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ONE HEALTH IN HLUVUKANI: THE 'WHAT' AND 'HOW' OF IMPLEMENTATION

DEVELOPED BY THE COMMUNITY-ORIENTED PRIMARY CARE RESEARCH UNIT OF THE
UNIVERSITY OF PRETORIA

Abstract

In its work of supporting community-oriented primary care among almost 3 million people, the Community-Oriented Primary Care (COPC) Research Unit has developed a model that includes a One Health approach, thus integrating human, animal and environmental health aspects in supporting communities. Since disease knows no barriers between these three disciplines, and because of the existing vertical approaches between the Departments of Environmental Affairs, Social Development, Health and Agricultural Sciences, a concerted effort to overcome the barriers to integrated, comprehensive healthcare is necessary. This will prevent zoonosis, pollution causing human and animal diseases, and general improvement of animal, human and environmental health literacy and subsequent management of disease. The following document outlines the approach, activities and costs of introducing the public health aspect of a One Health model in the existing UP footprint of the Mnisi Tribal Authority communities, where UP already has an existing academic footprint. The aim is to showcase what One Health can look like in a rural community to benefit environmental and animal health, together with human public health at primary care level.

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A CONCEPT NOTE FOR DEMONSTRATING A ONE HEALTH APPROACH

PART A: HUMAN HEALTH

COMMUNITY-ORIENTED PRIMARY CARE (COPC) IN PRACTICE

Community-Oriented Primary Care, or better known as COPC, integrates public health and clinical care at the level of the household. The COPC Research Unit has been involved in the implementation science and research behind community-based primary care for almost a decade. A properly executed COPC service enables people to actively attend to their own and others' health, while simultaneously rendering individual specific clinical care.

Taking SDG 3 serious: As such, the programme is responsive to the specificity of local contexts in order to effectively meet individual, system and societal needs. It is also a direct contribution towards target 3C - "Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States" and 3D - "Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risk" of the Sustainable Development Goal 3 on health. The actions of the programme contributes directly to meeting several of the other SDG3 targets with a focus on delivery of programmes on substance abuse, TB and HIV and maternal mortality.

A summary of the COPC framework is provided in Figure 1.

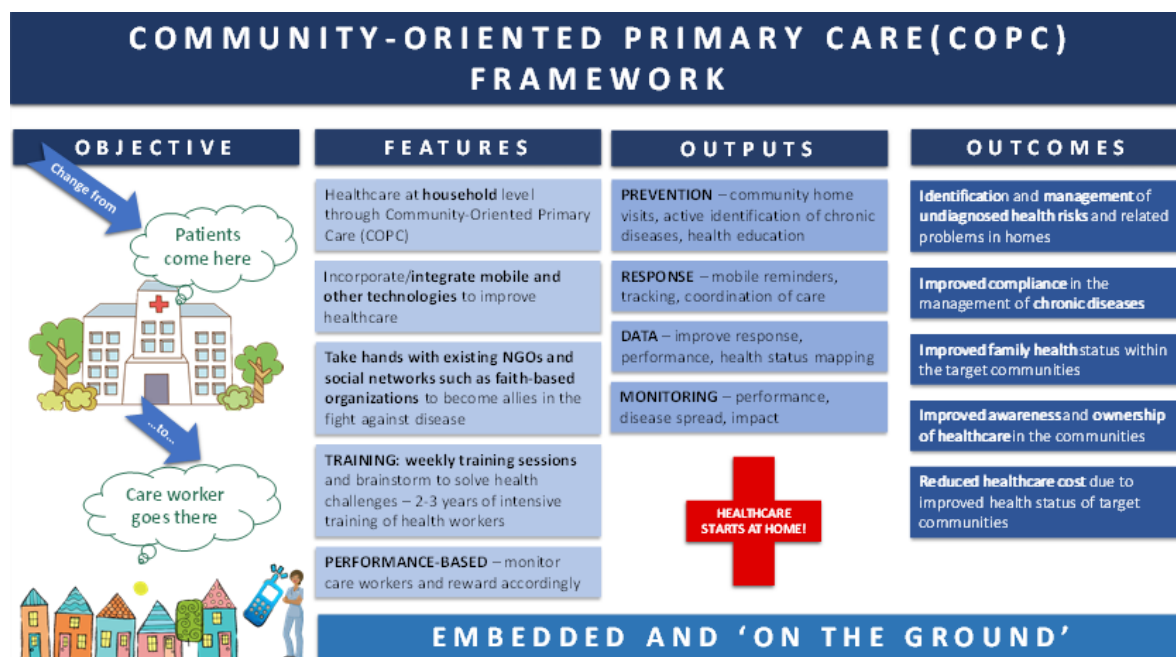


Figure 1: The COPC Framework

COPC is an internationally recognized approach that includes a set of practices. The approach is informed by five principles described below.

LOCAL HEALTH AND INSTITUTIONAL ANALYSIS (LISA)

COPC work is done in geographically-defined areas or communities. Since local municipalities are divided into wards, that is how COPC works as well. Local health analysis is done to gain insight into the local health needs of the community and to build strong relationships between service providers and service users. Local institutional analysis looks at the types of organisations that are available in each community; how these organisations' activities tie into health; how they can contribute to COPC and how we can collaborate with them. All this information is used to respond to specific needs in local contexts, working with existing organisations and institutions in each community.

COMPREHENSIVE CARE

Comprehensive care is about managing the health-to-disease continuum. This involves health promotion, disease prevention, treatment of existing disease, rehabilitation, and palliation where necessary.

EQUITY

Horizontal equity means that people with the same needs should get the same care or have access to the same resources. Vertical equity means that people with greater needs should get greater care or more resources. Equity in health means providing accessible, affordable, appropriate, and relevant healthcare. Part of providing accessible health care in COPC involves not waiting for people to come to health facilities, but rather going to their homes, schools or places of employment and recreation to provide health care. Affordability can also be improved by working with people to improve their health in their homes and communities.

PRACTICE WITH SCIENCE

Clinical practice in COPC is based on evidence-based medicine, using scientifically tried and tested methods to promote health and treat disease. Part of this involves following a collaborative, multidisciplinary approach, using professionals from more than one academic discipline, to give the best possible care. Teams can therefore include (but are not limited to) doctors, nurses, community health workers, clergy, traditional healers, social workers, police officers and NGOs.

SERVICE INTEGRATION AROUND USERS:

Person-centred care involves looking at the person as a whole, taking into consideration their context and respecting their autonomy. Partnerships between service providers and service users are created and maintained. Continuity of care is prioritized as it improves health outcomes. Assigning a Community Health Worker to a specific group of families is one way in which this can be achieved.

STEPS IN THE COPC IMPLEMENTATION CYCLE

The COPC approach revolves around the COPC Cycle, which comprises 12 steps:

1. Identifying suitable communities – not all communities in Southern Africa are suitable as wealthier communities fall outside the public healthcare system, having opted for private medical aid.
2. Identifying communities also involves mapping these communities geographically, using geo-informatic systems.
3. Create or join a health care team: Recognising that there are already established teams in Mpumalanga, we aim to work together with these teams to augment whatever service exists,

particularly at the level of community health workers (CHWs). Multidisciplinary teams can assist with coordination of care by having ward rounds in referral hospitals such as Tintswalo.

4. Create or link to a Regional Health Team.
5. Do an institutional assessment. This includes looking at available, active, local organisations whose activities link to health care, with whom we can collaborate. Examples include shelters, NGOs, schools and churches.
6. Form COPC Community Forums to maximise available resources. Stakeholders include professionals, public officials, traditional and faith-based leaders, businesspeople, worker representatives, unofficial community leaders, etc. The purpose includes sharing information about what is happening in the community, coordinating activities and identifying opportunities and risks.
7. Complete household and individual health assessments. UP uses the electronic means to capture and store this information, and would like to equip CHWs in these areas with devices to be able to do so, thus moving away from a paper-based system. This would enable more efficient and accurate data collection.
8. Create adaptive health plans.
9. Monitor plans and activities.
10. Evaluate plans and activities.
11. Reflect, re-plan and redirect.
12. Research – diligently record all aspects of implementation, and publish findings regularly.

The properly-implemented COPC Cycle repeats twice a year with some activities in parallel and others in linear fashion (Fig 2).

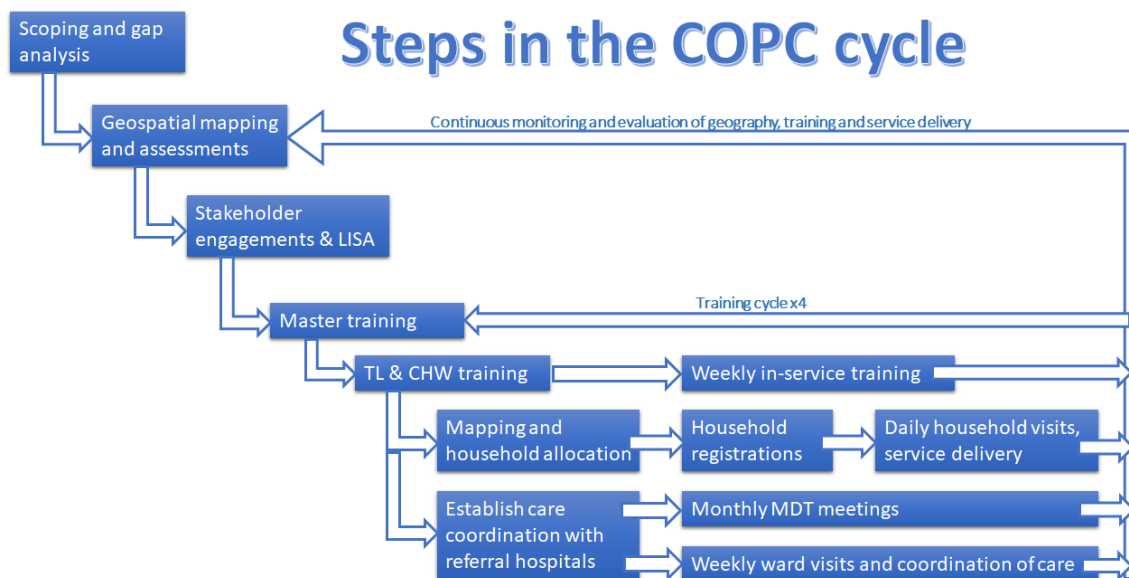


Figure 2: Steps in the COPC cycle – the cascade of learning repeats 4 times over 2 years

COSTS AND BENEFITS: AN EXAMPLE IN LIMPOPO MOGALAKWENA LOCAL MUNICIPALITY¹

Scope: Eleven clinics in Mogalakwena Local Municipality. Staff involved in the Public Health Care (PHC) sector: (based on above) includes 13 teams of 98 Community Health Care Workers (provided by the State) with the project providing 3 Clinical Associates and links to 3 Family Physicians, with the COPC Research Unit for management, HR and administration support.

The costs are equivalent to R170 per capita per year.

The benefits include an estimated:

- 5,665 deaths averted (equalling 204,400 life years saved).
- A saving of 1.6 million PHC visits, 137,000 out-patient attendances, 27,000 hospital admissions estimated at R685 million/year to health service
- R2.8 billion in poverty reduction to communities
- Supporting the R295 million income to CHW households.
- The project has a calculated Benefit to Cost ratio (BCR) of 3.4 with every CHW estimated to save 1.03 lives every year.

PART B: HEALTH OF ANIMALS AND THE NATURAL ENVIRONMENT THE RESEARCH/ACADEMIC FOOTPRINT IN THE MNISI TRIBAL AUTHORITY COMMUNITIES

The Mnisi community is situated in the north-eastern corner of the Bushbuckridge Municipal Area, Mpumalanga Province, South Africa. This mainly Shangaan-speaking community of which over 40,000 people has a long and proud history under the leadership of the Mnisi Traditional Authority (MTA).

The Mnisi Community Programme (MCP) is a multidisciplinary platform for research, teaching, learning and community engagement within the 'One Health' philosophy. At the centre of the programme is the Mnisi community and their animals as well as the conservation areas surrounding the community.

Research is mainly focussed on various aspects of the human/animal(livestock/wildlife)/ecosystem interface which includes disease ecology and emergence, zoonoses, livestock production and trade as well as natural resource utilisation. Research and community engagement activities are conducted within the principle of 'Research Into Use' with strategies and activities ensuring the upliftment and development of this resource-poor community through innovative scientific initiatives and capacity building, a high priority. A close relationship with the Mnisi Traditional Authority and the MCP research coordination team from the Faculty of Veterinary Science, University of Pretoria (UP), ensures that research themes are relevant, the community is informed and involved at all times and that important findings are channelled back to the people. Feedback to the community is standard protocol for all research activities within the MCP.

Various governmental institutions and departments as well as faculties and departments within the University of Pretoria forms part of the network of stakeholders involved in the MCP. These include the Department of Animal and Wildlife Sciences, UP, Mpumalanga Veterinary Services within the

¹ For detailed information on how the cost-benefit is calculated: Bennett R, Marcus TS, Abbott G, Hugo JF. Modelling cost benefit of community-oriented primary care in rural South Africa. *Afr J Prm Health Care Fam Med.* 2020;12(1), a2225. <https://doi.org/10.4102/phcfm.v12i1.2225>

Mpumalanga Department of Agriculture, as well as the Mpumalanga Tourism and Parks Agency. The MCP is involved in and closely linked with two other exciting research and training initiatives within the same area; the Hans Hoheisen Wildlife Research Station (HHWRS) and the Hluvukani Animal Clinic (HAC). Together with the MCP, these initiatives form a very unique One Health Platform for research, training and community engagement at the wildlife/livestock interface. This platform is key to the University of Pretoria’s objective to initiate innovative research that is relevant, provide quality teaching and learning in which high-impact community engagement activities are embedded that facilitate sustainable community upliftment.

One component missing within this long-standing network of actors is the **local primary health facilities, in particular the Hluvukani Clinic**. Although Wits Medical students visit the clinic regularly to get exposure to rural health facilities, there is a way to expand this part of human healthcare to ensure linkages between the existing animal and environmental health research/implementation, and we propose a combined model of One Health below.

PART C: A ONE HEALTH APPROACH: WHAT WOULD THAT LOOK LIKE?





The COPC Research Unit recognises that the health of people are closely linked to the health of our animals and the natural environment. More than half of all infections that people can get can be spread by animals. Diseases like rabies, Salmonella, and West Nile virus infections are examples of zoonotic diseases (or zoonoses)—diseases that can be shared between animals and people.

Every year, tens of thousands of South Africans will get sick from diseases spread between animals and people. The intertwined lives especially of rural communities with animals and the natural environment obligates an integrated approach. Animals can sometimes serve as early warning signs of potential illness in people. For example, birds often die of West Nile virus before people get sick with West Nile virus fever. The Covid-19 pandemic is a typical example of zoonosis (Fig 3). A One Health approach encourages collaborative efforts of many experts (like disease detectives, laboratorians, physicians, and veterinarians) working across human, animal, and environmental health to improve the health of people and animals, including pets, livestock, and wildlife.







Figure 3: Diagram showing how a One Health approach can prevent further Corona virus pandemics (Source: CDC)

The COPC model of supporting public health messaging through training community health workers to

-  regularly visit registered households;
-  monitor conditions and capture information digitally;
-  refer cases appropriately to other health and allied professionals; and
-  inform community leadership where appropriate of social determinants of health through the clinical associate

is a model **that can be replicated with minimal human resources in the animal and environmental health space**. In the Mnisi area the model of collaboration between the animal health clinic and the public health clinic has been established for years as a platform to expose medical and veterinary students. These engagements do not directly benefit the community per sé, as would a well-functioning community-oriented primary care intervention in addition to the role of the Hluvukani veterinary clinic.

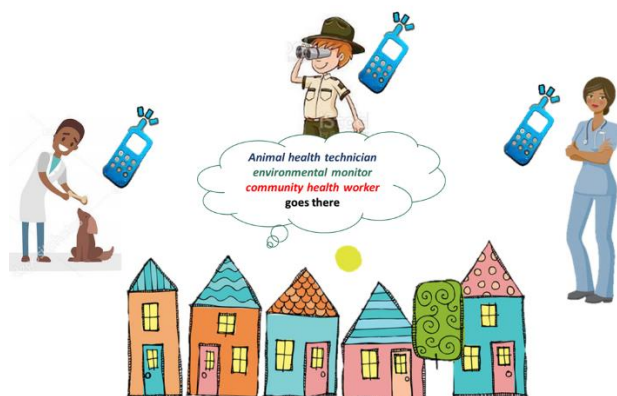
Environmental monitors have really shown their value in the Bushbuckridge area. The Environmental Monitors Programme forms part of the government's concerted efforts to address the challenge of wildlife crime, particularly rhino poaching. It funded at least 1 659 young South Africans in the Environmental Monitors Programme, with the aim of increasing conservation capacity within the South African National Parks (SANParks), provincial and private nature reserves through patrols, biodiversity monitoring, environmental education and awareness within different communities. In the Mnisi communities their role has expanded and they also provide substantial animal husbandry support to cattle herders, and support the local veterinary clinic during vaccination campaigns in the villages. This proposals hopes to make the case for funding the role of the clinical associate and training of CHWS, so that an integrated approach to human, animal and environmental health can be following. Animal health technicians (AHTs) and suitably trained environmental monitors (ideally from the communities) can play the same role as that of a clinical associate by:

-  continuously monitoring the environment and animals (domestic as well as wildlife, rodents, birdlife, snakes etc.);
-  capturing and tracking relevant information digitally for storage/analysis on a platform;
-  referring to appropriate animal/environmental professionals in government or civil society;
-  informing community leadership of research findings, potential disease outbreaks, providing animal husbandry extension services, and any pollution of natural resources.

A major advantage is the development of the Greater Kruger Strategic Development Programme, which aligns perfectly with the objectives of the University of Pretoria, albeit at macro scale. The Kruger to Canyons Biosphere and South African Wildlife College, and the private game reserves within the larger Bushbuckridge footprint will all be part of the stakeholders that will benefit from the research emanating from a One Health approach within a small locality.

Internally within the University, these functions should be coordinated and guided by the COPC Research Unit, the School of Public Health Medicine, the Veterinary Faculty at UP and relevant faculty members of the Natural and Agricultural Sciences Faculty. Current research within the Engineering, Built Environment and Information Technology Faculty will also be considered within the broader research platform.

The Environmental Monitors already employed in the Hluvukani area should each receive a mobile device to assist them for monitoring purposes, with information stored on a One Health platform developed by the University, in collaboration with AfriVet and other partners. All custodians of the project should have access to the dashboard and will have inputs into developing the platform's content.



ONE HEALTH IMPLEMENTATION FRAMEWORK

| ONE HEALTH DIMENSION | | Human health (public health, social determinants of health etc.) | Animal health (cattle, goats, donkeys, chickens, birds, wildlife, rats, cats, dogs etc.) | Environmental health (plants, water, climate, air, soil etc.) |
|----------------------|-------------------------------|---|--|--|
| WHO | | Department of Health community health worker (CHW) supported by UP clinical associates | UP animal health technician (AHT) | UP environmental monitor |
| ACTIONS | MONITOR | CHW, through mobile device monitor assigned households for any disease/social determinant of health – trained weekly by clinical associates and supported clinically by ClinA (supervised by family physician and UP COPC research unit) | AHT, through mobile device monitor community's animal health and/or wildlife, supported by state vet and UP COPC research unit, jointly with State Vet Service | Environmental monitor, through mobile device monitor village and surrounds – supported by UP research teams, SA Wildlife College and K2C |
| | REFER | Automated referral via mobile device and data platform Clinical associate for clinical support Outreach team leader and clinic staff Multi-disciplinary teams (MDT) Hospital for care coordination and specialist treatment Labs | Automated referral via mobile device and data platform State veterinarian UP Onderstepoort Labs | Automated referral via mobile device and data platform Department of Environmental Affairs, Water Affairs as appropriate UP COPC research unit for linkage to environmental researchers Labs when necessary |
| | COMMUNICATE and INFORM | Clinic committee Other relevant stakeholders as necessary Traditional authority as necessary | Cattle owners/herder committee Any environmental stakeholders Traditional authority as necessary | Environmental stakeholders Traditional authority as necessary |