useful for pre- and post-training purposes and as a discussion starter for all disciplines and groups. Disciplinary groups have since adapted it to meet their own particular needs.

There were some significant staffing increases in the NT to deal with chronic disease, though a distinct drop was reported in Aboriginal health worker numbers. The orientation, education and preparation programs were found to be inconsistent and unsustainable due to the extremely high turnover rates of staff, amid a worsening health status. There was a distinct lack of sustainability built into most approaches, and acute care always predominated.

The initial training needs analysis identified the top 10 areas where the workforce, and those who train and manage them, thought were areas of training need, as seen in Figure 1[11]. The top four areas were prevention focused training, using a systematic and population health approach and working in a respectful way as part of a cross-cultural team.

Change in project direction

The original intent of this project was to develop a curriculum and training resources to support the workforce. However the consultation phase found that the issues were so broad, and common across the disciplines, that one or two additional resources would provide little change to assist the required paradigm shift. Therefore it was determined by the steering committee that this initial approach would not have the desired, and required, impact upon the workforce due to the high turnover rate of staff, the breadth of the work, and the integration of chronic disease into all areas. Therefore five principles to manage and progress the project were endorsed by the steering committee in May 2004:

1. Prioritise the populations suffering the greatest burden of chronic disease - remote Indigenous communities
2. Target those who prepare and educate the health workforce, as this will have the greatest impact - health educators across all disciplines
3. Develop a curriculum framework that:
   - is population and outcomes based
   - focuses on those factors that affect health – the social determinants of health
   - integrates prevention, early detection and management into those things that everyone practices. This resulted in the development of the domains of remote practice.
4. Develop an implementation strategy that could be integrated into all workforce training - undergraduate, postgraduate, and professional development across the disciplines
5. Develop any resources and a web-based annotated bibliography to support the educators and the workers in a sustainable way.

Curriculum development and implementation

The curriculum framework (Fig 2), was developed using four main foundations. It is:

1. *Population health based* It starts with pregnant women, babies, young children, youth, men, women and older people – through the health transitions of the lifespan.
2. *Needs based* It is structured to focus on those 'areas of workforce need' and where there are 'identified skills gaps' – prevention and early detection.
3. *Impact focused* It focuses on those things we can 'impact upon' – the social determinants of health; and those things we 'can manage' – chronic diseases identified in the chronic disease strategies.
4. *Organised using the domains of remote practice* The domains are the critical knowledge, skills and attitudes necessary for the prevention, early detection and management of chronic disease. They provide an organising framework for the list of expected core outcomes for all disciplines.

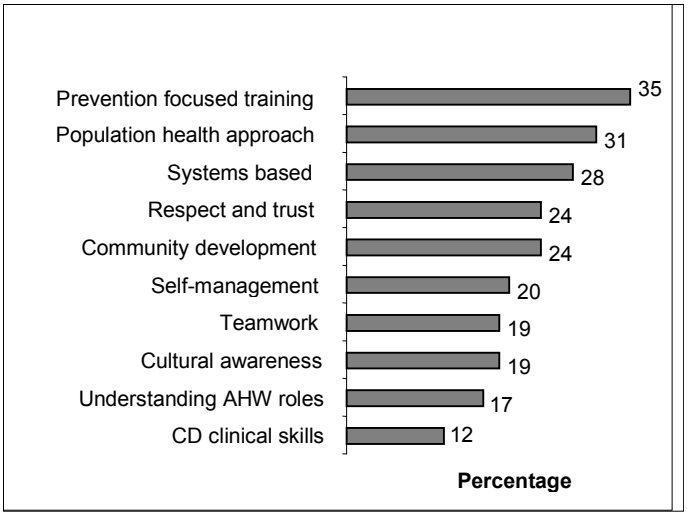

Figure 1: Identified training needs (*n*=100).

The most used aspect of the curriculum framework are the domains of remote practice, which three universities, two health departments and several non government organisations have used to provide an organising framework for their existing and new programs[12]. These domains were developed by examining and cross-referencing the curriculum, professional standards, competencies and objectives, found in the disciplines of medicine[13-16], nursing[17-19], Aboriginal and Torres Strait Islander health worker[20,21], public health[22] and allied health[23]; plus those found in various public health masters programs[24,25] and other various relevant documents[6,7,11,26,27]. These domains now provide a flexible basis on which to build professional development and tertiary education programs to prepare the workforce for the impact of chronic disease.

In August 2004, 35 educators representing a cross-section of all health disciplines and industry groups attended a three-day workshop in Darwin. They each presented what existed in their area, swapped models, and undertook training in the chronic care model and using a population health approach. They discussed how they could refocus their orientation, professional development and accredited training programs towards a comprehensive, integrated and population-based process, which would equip health practitioners to deliver the primary healthcare components of the NT and Qld chronic disease strategies. This workshop proved very successful in that it provided strong links among the states and organisations, provided support mechanisms for future development, and educated the educators. Follow-up teleconferences and meetings with group participants assisted in monitoring progress.

A final curriculum framework was published in January 2005 and a second edition was published in February 2006. During 2005 the project consultant worked closely with the various groups in practical ways to integrate, adapt, adopt or implement the chronic disease curriculum framework into their existing and new training programs, using mainly the domains of remote practice to guide the process. This proved to be practical, timely and successful because it provided a solid link between research, policy development and practical implementation at a local level. She also promoted the work at numerous national and state conferences and at an international Indigenous conference in Canada.

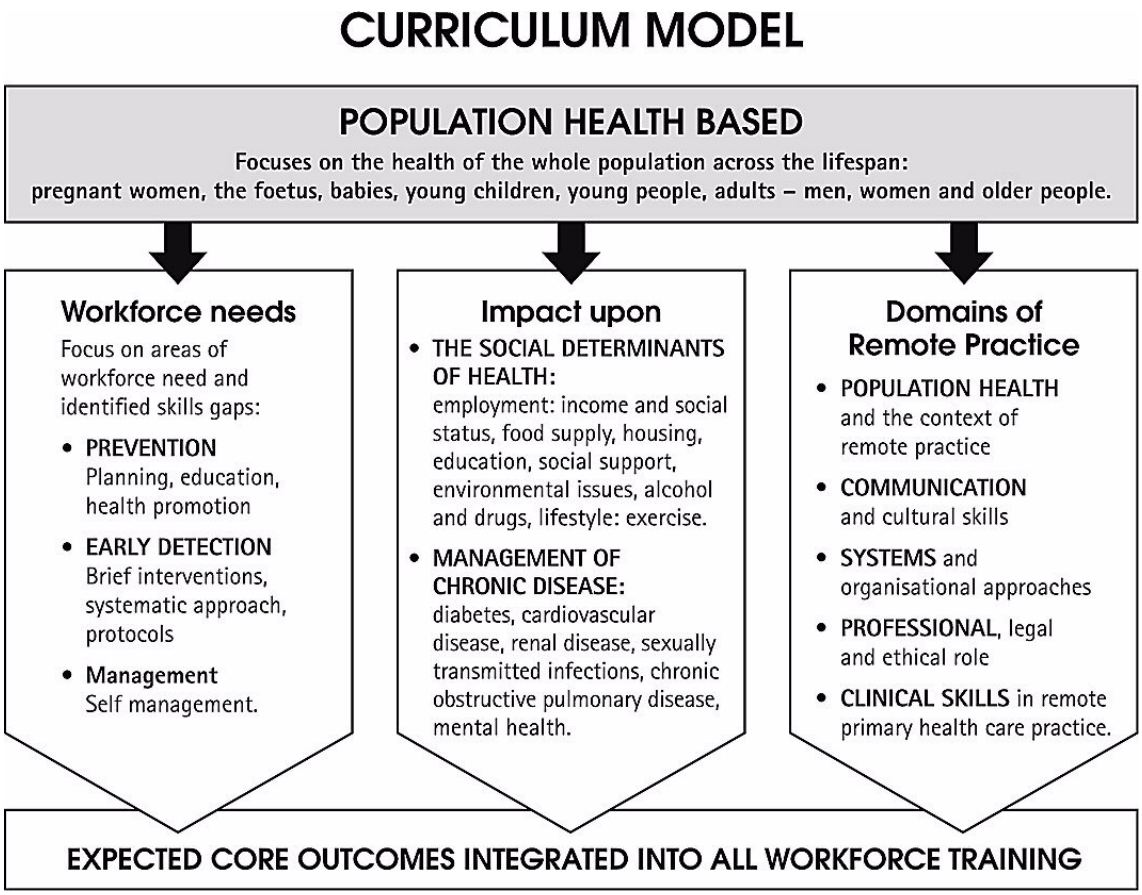

Figure 2: Curriculum framework. Source: reference 12, reproduced with permission.

The outcomes of this project have been more significant than was originally anticipated. This project has resulted in a curriculum framework and implementation model that is comprehensive, practical, integrated, outcomes based, and focused on the social determinants of health using a population-based approach to health care. It is useful for all health professions and can be adapted to suit their particular needs. The process has also identified the need to influence educators as a critical step in the whole endeavour if we are to bring about the required change in practice.

Conclusions

There are significant issues that need to be addressed in the way in which the Australian health workforce is educated to practice as the population ages and chronic disease implodes in the 21st century[28]. This is particularly so for those who work in the 1218 discrete remote Indigenous communities, which house a quarter of the total Australian Indigenous population in Australia[29,30]. We also assume that the educators automatically understand the required change as they prepare undergraduate and postgraduate students and health staff for practice. However the majority have also

been trained in the acute care model and are comfortable in working in this way.

While it is always important to have more research being undertaken in this important area of chronic disease, we also need to be working in practical ways to alter the acute disease based practice model that dominates in the health workforce, towards an integrated, systematic, population-based approach. This project has made some inroads to assisting this process but it will take a shift in thinking from those who guide our undergraduate preparation programs to have it seriously addressed to meet the needs of the population in the 21st century.

The curriculum framework can be accessed via www.menzies.edu.au or email: info@menzies.edu.au to order a free hard copy.

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Appendix I: Chronic diseases self-assessment tool

Chronic Disease Self-Assessment Tool

The following provides a core list of knowledge and skills that all remote and rural primary health care professionals require when working in the prevention, early detection and management of chronic disease. This tool is intended to be a self-assessment tool, which can be used by new and existing remote and rural practitioners to determine their own educational needs. It will also be of use when working with a supervisor to determine learning needs in this important area.

Please tick the box that describes your level of confidence, at this time, in working in chronic disease in your community: 1 = NOT Confident; 2 = Confident; 3 = VERY Confident.

This should be used in conjunction with *Educating to Improve Population Health Outcomes in Chronic Disease* p14–24. www.menzies.edu.au

	Domain and expected outcome	1	2	3
	Domain 1 Population Health and the Context of Remote Practice			
	CAN YOU:			
1	*Community profile* – Describe the health status of that community			
2	*Public health* – Discuss the public health issues relevant to that community			
3	Discuss the impact of chronic illness on the community			
4	*Population health* – Describe how to work from a population health approach that considers health across the lifespan			
5	*Social determinants of health* – Discuss the links between the social factors that affect health outcomes in that community			
6	Explain Barker's hypothesis			
7	*Community health action* – Discuss ways to facilitate community health action through community directed initiatives			
	Domain 2 Communication and Cultural Skills			
	CAN YOU:			
8	*Communication skills* – Communicate in a way that reflects the particular needs of people in remote areas – gender, culture, and first language			
9	*Self management* – Describe your way of developing a long term professional relationship that helps chronically ill patients take responsibility for their own health			
10	*Cutlural skills and respect* – Describe how you elicit the patient's health concerns in a culturally appropriate way that considers: their emotional state, state of health, social status, traditional health beliefs and cultural background			
11	State how you would respectfully seek appropriate cultural and traditional healing advice when required			
12	*Teamwork* – Discuss the main elements of how to respectfully work within a cross-cultural multidisciplinary team			
13	*Brief interventions* – Discuss the principles and value of brief interventions and promote small achievable changes			
14	*Health promotion* – Demonstrate how you would use opportunities for health promotion and education, which are relevant to the community			

	Domain and expected outcome	1	2	3
Domain 3 Systems and Organisational Approaches				
	CAN YOU:			
15	*Record and recall system* – Use the health centre's information and recall system – paper based and/or computerised			
16	*Manage information and data systems* relating to clinical standards, guidelines and protocols for the early detection and management of chronic disease			
17	Compile a disease register			
18	Describe strategies to engage the community council in regular feedback regarding the community's health			
19	*Time management and prioritisation* – Describe ways of organising and prioritising sufficient time to undertake chronic disease prevention, early detection and management activities			
20	Recognise your own limitations within the professional and legislative guidelines and know when, and how, to refer			
Prevention				
21	*Pregnant women* – Provide education to groups about conception, pregnancy and the underlying determining factors that affect adult health outcomes			
22	*Advise women* re: smoking, alcohol intake, nutrition and exercise during pregnancy			
23	*Describe the early indicators of pregnancy related problems* – Gestational diabetes, pre-eclampsia, intrauterine growth retardation			
24	*Babies and children* – Describe normal childhood development			
25	Provide preventative health advice and intervene in those conditions that effect the normal childhood development and education – Otitis media, urinary tract infections and upper respiratory tract infections			
26	Describe the factors that impact upon early childhood development			
27	Discuss the links between the determinants of health and chronic disease			
28	Provide nutritional advice relevant to the child's age, food supply, family income and social situation			
29	Assess and implement a dietary management plan for anaemia			
30	Promote well being though education of the mother/ family/ carer to nutritional information – 'the child's growth story'			
31	Identify, and follow up, children at risk			
Early detection				
32	*Screening* – Use screening procedures and investigations to identify asymptomatic individuals with risk factors and/or chronic conditions			
33	Perform, record and interpret results of growth assessment programs, school screening and adult health checks			
34	Incorporate brief interventions as a routine part of your consultations			
35	Practice opportunistic individual screening			
36	Provide appropriate information to the whole community on screening outcomes			

	Domain and expected outcome	1	2	3
Domain 3 Systems and Organisational Approaches *(contin)*				
CAN YOU:				
Management				
37	*Care planning* – Perform care planning that involves the patient in the decision making			
38	*Provide culturally appropriate lifestyle advice* – Nutrition, physical activity, smoking, and alcohol eg hunting, promoting bush foods to those at risk or engaging in risky behaviour.			
39	Discuss strategies for time management, taking into consideration demands on time and effort when managing chronically ill patients			
40	Rationally use medicines			
41	*Mental health* – Identify symptoms of depression, anxiety and behavioural disturbance in children and young people and offer appropriate support, intervention and referral as required			
42	Identify the effects of alcohol and substance abuse on the individual and the community and offer appropriate support and/or referral			
43	Describe the early indicators of mental illness and psychosis			
44	Identify and deal with the acute phase of psychotic conditions in the community in consultation with the district medical officer or psychiatrist			
45	Provide basic education and support to the family and the community in the event of an acute psychotic episode			
46	Describe the guidelines for transporting a psychotic patient			
47	*Pathology* – Use investigations appropriately, based on the standard treatment protocols, when managing chronic disease			
48	*Best practice* – Keep abreast of best practice evidence and recent advances in technology in your own discipline			
49	Describe where, and how, to find information about the prevention, early detection and management of chronic disease			
50	Use locally approved standard treatment protocols to guide all consultations			
51	Refer appropriately, or seek advice about how to do so			
52	Use the evidence base and feedback from systems approaches to provide advice to the community members about chronic disease activity, process, impact and prevention			

	Domain and expected outcome	1	2	3
Domain 4 Professional, Legal and Ethical Role				
	CAN YOU:			
53	*Ethics* – Appreciate and respect the different cultural frameworks for determining ethical behaviour in a remote community			
54	Discuss the ethical principles underlying the care of chronically ill patients in remote practice, informed consent, confidentiality, and autonomy			
55	Discuss the local issues that might impact upon the decision to treat a patient locally or refer on			
56	*Legislation* – Describe the legislation governing your profession regarding notification of disease, birth, death, autopsy and consent			
57	*Teamwork* – Respect the different priorities, cultural considerations and family commitments of Indigenous team members			
58	Discuss the role of the Indigenous health worker, health centre manager and other team members			
59	*Self-care* – Discuss your own strengths, values, and vulnerabilities in maintaining a personal and professional balance when working in isolation			
60	Discuss self-care issues when working in a remote cross-cultural environment			
61	Identify your personal support mechanisms			
Domain 5 Clinical Chronic Disease Skills in Remote Primary Health Care Practice				
	CAN YOU:			
62	*Early detection* – Conduct screening and health education programs in the community (refer list – see over)			
63	*Management* – Recognise the indicators for the major chronic diseases and manage appropriately			
64	Consider the possibility of serious illness inherent in many commonly presenting symptoms			
65	*Referral* – Refer appropriately, knowing when and how to do so			
66	*Pathology* – Use investigations and interpret results, to refine a working diagnosis and care plan			
67	Collect specimens and maintain cold chain as per the protocols			
68	*Prescribing* – Prescribe and/or dispense medications within the standard treatment protocols and your own disciplinary guidelines			
69	*Standard precautions* – Apply the principles of infection control and use standard precautions consistently.			

CORE CLINICAL SKILLS

The core MINIMUM AND ESSENTIAL clinical skills list is for remote nurses, doctors, Indigenous health workers and clinical health centre managers. Tick the box that best describes your ability to perform these skills competently to the standards

Please tick the box that describes your level of confidence, at this time, in performing these clinical skills: 1 – NOT Confident; 2 – Confident; 3 – VERY Confident.

General clinical skills	1	2	3
CAN YOU COMPETENTLY PERFORM THE FOLLOWING SKILLS?			
Blood pressure			
Blood glucose monitoring			
Capillary haemoglobin			
Dressings – basic			
Electrocardiograph			
Foot assessment and care – basic			
Measurement – baby and adult:			
Body mass index			
Head circumference (infants)			
Height			
Length (infants)			
Maternal weight			
Waist circumference			
Weight			
Mental health assessment – basic			
Oxygen saturation			
Packaging and transport of specimens			
Peak flow			
Phlebotomy / venepuncture			
Pulse rate			
Recording and reporting processes			
Respiration rate			
Temperature			
Urinalysis			
Urine specimen collection			
Vaccinations – standard			
Visual acuity test			

General equipment	1	2	3
CAN YOU COMPETENTLY USE AND MAINTAIN:			
Body mass index (BMI) sheet			
Centrifuge			
Cold chain monitors			
Electrocardiograph (ECG) machine			
Eye chart			
Glomerulofiltration rate (GFR) calculator (calculated creatinine clearance)			
Glucometer			
Haemocue machine			
Infant length boards			
Maintenance of fridges for specimen storage			
Monofiliment			
Nebuliser and spacers			
Opthalmoscope			
Otoscope			
Oxygen therapy			
Oxygen therapy equipment			
Pulse oximeter			
Scales for child and adult			
Slit lamp			
Sphygmomanometer			
Spirometer			
Stadiometer			
Tape measures			
Thermometer			
Venepuncture equipment			

Screening	1	2	3
HOW CONFIDENT ARE YOU IN USING THE RELEVANT INVESTIGATIONS, SCREENING PROTOCOLS, REPORTING AND PROVIDING HEALTH PROMOTION AND EDUCATION FOR THE FOLLOWING:			
Sexually transmitted infections			
Mental health / suicide risk			
Cardiovascular disease			
Diabetes and eye health			
Renal disease			
Respiratory disease			
Growth assessment processes			
School screening procedures			
Children and young people			
Antenatal and postnatal care			
Adult health checks			
Men's health checks			
Women's health checks			
Older people's health check			

List the areas you feel you have identified as needing more education about and discuss this with your supervisor:

End of self-assessment