VETERINARY CONTINUING PROFESSIONAL DEVELOPMENT IN ETHIOPIA – FRAMEWORK AND CURRICULUM DEVELOPMENT

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List of Abbreviations

APHRD	Animal and Plant Health Regulatory Department
CE	Continuing education
CPD	Continuing professional development
CPD-CC	Continuing professional development coordination committee
EVA	Ethiopian Veterinary Association
FMACA	Food , Medicine Administration and Control Authority
FMOH	Federal Ministry of Health
HACCP	Hazard analysis critical control points
KVB	Kenya Veterinary Board
M&E	Monitoring and evaluation
MOA	Ministry of Agriculture
NGO	Non-Governmental Organization
PVS	Performance of veterinary services
PPP	Public-private-partnership
SAVC	South African Veterinary Council
VCT	Veterinary council of Tanzania
VB	Veterinary Board
VP	Veterinary Professional
VPP	Veterinary para-professional
VS	Veterinary service
VSB	Veterinary Statutory body

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Establishing Veterinary CPD framework in Ethiopia: Review of existing experiences and adoption to Ethiopia condition

1. Introduction

There is a general belief that development of professionals (of any field) should not finish after initial qualification, especially in a fast-changing business environment in which skills are likely to obsolesce quickly. Therefore, continuous development is expected to be exercised right from the first day in the profession. Globally, continuing professional development (CPD)is recognized as an important element in lifelong learning for professionals after initial basic (and postgraduate) trainings. The world organization for animal health (OIE) recognizes that, the capability of the veterinary service (VS) to maintain and improve the competence of their personnel, in terms of relevant information and understanding is measured in terms of the implementation of a relevant training program (OIE, 2013). One such training program is CPD. Several definitions of CPD are provided in the field of veterinary profession, while all have commonalities in terms of its purpose: "to enhance the competencies of professionals in terms of knowledge, skill, and attitude necessary for the execution of quality veterinary professional services that focuses on clients need and satisfaction". Therefore, CPD is increasingly, seen as a vital means by which animal health professionals can keep abreast of the developments and new challenges arising in their sector and a rapid means to update their knowledge and skills in response to those developments and challenges. Hence, emphasis on CPD has been growing in recent years.

Since there is no as such established and formal veterinary CPD system in Ethiopia, it was found relevant to base the assignment on a review of CPD practice in selected African countries, UK, Australia and USA. Moreover, experience from the Health Ministry of the Federal Democratic Republic of Ethiopia is also included. The approach and format adopted in this report are the result of several review documents (literatures, veterinary acts, regulations, guidelines, plan) and consultation (through questionnaires) with the stakeholders.

2. UK, Australia and USA CPD experiences

2.1 UK

In the UK, CPD is regulated by its Veterinary Statuary Body [VSB] the Royal College Veterinary Surgeons [RCVS], to which membership is mandatory for all practicing veterinarians and dependent on compliance with CPD regulations and other codes of professional conduct. Under RCVS regulation Veterinarians are required to undertake a minimum of 35 hours CPD per year with 15 hours for veterinary paraprofessionals [Veterinary Nurses].

The RCVS has recently introduced an outcomes focused CPD, including a 'reflect' element embedded in a 'plan, do, record, reflect' cycle (https://www.rcvs.org.uk/lifelong-learning/continuing-professional-development-cpd/).An important purpose of the "outcomes" approach is to assure the quality, impact and relevance of the CPD being undertaken Setting out a CPD plan and once undertaken, providing a written or oral reflection on the learning impact are key innovations. The latter seeks information on how the CPD related to given learning needs and plan, what were the key things learned and what impact has the CPD had in terms of professional development or work performed. The elements of the 4 stage CPD cycle are recorded using "1CPD" a purpose designed mobile phone app that keeps a running account of CPD activity undertaken and provides proof of compliance to the RCVS - whilst keeping cost and administration time to a minimum.

Unlike other CPD models the RCVS is not prescriptive about what constitutes CPD – stating that anything that is relevant to a given veterinarian professional development, can be counted as CPD. In addition to attendance at formal courses and congresses this approach includes such activities as listed in table 2. below.

Table 2. Non-Exhaustive List of CPD Activities as given by the RCVS UK

Activity	
1. Undocumented private study (max 10 hours/ year)	12. Working on a new project/ area of work
2. Clinical audit activity	13. Planned and documented study/reading
3. Discussion group - informal learning set	14. Research - clinical
4. Distance learning - on-line/ formal (assessed)	15. Research - scientific
5. Distance learning - on-line/informal (not assessed)	16. Research - veterinary business
6. Distance learning – webinars	17. Secondment to another work-place
7. Lecture by external provider	18. 'Seeing practice' - work-based observation
8. Mentoring or being mentored	19. Seminar/workshop/conference - external
9. Practical training - clinical skills	20. Studying for an external qualification
10. Practical training - wet lab	21. Training - in house
11. Preparing a new lecture/presentation	22. Training as examiner/assessor

2.2 Australia

Continuing Professional Development (CPD) is expected of registered veterinarians in all States and Territories in Australia and that a minimum of 60 CPD points must be attained over a consecutive three-year cycle. CPD points are described as either structured or unstructured. Structured CPD points are allocated to activities which can be externally validated such as attendance at conferences and workshops, completion of courses and authoring or refereeing of peer reviewed articles. At least 15 of the minimum 60 CPD points must be structured points. Unstructured CPD points are allocated to activities such as private reading, clinical rounds, mentoring and unassessed computer-based courses.

The Australian Veterinary Association [AVA], provides a VetEd points system for members to track and record their CPD points. Members are able to submit their CPD points online and print out a CPD statement. Continuing professional development (CPD) providers can apply to have their CPD events assessed by the AVA, and if successful, their activities will be recognized for VetEd points and listed on the AVA CPD events page. The VetEd approval system ensures approved external CPD events abide by AVA guidelines in terms of ethics, promotion and conflict of interest.

2.3 USA

Almost every state in the United States has continuing education [CPD] requirements for veterinarians. In most cases, a veterinarian must meet the continuing education requirements to keep their license valid. Continuing education credit is usually only given for certain types of education that have been approved by the state.

For example, in Indiana veterinarians must have 40 hours of continuing education through an approved method within each two-year licensing period, according to Indiana Professional Licensing Agency. Approval for continuing education is based on content, materials, length and the qualifications of who is teaching the course.

According to the Idaho Board of Veterinary Medicine, the continuing education requirement for veterinarians in Idaho is completion of 20 hours of approved education for every two years after being licensed. The requirements in this state are rather specific: the state mandates 14 credit hours minimum of the training must be in medicine, surgery and dentistry, and only six credit hours may be in practice management. Veterinarians must file a report on their continuing education when renewing their license each year.

In Massachusetts, according to the Office of Consumer Affairs and Business Regulation, 15 units of continuing education are required for a licensed veterinarian in each licensing period. Requirements can be met through attending seminars, workshops or courses through an approved organization. Credit for the requirement may also be given for publishing written materials.

3. Documentation of CPD experiences from Selected African countries

Countries in Africa are historically at different stages in the development of veterinary system, veterinary education and training. For the ease of understanding and relevance to the current assignment, we focused on the veterinary service governance (who is regulating), CPD administration and framework (what constitutes CPD inclusive of providers, point allocation, accreditation of course/activities, monitoring and evaluation etc.).

3.1 Regulations governing veterinary practices and CPD

In all of the countries under review, there are a clearly defined Acts that govern veterinary services promulgated during different times: South Africa (since 1982; amended several times), Kenya (since1953; latest 2011) and Tanzania (2003). The acts clearly underline the establishment of Veterinary Statutory Body (VSB)in each countrythat regulate their veterinary practices. This body is known by different names: Veterinary council (South Africa, Tanzania) and Veterinary Board (Kenya). There are also regulations and rules emanated from the acts. Moreover, there are clear regulation or guidelines with respect to CPD: South Africa (2005; 2015 paraprofessionals), Kenya (2013), and Tanzania (2014).

According to OIE (Chapter 3.4 of the OIE Terrestrial Animal Health Code), the role of a VSB is to oversee the quality and competence of veterinarians in a country. A competent VSB, autonomous from any political or commercial interests, can ensure the excellence of the veterinary professions through appropriately licensing or registering veterinary professionals and veterinary paraprofessionals, and providing minimum standards for (initial and continuing) education and professional conduct for those registered.

South Africa: The South African Veterinary Council (SAVC)is the regulatory body for the veterinary profession and veterinary para-professions in South Africa and has a statutory duty to determine scientific and ethical standards of professional conduct and education. Among the mandate of the SAVC are (a) to regulate the practicing of the veterinary professions (VPs) and veterinary para-professions (VPPs) and the registration of persons practicing such professions; (b) to determine the minimum standards of training required; (c) to exercise effective control over the professional conduct of persons practicing the veterinary professions and veterinary para-professions.

Kenya: The Kenya Veterinary Board (KVB), as currently constituted, is created by the new VPs and VPPs Act of 2011 (replaced old Veterinary Surgeons' Act (Chapter 366) of 1953, which provided for registration of Veterinary Surgeons only) and took effect in December 2011 after gazettement (Legal Notice No. 183 of 28-11-2011) by the Minister for Livestock Development.

The Board was launched in February 2012 in accordance with the provisions of the Veterinary Surgeons and Veterinary Para-professionals Act. It provides for registration of both VPs and VPPs. The KVB, realizing the need to professionally manage CPD activities and / or programs, has developed guidelines (2013; last revised in 2019) as envisioned in the VPs and VPPs Act, 2011.

Tanzania: The Veterinary Council of Tanzania (VCT)has been established under the Veterinary Act of 2003. According to this, the VCT is responsible for regulation of the performance of veterinary professionals, para-professionals and para-professional assistants, and for regulation of veterinary practice facilities. One of the council's function was to promote and encourage educational advancement with regard to the practice of the veterinary profession (this could include CPD).

In general, in these countries no person is allowed to practice as a veterinary practitioner unless he/she is registered with the respective veterinary regulatory authorities. In addition, it is mandatory for registered veterinary professionals to accumulate minimum continuing education unit of accredited structured and/or unstructured CPD activities during specified time period for re-licensor.

3.2 What are the aims of the CPD in those countries?

These countries whose CPD reviewed have strong conviction that veterinary science in general is growing in terms of knowledge, skills and enabling resources to properly deliver the intended services, thus efforts to keep on progressing in the professional endeavors are essential. Therefore, the purposes of CPD include:

- Keep up with contemporary veterinary science.
- Provide services in line with the latest technology and procedures and thus continuously improving the image of the profession.

3.3 CPD administration

In these countries all ranges of activities related to CPD is regulated under the VSB (council or board) who usually establishes a designated committee with defined role and responsibilities. Among the other, the major one is setting guidelines that support implementation of CPD. The guideline contains every detail about the operationalization of the system.

In South Africa regulations relating to CPD for VPs and VPPs was enacted since November 2005 and became operational beginning 2006. The regulation states that CPD is a mandatory

requirement for all professionals and para-professionals, quantities of CPD point requirements for different categories, Accreditation and monitoring of CPD activities, system of point allocation for structured and unstructured CPD activities, deferment of compliance or non-compliance. Moreover, all veterinary professionals registered with council as of April 2006to practice or render professional veterinary services are required to comply with the system of CPD as a prerequisite to retain registration.

In Kenya, there is a clear guideline that depicts the role of KVB, registration of CPD activities/program, accreditation of CPD provider and principles of CPD point allocation. Among the major roles of the KVB as indicated in the guidelines are:

- Raise the awareness on the need for CPD activities within the Veterinary Profession.
- Identify areas critical to VP and VPPs in which CPD activities and/or programs should be organized
- Set guidelines for accreditation of CPD Providers and for registration of CPD activities and/or programs
- Act on the VS and/or Veterinary professionals and para-professionals who do not meet CPD requirement.

Tanzania: From the beginning of 2015, VP, VPPs and para-professional assistants are required by law to complete a series of continuing educational activities accredited by veterinary council of Tanzania each year. The law requires that individual practitioners keep record of their attendance of CPD-accredited activities to be presented during application for retention of registration, enrolment and enlistment. Consequently, the Ministry of livestock and Fisheries has initiated a CPD Plan in 2018 to enhance the competence of veterinary professionals and para-professionals in the delivery of animal health services in the country.

In general, the approach taken to CPD in those countries is that the veterinary board or council set minimum standard and regulates its follow-up actions.

3.4 What are considered as a CPD courses or activities?

Since CPD is considered as a form of education that takes place after the initial basic training, it encompasses broader activities that could meet an educational and developmental need of the participating professionals and provides an effective learning experience. Those activities, in general, are believed to provide added value to the capability of the VS and professionals through the increase in knowledge, skills and personal qualities necessary for the appropriate execution of veterinary professional services.

CPD activities could be formal/structured or unstructured:

- CPD courses registered by the regulatory body and presented by accredited service providers (with a defined CPD code (formal/structured)
- short training and organizational activities (Conferences, Congresses, Lectures, Seminars, Refresher courses, Symposia, Exhibitions, In-house training, Workshops and Online trainings),
- There are several other activities that contribute to CPD: teaching courses, writing for publication, consulting with peers, mentoring, and working with professional associations or regulatory organizations. These would include authorship or reviewer of scientific articles or book chapter of a veterinary nature and/or of direct importance to veterinary science, preparation and presenting lectures, instructing or supervising a trainee on attachment or internship, evaluation of student thesis work etc.
- Non veterinary related activities that could improve personal and managerial skills and assist in providing better service (computer skills, financial management etc), could also be taken as CPD activities.

CPD activities could also be categorized as organized or non-organized learning activities.

Organized Learning Activities

- Courses, conferences, wet-lab practices, seminars, and workshops
- Training and studying for supplementary credentials
- Online learning modules and webinars
- Presentations given and published written materials
- Other organized learning

Self-directed Learning Activities

- Consulting with peers, participating in mentoring
- Reading professional publications and reviewing other media
- Independent research
- Contributions to professional organizations
- Other self-directed learning activities

Moreover, registered veterinarians are expected to maintain superior knowledge of current veterinary practices through, publication in local or international journals, Presentation in local or international conferences and supervision of registered graduate veterinarians. In most cases, students in basic (and postgraduate) training program are exempted for the period of their enrollment.

However in rare cases, formal education or study that lead to certificate or formal degree(s) could also be considered, but with higher CPD point (experience of Kenya).

3.5 Who is supposed to undertake CPD courses/activities?

The targeted beneficiaries of the CPD program are VPs and VPPS registered and licensed as indicated in their respective veterinary acts. Therefore, every VP and VPP is expected to attend CPD courses or activities and show evidence that attest the CPD activities undertaken and credit points earned towards fulfilling requirements for re-licensing. These would include those VPs in the different categories: field service, teaching, research, consultancy services, regulatory services and private practices. To this end, each professional is expected to keep documentation of participation in CPD activities in the form of credits registered by regulatory body. It was not clear whether the staff obtained funding for participation in CPD activities from their employer, self, or sponsorship by other organization.

3.6 CPD point allocation and minimum requirement

Credit points are allocated to CPD activities during the accreditation process using the credit points' allocation system and defined criteria (indicated in regulation or guideline).In Kenya, registered activities must cover a minimum of one (1) CPD hour and will earn the participating individual one (1) Credit point per CPD hour. Similarly, in South Africa one (1) Credit point is allocated per completed hour of formal lecture and/or practical demonstration. Their CPD related regulations or guidelines clearly depict CPD point allocation of formal and informal activities (mentioned under section 2.4)

The recommended minimum CPD requirements for each of these countries and professional categories are described below: this varies on the nature of courses.

South Africa:

All VPs who enter the CPD systems shall accumulate not less than sixty (60) points, of which twenty (20) points have to be structured activities, within every three-year cycle from commencement of the CPD system while VPP's who enter the CPD system must achieve 50 points; fifteen (15) structured and thirty-five (35) unstructured CPD points for every consecutive three year CPD cycle.

Kenya:

Every VP must obtain a minimum of twenty (20) Credit point per CPD year to retain their names in the KVB's register of VS while every VPP must obtain a minimum of fourteen (14) Credit points per CPD year in order to retain their names in the KVB's register of VP. A minimum of fifty percent (50%) of the Credit point in any CPD year must be accumulated from activities and/or programs that are veterinary oriented. Each KVB registered veterinarian must accumulate at least 60 CPD points over three years with a minimum of 15 points per year.

Tanzania:

Every VP must accumulate a minimum of thirty (30) CPD points over a period of one (1) year in order to retain their names in the register of Veterinarians while every VPP must accumulate a minimum of fifteen (15) CPD points over a period of one (1) year in order to retain their names in the list of their respective professional category.

CPD record keeping remains the responsibility of the professionals themselves. Documentation can include personal development plans, records of CPD activities undertaken and other appropriate CPD evidence, which are collected into a portfolio for independent scrutiny.

2.7 CPD delivery methods

Continuing professional development can be obtained by a variety of structured and unstructured learning activities. The traditional face-to-face delivery method still dominates while the use of information technology (E-learning, web-based) is an emerging method in relation to the rapidly changing way of communication. For the nature of activities, that demand practical demonstration face-to-face approach is unavoidable. Under certain circumstances theoretical approaches (reading, watching video materials, seminar etc) could also be taken as a delivery method.

2.8 CPD providers

According to the regulations or guidelines in those countries, CPD providers would include institutions /companies/organizations or individuals that have obtained or may be accredited to provide CPD activities / programs by the council or board. These include:

- Universities, Colleges and Research Institutions recognized by a designated regulatory authority (VSB)
- Professional Bodies / International Organizations
- Referral Centers or Laboratories

- Leading Professional Experts/Consultants
- Web – based training providing Institutions
- Pharmaceutical and medical companies

2.9 CPD provider and activities accreditation, monitoring and evaluation

In those countries CPD providers are accredited by their respective regulatory authorities. In South Africa, it is the responsibility of the council to accredit CPD activities and CPD providers. In addition, all CPD activities are subject to monitoring by a VSB (council or board). Typical features of the CPD in the three countries are shown in Table 1.

Table 1. Overview of veterinary CPD regulation in South Africa, Kenya and Tanzania

Characteristic	**South Africa**	**Kenya**	**Tanzania**
CPD regulatory body	SVC	KVB	TVC
CPD regulation/ guideline/plan	Regulation exists	Guideline exists	CPD plan
CPD beneficiaries	VP and VPP	VP and VPP	VP, VPP, Assistant PP
CPD accreditor	SVC	KVB	TVC
CPD provider	Accredited Institutions/Organizations/individuals	Accredited Institutions/Organizations/individuals	not clearly indicated
Monitoring and Evaluations	SVC	KVB	TVC
CPD requirement	Mandatory for license renewal	Mandatory for license renewal	Mandatory for license renewal

4. The Ethiopia Experience

Continuous development of staff, especially in its structured form, could be considered as non-existent in the field of veterinary profession in Ethiopia. The current CPD framework preparation is an initiative of the Ethiopian veterinary association with an intention to strengthen animal health workforce skills based on the identified gaps.

4.1 Veterinary continuing education experience in Ethiopia

Modern veterinary education and training was introduced in Ethiopia in 1960's with the establishment of the school of Animal Health Assistants at Debrezeit. Later on, in 1979, Faculty of Veterinary Medicine was established, in the same place. The graduates are the veterinary human forces serving the country's need in VS delivery at different levels. Nevertheless, there is no clear law (proclamation or acts, regulations, rules) that govern the profession and veterinary practices in the country – other than a brief outline given under Proclamation 267/2002, which was not taken further to implement activities such as CPD. The veterinary system has characteristics where veterinarians' work in either government or private, but neither registered nor licensed. Moreover, after basic training, professionals are not required to undertake CPD or be accountable for their professional competency.

According to OIE, Evaluation of training programs and programs for CPD, for VP and VPPs requires a country to present or make available documentary evidence to demonstrate compliance with initial and continuing education (CE) requirements. According to Performance of Veterinary Service (PVS) evaluation mission (2011), over several years, the VS and its related centers used to offer different trainings, which were considered as 'Continuing Education (CE)', in the area of disease control and surveillance, laboratory diagnosis, quarantine and inspections etc. Furthermore, the report attested that CE is broadly available to staff and is well planned, uses solid teaching materials and baseline documentations are readily available in the form of Strategy, and standard operating protocol (SOP) produced by the Central VS of Ethiopia. Accordingly, the mission rated the veterinary CE as of good condition (4in the scale of 1 to 5), meaning "The VS has access to CE that is reviewed annually and updated as necessary, and it is implemented for all categories of the relevant personnel." However, the same report also mentioned the limited roles of educational institutions for the delivery of CE. Nevertheless, those training workshops were not gauged to be considered or accredited as such as standard CPD course or activities for either promotion or career development. We believe that the inference by PVS evaluation team has emanated from the notion that equated in-service training or workshops, which is normally one-off, short-term, infrequent training events, with formal CPD activities. We have a reservation whether those mentioned subjects and experiences can be considered strictly as "CE" as they did not follow or be commensurate with

a formal CPD cycle (proper needs assessment not undertaken, not strictly planned and acted on, monitored and evaluated, and documented).

The follow-up PVS gap analysis under-taken in 2012, that provided suggestion for improvement as per OIE level of advancement for all deficient competence areas, described CE was deemed to be satisfactory (since rated 4) and it is unlikely that improvements would be made in the 5year strategic plan. However, it recommended that:

- CE efforts will be required on the following recommended areas:
    - Quarantine and border security, livestock identification, traceability and data entry
    - HACCP, ARIS, licensing of abattoirs (accredited/approved), SOPs and guidelines;
    - Regulatory control of veterinary drugs
    - Sampling and reporting of diseases at field level (including sample collection and handling as it relates to emerging diseases
    - Regional laboratory training (including sample collection and handling as it relates to emerging diseases)
    - Early detection and effective and early response to diseases of national importance
    - Disease prevention, control and eradication
    - Animal welfare/humane handling/humane transport
- Consider making some levels of Continuing Education a mandatory requirement for the VS.
- Provide a reward system for Continuing Education to professionals and paraprofessionals.
- Provide more funding to educational institutions for the delivery of continuing education, both in the form of scholarships or programs for VS staff to gain postgraduate qualifications and for educational institutions to deliver short courses to staff.

Interestingly, some of the subject areas indicated as relevant for CE are considered in the need assessment undertaken previously and hence, considered for curricula development in the current assignment.

With respect to the institutional arrangement, cognizant of the fact that there was no VSB during the mission (even today), the mission had suggested the need to develop continuing education system, or CPD program under the then Animal and Plant Health Regulatory Department (APHRD). Furthermore, the mission team had proposed the establishment of Training and Continuing Education Desk at APHRD that would coordinate the program. As

potential implementers, bodies such as universities, EVA, including private companies or private consultants were indicated. Unfortunately, there is no move along the suggested line since then (2012). However, there are some fragmented efforts to train on specific areas for VPs and VPPs in different areas by various NGOs, Federal and Regional VS sectors. These include areas in laboratory diagnosis, surveillance, meat inspection, zoonotic diseases etc.

4.2 Experience from Health Sector in Ethiopia

The other existing and relevant experience in Ethiopia is from the Federal Ministry of Health that targets various categories of medical health professionals. Indeed, according to the health policy of Ethiopia developing appropriate CE for all categories of the workers in the health sector is among the five strategic areas which human resource development underlined. To this end, the Food medicine, Health Care Administration (FMHCA), based on the power vested to it according to Proclamation No. 661/2009, has developed a directive "Directive on Continuing Professional Development for Health Professionals No.12/2013". Hence, CPD is one of the main regulatory requirements provided under the Food, Medicine and Healthcare Administration and Control Regulation. Later on, this responsibility was delegated to the Federal Ministry of Health (FMOH) who had prepared directive and related guidelines pertinent to CPD in October 2018. The guideline is governing document to all health professionals practicing in Ethiopia, with respect to CPD framework (outlines standard of CPD, accreditors, accreditation of CPD providers, monitoring & evaluation, roles of stakeholders in the CPD program etc.)

The primary aim of the CPD program, according to the guideline, is to enhance competency of health professionals and eventual improvement of health services. Therefore, in the directive as well as the guideline, CPD is defined as; "a range of learning activities through which health professionals maintain and develop throughout their career to ensure that they retain their capacity to practice safely, effectively and legally within their scope of practice". In the context of the guidelines, CPD refers to all activities health professionals undertake formally to maintain, update and develop their knowledge, skills and attitudes in response to the health service needs of the public.

The two important principles in the directives worthy to note are: 1) fulfilling the required CE unit is crucial for any health professional to be re-licensed and 2) any course or activity to be considered as CPD course or activity has to be accredited by Accreditors and endorsed by the Ministry. The guideline indicated government universities or health professional associations that shall be accredited by the Ministry to Accredit CPD service providers and CPD courses according to predefined criteria (available in the guidelines). With respect to the potential CPD Service Providers public or private institutions including universities, health science colleges, professional associations, hospitals and other consultancy firms with the experience of

providing training and meet the specified criteria and have been accredited by accreditor to provide learning activities for CPD were considered.

CPD need assessment: CPD is conducted when there is a clearly identified need. There are different ways of need assessment: top-down and bottom-up approaches. In top-down approach, FMOH and professional associations could recommend relevant CPD activities for health professionals based on new scientific development, revised national guidelines and changes in health services delivery. In the bottom-up approach, health professionals and their employing organization could identify their learning needs based on their performance appraisal and ability to accomplish annual plans. Therefore, CPD providers must seek information from the target health professional audience, professional associations, training institutions, regulatory bodies and FMOH as the basis for planning CPD activities.

In the operationalization of CPD, the Ministry underlined the following principles as important:

- **Integral Part of Health Professional Practice** - CPD should be recognized as an integral part of health professionals' practice reflected in budget, resource allocation, and time planning. CPD activities ought to be appropriately managed and resourced.
- **Allocated and protected time** - Health professionals should have allocated and protected time and opportunities to participate in CPD activities
- **Recognition**- There must be a system for recognition of CPD providers and the individual CPD activities.
- **Quality-** The provider of CPD activities must meet agreed training quality requirements.
- **Linked with Re-licensure**- CPD courses need to have the required Credit point and linked with health professionals license renewal
- **Need-based-** CPD needs to be relevant to the day-to-day practice of health care providers and based on the need for the healthcare system

CPD administration: the CPD is administered under the FMOH, with a designated case team and a **CPD committee**. The Committee is composed of representative members from the Ministry, Regional Health Bureau, professional associations, training institutions, community representatives, and development partners. This committee approves accreditors, as per the criteria set in the guidelines, and undertakes the quality check there after. The Committee shall have the following roles and responsibilities:

- Develop implementation guidelines and manuals
- Accredit the application of accreditors by standard criteria provided under the CPD guideline

- Investigate complaints and recommend appropriate administrative measures against accreditors and CPD providers;
- Participate in the Monitoring and Evaluation of CPD implementation process;
- Review the CPD guideline when necessary;

The Ministry CPD Committee shall conduct quality assurance checks of Accreditors

Roles of stakeholders

The Ministry of Health:

- Establishes a committee to administer the CPD program
- Creates mechanism of institutional recognition to enroll Health Professional in CPD activity
- Organizes CPD activities and identify means to fund and sustain the program.
- Etc.

Professional Associations:

- May serve as an accreditor and/or CPD provider if they meet the required criteria.
- May suggest the annual CE unit requirements for the respective profession.
- Shall conduct and participate in need assessment and propose CPD activities in their respective profession.
- Shall create means to encourage professionals in the respective association to participate in CPD activities in collaboration with other stakeholders

Accreditors:

- review applications for accreditation of CPD service providers and CPD courses;
- monitor compliance with the guidelines;
- revise Credit points allocated where the provider failed to comply with the guideline
- Monitor and evaluate CPD providers and submit an annual report to the Ministry

CPD providers:

- Have program mission statement specifying changes in competence, performance or patient outcome that will be the result of the program for review and accreditation
- Submit each CPD course to an accreditor for review and accreditation three months before presenting the CPD activity.

- Assign qualified panel of experts composed of content experts, program experts and instructional design experts.

Employer:

- Integrate the CPD program in the annual performance
- appraisal of health professionals; include the CPD offering schedule for its staff and report the number of staffs who took CPD courses annually to their respective body.
- Notify on time information on CPD issues from the Ministry and provider to its staffs.
    - Undertake CPD need assessment for their health workers and, where appropriate, support the professionals accordingly.
    - Avail adequate time for their employees to participate in CPD activities; and
    - Assist for their employee's CPD activities.

CPD Monitoring and evaluation:

- FMOH undertakes regular monitoring and evaluation of the CPD. The exercise relies on the existing records and reports showing plans and achievements.

5. Establishing CPD for VPs and VPPs in Ethiopia

5.1 Introduction

As indicated in the review section, although the PVS mission reported the existence of continuing education (CE) in Ethiopia, there is no documented evidence that attests the existence of formal structured CPD activities, governed or dictated by any regulation or guideline, for meeting the changing need of the VS delivery system and the emergence of new challenges. Therefore, since CPD is a lifelong learning, it is pressing to introduce it in a formal and structured way. In an ideal situation and from review exercise in the veterinary domain, establishing and regulating CPD activities has remained (in most cases) the duties of veterinary regulatory authorities (such as VSB). However, in the ~~apparent~~ absence of a legally established and functioning regulatory authority (VSB) in Ethiopia, we propose adopting working modalities as an interim measure that will be subject to revision in response to a legal framework, that facilitates and governs CPD activities in all its forms, being enacted.

The mission of this CPD program is to enable and support effective lifelong learning by providing an educational environment that fosters the CPD of VPs and VPPs through diverse learning opportunities that enhance competencies in terms of knowledge, skills, and attitude. The competencies of VPs and VPPs shall be enhanced so that they are confident and capable of delivering the required quality of veterinary service.

5.2 Setting up CPD System for Veterinarians and veterinary para-professionals

5.2.1 Guiding principles

The principles of CPD in this document focus on three pillars: 1) the VPs and VPPs that recognize and demonstrate the effect of CPD on practice; 2) the employer or contractor that actively invests in people and provides opportunities for CPD; and 3) the wider veterinary system that supports the VPs and VPPs workforce and improves the safety and quality of services by investing in and developing the workforce. CPD must be recognized as an integral part of veterinary practice and should be reflected in budgets, resource allocations and time planning, and not be subordinate to service demands.

The fundamental guiding principles for the CPD include the following:

- **The need for enhancing competence**: the effectiveness of VPs and VPPs in the veterinary system is highly dependent on their competencies, which requires regular updating on a continuous basis through CPD courses and/or activities.
- **Individual responsibility**: VPs and VPPs have a responsibility for their own learning and for recording CPD that has educational value. It should be appropriate to their personal

fields of practice and anticipated future changes, and the needs of the veterinary service in which they work. The responsibility for identifying and prioritizing professional development requirements rests ultimately on the learner and its employer. Learning may reinforce existing good practices as well as enhancing knowledge, skills and behaviors/attitude.

- **Employers' responsibility:** employers of VPs and VPPs have a responsibility to ensure that their entire animal health workforce is competent, up to date and able to meet the needs of the service; they must facilitate access to adequate resources to allow staff to develop, including time. Employers should plan and coordinate the CPD needs of their staff and monitor the effectiveness of their staffs' CPD activities.
- **Conducive environment:** CPD activities have to be provided in a conducive environment/settings and circumstances that are suitable for effective learning. Physical facilities, skills training equipment and work schedule should be evaluated and regularly updated for their appropriateness in providing adequate context and conditions for CPD.
- **Reflection and documentation:** VPs and VPPs should always reflect on the learning gained from their CPD and any changes made as a result, including the likely effect on their professional work and any further learning needs identified. Reflection will help professionals assess whether their learning is adding value to improving the services in which they work, and they should record any impact (or expected future impact) on their performance or practice and report to the CPD organizing body under Ministry of Agriculture
- **CPD and appraisal:** VPs and VPPs shall document their CPD undertaken during a given CPD year, and associated reflection (feedback), for assessment at the three-year appraisal period. The appraisal should include the learning and/or changes in practice that have arisen from the activities.
- **Quality:** CDP providers must fulfill agreed requirements and be accredited, and they should sustain their accreditation status as far as they are committed to continue providing the CPD. The CPD courses and activities should also fulfill agreed standards and get approval ahead of starting the training.
- **Need based CPD:** CPD should benefit service users; it should be relevant to the day-to-day practice of veterinary service providers and be responsive to veterinary service needs along given livestock value chains and value chain actors [Table 3.]. The learning must encompass integrated practical and theoretical components in order to enhance veterinary practice when appropriate

Table 3. Factors at critical points in the livestock value chain affecting market access

Production	Market chain	Slaughter	Sales	Consumption
Neonatal mortality	LITS	Welfare standards	Sanitary standards	Consumers
Nutrition	Movement controls	Pre-mortem	Butchery skills	Selectivity
Water	Welfare standards	Humane slaughter	Packaging	Handling/hygiene
Husbandry	Nutrition	Bleed out	Labelling	Storage
Welfare	Water	Traceability	Marketing/promotion	Cooking
Epidemics	Transport	Post-mortem	Cold storage	
Endemics	Check-points	Sanitary standards		
Zoonosis	Markets	Carcase quality		
Metabolic	Quarantine	Primal cuts		
Stock losses	Export regulations	Labelling		
Infertility		Cold storage		
Breeding				

5.2.2 CPD courses /activities and need assessment

Available evidences suggest that effective CPD is characterized by the presence of three factors: a clear need (or reason) for the particular CPD activity to be undertaken; a coherent learning plan; and provision for follow-up that reinforces the learning accomplished.

This CPD curricular framework is proposed based on two gap analysis studies, discussion with relevant experts in the veterinary service, EVA, adopting experiences from FMOH of Ethiopia, and veterinary services of other countries, specifically of South Africa, Tanzania and Kenya, and consulting OIE core competencies for VPs and VPPs.

For the purpose of this CPD framework development, we propose to classify CPD activities in to three broad categories (summary provided under sub-section 5.2.5 in Table 2):

The first category would include formal and structured learning activities offered by recognized or accredited service providers (proposed in sub-section 5.2.4). This includes, but not limited to, those courses for which a clear module outline and other details (learning objectives/outcome) are defined as indicated or proposed under section 6 and detailed in the Annexes.

The second category would include educational development, teaching and research (preparation of lectures and presentation, formal teaching, mentoring, evaluation of student thesis works, publication of scientific papers in reputable journals etc.

The third group would include several forms of activities such as attending professional conferences, seminars, presentation on local and international conferences, specialized or general workshop, conducting mentored on-job practical trainings. It would be prudent to identify, recognize, and register certain conferences, workshops, and other similar events being (or to be) conducted within Ethiopia if the participants who would attend them are to claim CPD credits.

For the sake of this CPD preparation initiative, the following broad definitions are provided for activities under category three:

- Seminar: a group of lectures on a certain topic.
- Conference: an open scientific meeting which calls for papers on topics related to the conference to be presented by specialized and professional experts.
- Specialized workshop: a specialized practical training in a specific area for a certain category (group) of practitioners in that area. The training would be conducted by a specialized trainer and/or a group of specialized experts (service providers)
- General workshop: A practical training in certain areas for the purpose of upgrading the general skills of VPs and VPPs. The training would be conducted by a specialized trainer and/or a group of lecturers/ specialized experts.
- Cascading of CPD acquired skills/knowledge from VP to VPP to Community based personnel [CAHWS] and to other livestock value chain actors
- Learning by doing: a structured and mentored applied study or research into a specific area of work leading to a more informed / skilled capacity to address that work area

VPs and VPPs from both public and private sectors are expected to be involved in a balanced selection of activities from all categories based on his/her career pathway and his/her own development plan. An important criterion for the private sector will be the potential of a learning module to enable delivery of a needed service that will generate additional income (as modules are likely to come at a cost).

It is necessary to conduct regular need assessments to support development of tailor-made CPD courses. The CPD needs might be recommended by animal health regulatory authorities such as VS [For public sector workers,] and VSB, or professional associations such as EVA (top-down approach) based on new scientific development, revised national guidelines, emergent value chain service requirements, and changes in VS delivery. On the other hand VPs, VPPs, private veterinary practitioners who engage in PPP/SMC or employers/ contactors may identify their CPD needs based on their performance appraisal and ability to accomplish their plans / meet service demands (bottom-up approach). For the private sector, need will be indicated by rate

of use of given modules, and requests for additional modules. As a principle, identified CPD needs at different levels should be compiled centrally and prioritized as necessary by the VSB or CPD unit under the VS. Systems should be established to document recognized CPD courses and activities in a transparent way under the CPD unit of the VS. This could then be communicated to the customers (VP, VPP and employers) through the Ministry or the EVA. CPD providers should consider and align the identified gaps in their planning of CPD activities. Any CPD course and activities planned by CPD providers should be assessed and registered by the CPD Coordination Committee composed of five members (for the time being) before it is delivered. This committee is accountable to State Ministry for Livestock Resources (SMLR). EVA and the CPD providers are proposed to facilitate the need assessment.

5.2.3 Accreditation of CPD providers, Courses and activities

Accreditations of CPD courses/activities and course providers is essential for the delivery of quality CPD that help to improve the VS of Ethiopia. The quality and processes of all CPD activities are subject to monitoring by the CPD Unit for the purpose of CPD operationalization, (see sub-section 4.5) and acting as a regulatory body until such time when a VSB will be established. To this end, the CPD Unit has to develop a directive or guidelines that would govern CPD framework, implementation as well as elaborate the possible roles of CPD coordination Committee (CPD CC). The CPD CC is responsible for accreditation of CPD providers, CPD courses, and activities. The CPD Unit shall develop a guideline that governs the CPD system.

CPD courses/activity and providers will be accredited following regulations, guidelines, procedures, and forms to be developed by the CPD unit under VS.

The CPD CC shall review applications for accreditation of CPD providers and CPD courses; monitor compliance with the guidelines; revise Credit points allocated where the provider failed to comply with the rules and regulations of the CPD System; review accredited CPD providers; investigate complaints against CPD providers and take necessary administrative measures and submit an annual report to the VS.CPD CC members could be selected from public universities involved in animal health education, EVA, veterinary professional and government institutions working on animal health diagnostics and research.

5.2.4 Identification of potential CPD providers

CPD course/activity providers can be public and / or private institutions including universities, animal health research institutes, veterinary diagnostic laboratories, professional associations, and leading public and successful private sector professionals or consultancy firms having

recognised expertise / record of accomplishment of rendering veterinary related trainings / participation in CPD ToT courses.

For provision of institutional based structured face-to-face CPD delivery, CPD providers are required to fulfill the required quota of qualified personnel for coordination and delivery of the CPD courses and possess office infrastructure with necessary facilities. CPD providers should have the experience of undertaking need based assessment, preparing course materials and providing training and have accreditation to deliver accredited CPD courses and activities. In addition to these requirements, CPD providers seeking registration are expected to

- Define and state clear, measurable and specific learning objectives for the proposed activity.
- Provide an outline of the proposed activity, which lists the knowledge, skills and attitudes to be acquired.
- Presenters / facilitators should have the expertise in educational techniques and command the necessary skills and knowledge to teach / present the subject matter.

Detailed requirements shall be elaborated in the CPD Framework document to be developed by the CPD Unit. CPD providers shall be selected by the CPD CC when they fulfill the minimum requirements stipulated in the guideline. Potential list of CPD providers (based on the feedback from stakeholders) is indicated under subsection5.3).

5.2.5 Allocation of Credit points and Documentations

The credit points will be allocated to activities during the activity accreditation process using the credit points' allocation system to be agreed in the 'to be designed guideline'. The following are the suggestions from the consultant team.

The allocation of Credit point is based on the following principles which are applicable to all categories of VPs and VPPs.

- VPs and VPPs shall be registered by CPD unit until VSB is established.
- Credit point for a CPD course shall be obtained only if the course received or activities attended is accredited or recognized by CPD CC.
- CPD courses or activities presented in foreign countries or by other professional groups, which are not accredited or recognized by CPD-CC will be accepted so long as the participating individual provides evidence on the course content; facilitator's details and qualifications, in order to enable the CPD CC assess the CPD value of such an activity.
- Counting of CPD year starts from the date of registration, and licensure of registration status by the CPD Unit shall take place every two years

- As a general principle 1 hour of recognised and effective CPD activity is equivalent to 1 CPD credit point
- The maximum Credit point that can be earned from a single CPD course/activity shall not normally exceed 20 Credit points.
- The maximum number of CPD credit points that can be accredited for one day training is six.
- A trainee shall not be awarded Credit point for taking the same course content or involved in same activity more than once within the licensure period.
- Professionals attending long-term training leading to change in career arenot obliged to fulfill the Credit point requirement for that period, i.e., they qualify for 100% of the required CPD credit points.
- Attendance of lectures, refresher courses, in-house training, and online training, organized by accredited academic institutions, professional associations, other regulatory bodies and private CPD providers for duration less than nine (9) months are considered as short-term trainings, and credit allocation follows as shown in TABLE 1.
- A minimum of seventy percent (70%) of the Credit points in any CPD licensure period must be accumulated from activities and/or programs that are veterinary oriented / directly related to professional service delivered (Maximum of 30% Credit points could be accumulated from CPD activities related to livestock development, management skill, business and other relevant activities.
- Of the Credit points required for licensure, Credit point obtained from unstructured CPD activities shall not exceed fifty per cent (50%) of the total points accumulated.
- The following activities do not qualify for credit point allocation: registration, opening and closing remarks, inauguration, introduction, CPD head speech, unscheduled poster viewing, exams, commercial presentations, and attendance of annual / special general meetings.
- Waiver from compliance with the CPD requirements shall only be granted by the CPD-CC on application and submission of adequate reasons for such request. Detailed criteria for the wavier/exemption shall be defined in the guideline

CPD point requirements

The accumulated credit points could be used for various purposes including registration, promotion, professional license, etc., as per the guidelines, which will be developed for the purpose. Our initial proposal would be:

- Renewal of registration status by the CPD-CC requires accumulation of 20 Credit points (minimum of 10 for structured) or 15 Credit points (minimum of 10 for structured) for VPs and VPPs, respectively within three years for retention in the register.
- Every VP must obtain a minimum of 10 Credit point per CPD year to comply with the system of CPD as a prerequisite to retain registration in terms of the directive.
- Every VPP must achieve minimum of 5 Credit point per CPD year to comply with the system of CPD as a prerequisite to retain registration in terms of the directive.

Credit point allocation and recording

All VPs and VPPs participating in the CPD system should retain documented proof of participation /confirmation and progress of structured activities and a record including the nature, scope and duration of unstructured activities. A summary of all activities should be submitted during professional licensure to the CPD unit using the CPD Unit prescribed CPD format. Suggested credit point allocations for the type of CPD activities proposed for each veterinary category are presented in TABLE 4.

Mobile phones or web-based platforms offer new opportunities to avoid time consuming bureaucracy in monitoring progress of registered veterinarians in their CPD. Such an example is the "1CPD" recoding platform in the UK (https://www.rcvs.org.uk/lifelong-learning/continuing-professional-development-cpd/access-1cpd/).

TABLE 4: CPD activities and Credit point accumulation

SN	CPD Activities	Credit point per category of veterinarians		Remark
		VP	VPP	
1. Formal and structured learning activities				
1.1	Completed Masters and Doctoral degree courses qualify for 100% of the required CPD points for the stipulated duration of the study.	Fulfill the required Credit points for the CPD period	Fulfill the required Credit points for the CPD period	Proof of admission to the university and an annual registration required. Institutions offering the courses should be recognized by CPD regulatory body (VSB/ CPD-CC)
1.2	Diploma and Certificate courses for the duration of not less than nine (9) months.	Fulfill the required Credit points for the CPD period	Fulfill the required Credit points for the CPD period	
1.3	A registered formal and structured CPD course/activity	1 point / hour or as per the CP attached to it in a module	1 point / hour or as per the CP attached to it in a module	Approved and coded courses by accreditor
1.4	Assessed lectures, refresher courses, and on-line trainings organized by non-CPD providing institutions	1 point / hour	1 point / hour	
2. Educational development, teaching, and research				
2.1	Author for an article in peer reviewed Journal or chapter in a book	10 points / item		
2.2	Author for an article in non-peer reviewed Journals or chapter in a book	5 points / item	5 points / item	
2.3	Author of a book	20 points / item		
2.4	Editor or reviewer of a scientific article or a book	3 points / item		
2.5	Oral / poster /abstract presentation in scientific	2 points / presentation	2 points / presentation	
2.6	Lecture preparation and presentation (CPD lectures, training courses, and University lectures)	5 points / delivered course		
2.7	CPD course reviewer	2 points / course	-	
2.8.	Supervision of Master's or DVM Thesis	3 points / thesis		
2.9	Evaluator of Master's or DVM Thesis	2 points / thesis		
2.10	Supervision of a Doctoral Thesis	5 points / thesis		
2.11	Evaluator of a Doctoral Thesis	4 points / thesis		

3. Attending conferences, symposia, group learning sessions, seminars and other relevant activities				
3.1	Non-assessed lectures, refresher courses, and on-line training organized by non-CPD providing institutions *(Max 15 points / Licensure period)*	2 points / day	2 points / day	
3.2	In-house training and in-practice training	2 point / week	2 point / week	
3.3	Attendance of scientific conferences, congresses, seminars, symposia, exhibitions, and workshops *(Max 15 points / Licensure period)*	3 point / day	3 point / day	
3.4	Moderating panel discussion *(Max 15 points / cycle)*	1 point / day	1 point / day	
3.5	Non-veterinary oriented courses or other applicable activities (*Max 5 points / Licensure period)*	1 point / day	1 point / day	When evaluated and considered by CPD-CC
3.6	Policy/ Regulatory framework/ curriculum preparation /defense *(Max 10 points / Licensure period)*	2 points / day	2 points / day	
3.7	Serving as Board/ Committee member in veterinary related issues and professional bodies *(Max 10 points / Licensure period)*	2 point / meeting	2 point / meeting	
3.8	Extension activities, field days, and development of educational materials (*Max 10 points / Licensure period)*	1 point / activity	1 point / activity	
3.9	Participation in designated veterinary days	1 point / event	1 point / event	
3.10	Any award from the Veterinary fraternity or Government recognizing excellence in community service.	1 point / event	1 point / event	

Issuance of certificate/other evidences/testimonials

At the end of every CPD course / activity, the CPD provider is required to issue every VP and VPP participant a signed certificate (template as to be defined in a 'to be developed guidelines') specifying the number of Credit points earned. VP and VPP who accumulate Credit points from other recognized CPD learning methods including unstructured CPD, should also require evidence (certificate or letter signed by a recognized body) stating the number of Credit points.

Certificate of attendance should be standardized and contain the following information:

- Institutional logo of the CPD provider / stakeholder,
- Accreditation or activity numbers,
- Course/activity title, its duration, and number of Credit points of that course/ activity,
- Name and professional registration number (when available) of the attendee, and
- Name, title, position, and signature of the relevant authority of the CPD provider.
- For activities related to student advising and thesis/dissertation evaluation from recognized University/College, the candidate should provide the letter attesting the claimed activity

5.2.6 CPD delivery methods

In principle CPD courses/activities should be accessible (with respect to delivery method), affordable (if the beneficiary has to pay) and contain relevant CPD content. Content of CPD: should be diverse and flexible whereby VP and VPP select contents to follow based on their plan for learning(need) pertinent to their professional roles (duties and responsibilities).

The mode of delivery for the courses in this CPD framework could involve integrated theoretical and practical components to enhance the quality of veterinary services. It can be given in the form of lectures, seminars, self-paced learning, practical visits, and participation in conferences, research project, field studies and study visits, etc. CPD course can be delivered in classroom (face-to-face), through ICT and distance learning modalities or undertaken in the workplace through on the job training and learning by doing. Variety of media such as print materials, enduring material including online CPD activity – videotape, monograph, or CD Rom / flash drive and distance learning using technology such as audio-conference, video-conference and internet webcast. Relevant use of ICT should function as an integrated part of CPD process.

5.2.7 Monitoring and evaluation

Monitoring and evaluation (M&E) of CPD process is useful to advance the overall system, including, in upholding standards of CPD. It can also be used to enforce accountability of key stakeholders in ensuring the quality and sustainability of CPD. Hence, M&E of CPD shall regularly be undertaken by CPD-CC. M&E requires adequate information on the overall CPD processes, courses, course providers, that can be obtained from records and reports. Hence, stakeholders participating in the CPD program need to maintain records showing plans, achievements, and other relevant documents.

Feedback from CPD course participants, course providers and institutions which facilitate in sending their staff for the CPD courses / activities should be sought systematically and analyzed and acted upon and the information should be accessible to stakeholders and other authorities. CPD course assessment should involve experts in subject matter and curriculum, instructional design, and program expertise. It should also address the context of the learning process (include the organization and resources as well as learning environment), the structure and specific components of CPD (include program description and intended outcome) and learning outcomes.

M&E undertakings can be held on annual basis, and appropriate indicators need to be checked on the following:

- CPD process: The processes of course accreditation, CPD providers' accreditation, licensing and renewal of professional registration processes.
- CPD providers: Compliance of CPD course providers with standards stipulated in the CPD guideline.
- CPD courses: CPD training needs and level of participation of VP and VPP in CPD, trainers, topics covered, delivery methods, quality and availability of training resources and appropriateness of the learning environment should be monitored and evaluated.

5.3 The role of stakeholders in CPD program

Identification of potential roles of key stakeholders

The consultant team has developed questionnaire and dispatched to different institutions that are working on animal health issues through EVA. The main aim of questionnaire was to identify possible roles of different stakeholders in veterinary CPD activities in Ethiopia. We received response from 19 institutions: 5 Universities, 6 Federal Institutions working on animal health, 3 from regional institutions, 4 non-governmental Institutions and one Professional association. List of institutions participated in the questionnaire survey is shown in Table 5.

Potential contribution of different stakeholders to the CPD activities based on questionnaire survey is shown in Table 6. Majority of the institutions, 15 of 19 (78.9%) reported that they can be involved in need assessment, design of CPD courses, and delivering and hosting CPD training. Eighteen (94.7%) of the respondent institutes reported that they are willing to facilitate participation of their staff in the CPD program. Interestingly all veterinary Schools and Colleges involved in this questionnaire reported that they can participate in development of CPD courses, and provision of CPD courses. On the other hand, none of the respondent stakeholders were interested to fund or solicit funding for the CPD activities. Hence this appears to be one of the major challenges in providing CPD services.

TABLE 5. Response of stakeholders on their potential contribution to various CPD activities

Name of Institution	Type of institution	Need assessment	Design of CPD courses	Quality assurance	Rendering CPD or hosting	Regulation/monitoring	Facilitate participation	Funding or solicitation of fund for CPD
Ministry of Agriculture	Federal	√	√	√	No	√	√	No
Veterinary Drug and Feed Administration and Control Authority	Federal	No	√	No	No	No	√	No
National Animal Health Diagnostic and Investigation Center	Federal	√	√	√	√	√	√	No
National Veterinary Institute	Federal	√	√	No	√	√	√	No
National Institute for control & eradication of Tsetse fly &Trypanosomosis (NICETT)	Federal MOA	√	√	No	No	No	√	No
The Donkey Sanctuary Ethiopia	NGO	No	No	No	√	No	√	No
International Livestock Research Institute	NGO	√	√	No	√	No	√	No
Brooke Ethiopia	NGO	No	√	√	√	No	√	No
CARE Ethiopia	NGO	√	√	√	√	√	√	No
Ethiopian Veterinary Association	Professional Association	√	√	√	√	√	No	No
Amhara Livestock Agency	Regional	√	No	No	√	√	√	No
Oromia Livestock Resource Development Agency	Regional	√	No	√	No	√	√	No
Livestock resource and pastoral Development Bureau 1	Regional	√	√	√	√	√	√	√
Livestock resource and pastoral Development Bureau 2	Regional	√	No	No	√	√	√	√
Aklilu Lemma Institute of Pathobiology, AAU	University	√	√	√	√	No	√	No

College of Veterinary Medicine and Agriculture, AAU	University	√	√	√	√	√	√	√
Haramaya University	University	√	√	√	√	No	√	No
Jimma University School of Veterinary Medicine	University	√	√	No	√	No	√	No
University of Gondar	University	No	√	No	√	No	√	No
Total No. of institutions capable of providing an activity		15	15	10	15	10	18	3
%		78.9	78.9	52.6	78.9	52.6	94.7	15.8

With regards to the experiences of various stakeholders on provision of structured trainings, all of them reported that they had experience of providing short term trainings in various areas of veterinary services ranging from 1 day to as long as 6 months. However, most of them reported that they do not have well designed curriculum for the trainings they are providing and most of them give training based on request and they do not have permanent training schedule. The experiences of providing training by these institutions, their specialization in different areas, and the distribution of these institutions in different regions of the country suggests immense potential contribution of these stake holders in various CPD activities. Types of trainings provided by some of the respondent institutes are shown in Table 6.

TABLE 6. Experiences of providing various animal health related trainings by different stakeholders

Name of Institution	Type of training Provided	Curriculum exist?	How long?	Frequency
Ministry of Agriculture	Meat inspection, food safety	No	2 days-6 months	On demand
Veterinary Drug and Feed Administration and Control Authority	Rational Use of Veterinary drugs and vaccines and Guide to good handling of veterinary pharmaceuticals	Yes	2-3 days	2-10 times/year
National Animal Health Diagnostic and Investigation Center	Laboratory diagnostic techniques	No	1-3 weeks	depending on the availability of budget AND demand
National Veterinary Institute	Poultry farm Biosecurity and vaccine management, hands on training on bacteriological and serological techniques and molecular biology techniques	No	1 day-2 weeks	On demand
National Institute for control & eradication of Tsetse fly &Trypanosomosis	Disease control and Data management in Tryps and Tsetse control	NO	5-7 days	bi-annually
Donkey Sanctuary Ethiopia	Equine Health and Welfare	No	1week-4 weeks	Based on demand
International Livestock Research Institute	Participatory epidemiology and gender; Community conversation, Food safety, Risk analysis	Not for all	3 days - 2weeks	bi-annualy
Brooke Ethiopia	Equine medicine , Animal health monitoring frame work tool	No	2-5 days	Based on request
CARE Ethiopia	Community Animal Health Workers, Livestock Emergency Guidelines & Standards	No	2 weeks	Based on request
Ethiopian Veterinary Association	Antimicrobial resistance and zoonotic diseases	Yes	2 days	Once/ year
Oromia Livestock Resource	Veterinary clinical work and Veterinary public health	No	1 month-3 months	Not specified

Development Agency				
College of Veterinary Medicine and Agriculture, AAU	Meet hygiene, anatomy and physiology, parasitology, pathology, microbiology, Animal welfare, antemortem and postmortem inspection for meat inspectors	Yes	6 months	On demand
Haramaya University	Meat inspection, Dairy health management, use of veterinary drugs and biologicals, Application of GIS and remote sensing in vet medicine, Ovariohysterectomy	No	Not indicated	No indicated
Jimma University School of Veterinary Medicine	Zoonotic diseases: Anthrax and brucellosis	Yes	2 days	On demand
University of Gondar	Canine rabies control, animal welfare, Risk analysis and International Health, Epidemiology of emerging zoonoses	No	Not indicated	On demand

5.4 CPD Institutionalization and administration

This framework envisages that the Government of Ethiopia shall establish a veterinary statutory body (VSB) to regulate the quality of the veterinary services, including the competency of VPs and VPPs working in the public and private sectors. The VSB shall register VPs and VPPs, grant professional license, and renew registry/license, regulate the quality of CPD system, provide accreditation for institutions/firms that shall accredit CPD courses and providers, prepare and avail list of CPD accredited activities for VPs and VPPs and assess/evaluate non-structured CPD activities for compliance. However, until the establishment of the VSB, we propose the establishment of a CPD unit. ideally under the directorate for VS. The unit is expected to work in collaboration with other relevant institutions mainly, with the EVA. The Unit will form and host the five member CPD-CC, which has power, and influence. The CPD-CC could have members from major stakeholders such as the Ministry, Professional Associations for VPs and VPPs, Training institutions, National Laboratories, Regional VS and Development partners). The CPD unit will provide the coordination committee with all the administrative support that it needs to carry out its work effectively and efficiently. Moreover, it will furnish the coordination

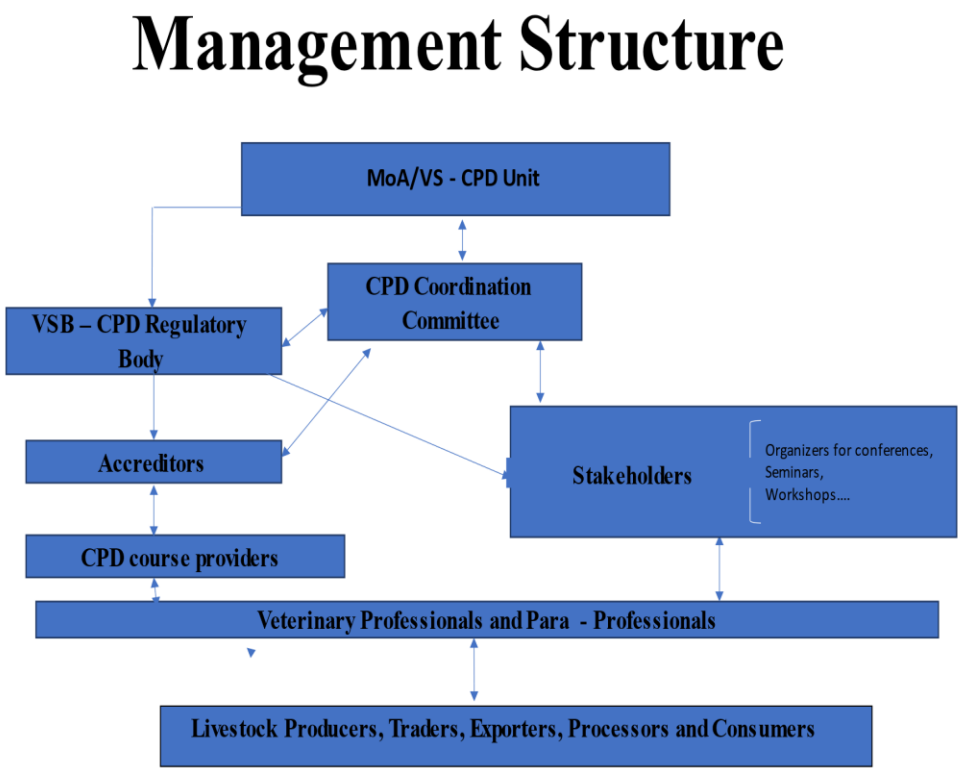
committee with the financial resources to effectively discharge all its activities that lie within the scope of its terms of reference.

The CPD-CC shall have the following roles and responsibilities:

- Develop implementation guidelines (that govern CPD implementation). It would include procedure/criteria for the accreditation of CPD activities and providers, monitoring and evaluation checklists, different application forms, etc.
- Assess and accredit the application of CPD providers
- Monitor and evaluate CPD program implementation
- Monitor the management and accounting of CPD program implementation funds by the EVA CPD Management Team
- Update the CPD guidelines as deemed necessary

The CPD-CC could establish sub-committee as deemed necessary to discharge fully its function. We propose the CPD structure as indicated in FIGURE 1.

FIGURE 1: Proposed institutional structure showing possible links within the CPD system



5.5 Potential challenges in the implementation of CPD program in Ethiopia

- **Institutionalization and operationalization of the CPD system**: in the apparent absence of VSB with the requisite powers to regulate the veterinary profession and set standards, strong commitment is required from the Ministry. Currently the absence of legislative enabling environment, is worrisome towards having the desired VSB in short time looking the recommendation made by the PVS gap analysis mission 10 years ago.
- Unless complying with a certain Credit point is put as a requirement for say promotion , further training and the like, VPs and VPPs might not get motivated to participate
- Funding of CPD programs remains a major challenge, in terms of maintenance of the program sustainability. None of the respondent institutes in theour questionnaire survey showed interest to provide funding for CPD activities*
- Delivery methods: unless IT based system is also effectively used, the traditional face-to-face system will be costly and limit several from taking part.
- Issues such as location, time, cost, and structure sometimes prevent individuals from completing the required number of CPD study hours per year
- A lack of workplace (employer) support and a lack of CPD activities at a suitable time, location or level
- Limited involvements of stakeholders may minimize their contribution in CPD activities
- Adoption of a “one size fits all” rather than a “nuanced” approach that is flexible, market responsive, inclusive, innovative and open to top-down and bottom-up alternative options.

*Institutions / Organisations are likely to be interested / willing to develop / review update existing CPD course material that relates to their area of interest / service provided and then if this can be made available on-line with a simple self-assessment system to monitor understanding / adoption then costs, if any, can be minimal and affordable by recipients.

More cost intensive CPD should be structured to career advancement and improved capability of private practitioners leading to better reputation and income and therefore payment of the higher charges will be motivated with opportunity for donor / government funding of scholarships for selected areas of specialism in the donor / national interest.

6. CPD curriculum development for structured CPD:

6.1 Introduction

CPD is important in professional life due to the fact that graduates with entry-level skills need to improve their knowledge, skills and attitude over time so as to provide sustained quality services. Information available from new research findings through time should be included into existing knowledge and transferred to previously trained professionals. The CPDs should provide chance for constant professional progress through provision of latest information in a given profession and new skills and attitudes required to continue actively in the professional service and to improve their work performance. Structured and un-structured CPD activities like short courses, trainings, seminars and related professional activities are an acceptable strategy in updating VP and VPP on new developments in their fields - including the new demands resulting from rationalizing delivery of VS and consequent demands on private and public players. It is useful for imparting professionals with necessary competencies in terms of knowledge and skills for better performance.

Comprehensive CPD curricula for veterinary profession targets enhancing competences of animal health workers in the delivery of animal health services. The current CPD curriculum is an initiative of the EVA with an intention to strengthen knowledge, skills and attitude of animal health workforce. Previously, EVA commissioned CPD need assessment (EVA, 2019; 2020), which came up with the different subject areas based on gaps that were identified from practitioners and veterinary service users. In the process the identified subject areas were clustered in to thematic areas based on the convenience and relatedness of the topics.

Accordingly, seven core courses that are of high relevance in the veterinary system are identified to be included in CPD curriculum development. Each core courses are anticipated to focus on contents that are highly applicable to the day-to-day practice of VPs and VPPs such as Hazard analysis and critical control points (HACCP), meat inspection and hygiene, animal health management, specific health problems related to intensification such as mastitis and pregnancy diagnosis, disease investigation (field, and laboratory), basic principles in the aspect of disease prevention and control including biosecurity practices. Additional areas such as Animal welfare Research ethics and One Health were also included based on current international demand in these areas.

Structured CPD training modules will be expected to be developed and provided by accredited CPD providers following the same format as the developed curricula outlined in Annex 1. These curricula are not exhaustive and should be subject to review and updating through time.

6.2 Standard format for a CPD Training module.

1. Course Title
2. Course code [Allocated by CPD CC after accreditation and registration]
3. Credit Points
4. Target trainees
5. Course
    a. Description
    b. Duration
    c. Objectives
    d. Learning Outcomes
    e. Content
    f. Required reading materials

6.3 Modes of Instruction

The types of learning and teaching activities could be any of the following depending on the availability of resources, and suitability for the trainees and the CPD provider. The CPD provider should develop the training module containing all the required contents and get approval by the CPD CC. The mode of instruction could be one or different combinations of the following:

- Lecture: face to face or online
- Seminar presentation by provider and attendance by trainees
- Practical exercise
- Collaborative studies
- Guided personal study
- Independent study
- Placement.

6.4. CPD curriculum implementation and evaluation

Once the CPD training is initiated, the CPD provider in consultation with the CPD-CC develop evaluation form to be filled by trainees after completion of the course for further improvement of the content and method of delivery of the training. In addition, the impact of the delivered CPD training should be assessed.

7. Conclusions and recommendations

7.1 Conclusions

In conclusion, CPD represents an effective vehicle for knowledge transfer. A holistic view of CPD can lead to more effective CPD programs and help address the need of wider beneficiaries both VP and VPPs. Much attention should be paid to the daunting challenge of sustainability.

Apart from learning materials – a key resource in any CPD programme is subject matter specialists [SMS] pedagogically capable and technically competent to deliver updated, and comprehensive teaching / mentoring in their field of expertise. The ET-CPD programme should therefore consider adopting a twin track approach:
Track one - CPD aimed at raising baseline competencies and quality of livestock services provided by all VPs, VPPs and CAHWs
Track two - CPD aimed at creating a cadre of SMS encompassing the range of expertise required to provide specialist services, training and mentoring. In the latter instance consideration should be given to creating formal CPD frameworks that offer CPD credit hours towards postgraduate certificates and/or diplomas, setting the individual learner on a pathway towards recognition and qualification as a specialist in a chosen area of the veterinary domain

7.2 Recommendations:

- The absence of VSB in Ethiopia is an immediate challenge to implement CPD in an efficient and regulated manner. An alternative is to organize an interim CPD unit under the Ministry of Agriculture.
- The tasks of developing CPD framework and related documentation to be undertaken by a dedicated national taskforce/working group under the overall guidance of the CPD unit.
- Ensure that all relevant VPs and VPPs (public and private) have awareness of and access to a systematic continuing professional development programme.
- CPD courses or activities development should also consider assessment on evaluation of current curriculum (of the different veterinary schools) and identify gaps as well.
- Consider commencing with a voluntary incentive driven CPD scheme that transitions, as needs dictate, into a compulsory scheme with set CPD points targets
- It would be prudent to connect CPD to career development pathways in Ethiopia where field staff are required to accumulate Credit points through the CPD program towards their promotion/ enhanced income earning and re-licensing (when available). This

opens the door for the ET-CPD programme progressing with time and experience from a voluntary to a mandatory requirement for the VS.

- Sustainability: CPD requires commitment and resources from the employee, supportive agencies such as professional bodies and NGOs. Ensure continuous funding to the implementation of CPD program. It is important to emphasize that all CPD activities are provided free for the moment.
- Establishment of educational resources exchange / partnerships with similar CPD providing bodies and institutions locally, regionally & internationally.
- It would be prudent to identify, recognize, and register certain conferences, workshops and other similar events being or to be conducted within Ethiopia if the participants who would attend them are to claim CPD credits
- Creation of formal CPD frameworks that offer CPD credit hours towards postgraduate certificates and/or diplomas, setting the individual learner on a pathway /stepping-stone towards recognition and qualification as a specialist in a chosen area of the veterinary domain

8. References

1 Continuing professional development for veterinarians First published:10 March 2008 https://doi.org/10.1111/j.1751-0813.2005.tb11647.x

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3 OIE, 2013. OIE Tools for the evaluation of performance of veterinary Service. OIE PVS tool

4 KVD-CPD http://kenyavetboard.or.ke/continuous-professional-development-cpd/ accessed on 28 July 2020

5 SAVC; https://www.savc.org.za/about-the-council/about-us# accessed on 27 July 2020

6 SAVC-CPD https://www.savc.org.za/pdf_docs/CPD-GG38783-gon390.15%20May%202015.pdf on 28 July 2020

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8 Federal Ministry of Health. Continuing Professional Development (CPD) Guideline for Health Professionals in Ethiopia. October 2018. p.70.

9 Federal Ministry of Health. Directive on Continuing Professional Development (CPD) for Health Professionals in Ethiopia. November 2018. p.22.

10 Ministry of Livestock and Fisheries. Continuing professional development plan for veterinary professionals and paraprofessionals in The United Republic of Tanzania. July 2018. p.24.

11 World Organization for Animal Health PVS Pathways, 2018. OIE Competency Guidelines for Veterinary Paraprofessionals. p.36. DOI: http://dx.doi.org/10.20506/PVS-2758

12 South African regulations for continued professional development of veterinary and para-veterinary professions Act No. 19 of 1982. No. R. 390, 15 May 2015.

13 Kenya Veterinary Board, Guidelines for Accreditation of Continuous Professional Development (CPD) providers and registration of CPD activities and / or programs for veterinary surgeons and veterinary para-professionals in Kenya, 2013. p.14. (Revised in July, 2019).

14 Tanzanian Ministry of livestock and fisheries development, Guidelines for monitoring continuous professional development for veterinarians and veterinary Paraprofessionals, April 2014.

15 Ethiopian Veterinary Association (EVA), AReport on Training Needs Assessment of Veterinary Service Providers in Ethiopia, December 2019.

Ethiopian Veterinary Association (EVA), A Report on Need Assessment to Identify Skill Gaps of Veterinary Professionals and Para- Professionals in Ethiopia, May 2020.

Annex 1. Model CPD Curricula

A. Veterinary Public health
B. Disease investigation, prevention and control
C. Clinical practices and health management
D. Veterinary laboratory techniques
E. Animal welfare
F. Ethics of research involving animals
G. One Health Concept: understanding and application

A. Veterinary Public health

1. CPD course Code: VPH-CPD101

2. Credit points: 20 points

3. Eligibility of trainees: Field veterinarians, Laboratory staffs including veterinarians and Laboratory technologists

4. Course Description:

Veterinary Public Health (VPH) is the contributions to the physical, mental and social wellbeing of humans through an understanding and application of veterinary science. It is the component of public health activities devoted to the application of professional veterinary skills, knowledge, and resources to the protection and improvement of human health. VPH deals with prevention and control of zoonotic diseases and safety of food of animal origin.

5. Course duration: 20 hours

6. Course objectives

- To understand the public health aspects of zoonotic diseases
- To describe the major zoonotic bacterial, viral and parasitic diseases
- To understand the major means of transmission of zoonotic pathogens
- To understand the control methods for major zoonotic pathogens
- To be able to explain how to protect the public from exposure to zoonotic pathogens
- To utilize epidemiological principles in control and prevention of zoonotic and food of animal origin associated diseases
- To demonstrate appropriate procedures and steps of protecting oneself from the risk of occupation associated zoonotic pathogens
- To improve skills of meat inspection so as to ensure that meat from animals is free from disease, wholesome and of no risk to human health

7. Learning outcomes

This course will provide the trainees with an overview of the role of veterinary professionals in protection of public health. The trainees will get the chance to explore the major zoonotic diseases of public health importance in Ethiopia, their route of transmission, and how to protect the public from these hazards.

By the end of this CPD course the trainee should be able to:

- Discuss the public health consequences of major zoonotic pathogens and their mean of transmission
- Explain the important epidemiological features of zoonotic diseases and relate to control strategies
- Outline the various stages of food animal production and critical stages at which risks to public health may occur
- Be able to give informed criticism of scientific publications that relate to issues of veterinary public health.
- Be able to protect oneself from occupation associated zoonotic transmission of diseases
- Demonstrate principles and techniques of ante-mortem and post-mortem meat inspection

8. Course Content

Zoonoses: Public health impact, epidemiology, prevention and control (12hrs)

- Endemic Zoonoses: *Salmonella, Campylobacter, Listeria, E.coli,* toxoplasmosis, Helminth associated zoonoses and others.
- Emerging and re-emerging zoonoses: Avian influenza, SARS corona viruses
- Neglected zoonoses: Brucellosis, rabies, cysticercosis/taeniasis, echinococcosis/hydatidosis, tuberculosis, anthrax, Leishmaniasis.
- Basic concepts in epidemiology of zoonotic pathogens
- Surveillance
- Diagnosis,
- Early identification of new and emerging infections
- Application of principles of Hazard Analysis Critical Control Point (HACCP)
- Aspects of occupational health.

Meat inspection (8hrs)

- Principles and procedures of ante mortem inspection
- Principles and procedures of post mortem inspection

- Guidelines for minimum postmortem inspection requirements

9. Modes of instruction

The types of learning and teaching activities could be any of the following depending on the availability of resources, and suitability for the trainees and the CPD provider. The CPD provider should develop the training module containing all the required contents and get approval by the CPD CC. The mode of instruction could be one or different combinations of the following:

- Lecture: face to face or online
- Seminar presentation by provider and attendance by trainees
- Practical exercise
- Collaborative studies
- Guided personal study
- Independent study
- Placement.
- For the meat inspection section at least 5hrs should be practical demonstration at established slaughter house.

10. CPD curriculum implementation and evaluation

Once the CPD training is initiated, the CPDprovider in consultation with the CPD-CC develop evaluation form to be filled by trainees after completion of the course for further improvement of the content and method of delivery of the training. In addition, impact of the delivered CPD training should be assessed.

12. Required reading materials

- Herenda, H., Chambers, P.G. Ettriqui, A., Senevirantna, P., da Silva, T.J.P. 2000.Manual on meat inspection for developing countries. FAO Animal Production and Health Paper 119
- Sherikar A., Thapliyal, D.C.2011. Textbook Of Elements Of Veterinary Public Health. Published by Indian Council Agricultural, New Delhi.

B. Animal disease investigation, prevention and control

1. CPD course Code: DIPC-CPD 102
2. Credit points: 30.
3. Eligibility of trainees
   Field veterinarians, Laboratory staffs including veterinarians and Laboratory technologists
4. Course description:

This course attempts to equip VPs and VPPs on the current knowledge and skills in standard animal disease investigation procedures (end-to-end), Outbreak investigation, Veterinary Laboratory diagnostics, and Animal Disease Prevention and Control, Biosecurity (main focus on intensive farms). The areas covered in this curriculum are very wide and depending on the required level of depth of training, several independent short term training courses can be developed.

5. Course duration: 30 hours

6. Course objectives

- To understand the basic principles of disease diagnosis and outbreak investigation
- To describe the major steps followed in outbreak investigation
- To be familiar with the type of samples collected for diagnosis of various viral, bacterial and parasitic diseases of animals
- To be familiar with the major laboratory diagnostic tests available for diagnosis of selected diseases and have hands on practice on these.
- To describe the required data and samples to be collected for diseases investigation
- To describe basic procedures and methods of infectious diseases prevention and control
- To explain and demonstrate appropriate biosecurity measures for management of infectious diseases

7. Learning outcomes

This course will provide the participants with basic knowledge of disease investigation, diagnosis, prevention and control of major animal diseases in Ethiopia.

By the end of this CPD course the trainee should be able to:

- Discuss basic principles of disease diagnosis and outbreak investigation
- Explain the major steps followed in outbreak investigation
- To be acquainted with and be able to practice the types of samples collected for diagnosis of major diseases
- Able to demonstrate at least common laboratory diagnostic techniques of disease diagnosis
- Able to explain the methods of control and prevention for common infectious diseases of animals
- Discuss the required biosecurity measures to control and decrease spread of infectious pathogens

8. Course content

Standard animal disease investigation procedures (15 hrs)

- Basic clinical diagnostic procedures
- Typical clinical signs of major farm animal diseases (FMD, LSD, PPR, sheep and goat pox, Anthrax, pasteurellosis, blackleg, Trypanosomiasis, babesiosis, helminthiasis, AHS, etc
- Steps to follow in outbreak investigation
- Type of samples collected and sterile sample collection methods
  - Handling and transport of samples for laboratory diagnosis
  - Need of transport media, cold chain, and packaging principles

Animal Disease Prevention and Control (15 hrs)

  - General infectious disease prevention and control measures
    - Treatment, isolation of sick animals, prevention of environmental contamination, control of intermediate host, vectors and reservoirs, quarantine, elimination of carriers etc
  - Vaccination
    - Different types of vaccines (Killed, Live, etc)
    - Vaccine managements,
    - Proper vaccination principle
    - When to vaccinate for which disease (vaccination calendar) etc
  - Role of Biosecurity in disease prevention and control
    - National level biosecurity practices
    - Farm level biosecurity practices
    - Different biosecurity methods
    - Common disinfectants and their use

9. Modes of instruction

The types of learning and teaching activities could be any of the following depending on the availability of resources and suitability for the trainees and the CPD provider. The CPD training provider should develop the training module containing all the required contents and get approval by CPD CC. The mode of instruction could be one or different combinations of the following

  - Lecture: face to face or online
  - Seminar presentation by provider and attendance by trainees
  - Practical exercise

- Collaborative studies
- Guided personal study
- Independent study

Training related to laboratory diagnostic techniques should involve practical section in established and recognized laboratory. It is also possible to arrange practical training separately for specific technique.

10. CPD curriculum implementation and evaluation

Once the CPD training is initiated, the training provider and the appropriate regulatory should develop evaluation form to be filled by trainees after completion of the course for further improvement of the content and method of delivery of the training. In addition, impact of the delivered CPD training should be assessed.

11. Required reading materials

- Guidelines for Animal Disease Control, World Organization for Animal Health (OIE) , 2014.
- Manual of Diagnostic Tests and Vaccines for Terrestrial Animals 2018, Volume 1, eighth edition, URL:https://www.oie.int/standard-setting/terrestrial-manual/
- Livestock diseases outbreak investigation guidelines, MoA, 2010
- Sample submission guide, NAHDIC, 2020

Clinical practices and health management

1. CPD course Code: CPHM-CPD 103

2. Credit points: 30

3. Eligibility of trainees

- Field veterinarians, veterinary para-professionals

4. Course Description:

This course attempts to equip VP and VPP on the current knowledge and skills on how to make syndrome based clinical diagnostics and management of major livestock diseases, acquaint professionals with typical clinical and post-mortem findings of contagious infectious diseases capable of causing significant economic and public health consequences. The major diseases considered in this course include FMD, CBPP, CCPP, bovine tuberculosis, PPR, trypanosomiasis, sheep and goat pox, lumpy skin disease, brucellosis, anthrax, pasteurellosis, black leg,

brucellosis, helminthiasis and others as appropriate based on the agroecology of the place where the trainees are coming. It will also deal with farm animal health management including pregnancy diagnosis and management of mastitis cases in dairy farms.

5. Course duration: 30 hours (may vary depending on the number of diseases covered)

6. Course objectives

- To understand the basic principles of syndrome based clinical diagnosis for major livestock diseases
- To describe major steps to be followed to diagnose diseases
- To be familiar with specific clinical symptoms associated with major livestock diseases
- To be familiar with the type of samples collected for diagnosis of various viral, bacterial and parasitic diseases of animals
- To familiarize trainees with farm health management practices – inclusive of biosecurity, youngstock management, disease prevention, etc to reduce disease incidence and improve productivity
- To familiarize trainees on prudent use of antimicrobials for treatment and prevention of infectious pathogens
- To improve awareness on mastitis, reproductive problems and metabolic disease management and control in dairy cattle
- To improve skill of pregnancy diagnosis

7. Learning outcomes

This course will equip trainees with knowledge and skills on clinical diagnostics and management of major livestock diseases, typical clinical and post-mortem findings of contagious infectious diseases capable of causing significant economic and public health consequences Trainees will also acquire knowledge in farm animal health management including pregnancy diagnosis and management of mastitis cases in dairy farms.

By the end of this CPD course the trainee should be able to:

- Discuss basic principles of clinical diagnosis and postmortem investigation
- Explain major typical clinical signs of major livestock diseases
- Be able to collect appropriate samples for laboratory diagnosis of these diseases

- Explain typical postmortem lesions associated with at least some of the major livestock diseases
- Able to explain the methods of control and prevention for common infectious diseases of animals
- Be able to conduct diagnosis of mastitis and able to treat sick animals and advise on methods for prevention and control
- Be able to advise owners on prudent use of antimicrobials for control of infectious diseases
- Demonstrate competent pregnancy diagnosis

8. Course content

- Basic approaches in clinical diagnosis and management of livestock diseases (20 hrs)
- Syndrome based clinical diagnostic procedures
- Typical clinical signs of major farm animal diseases (FMD, LSD, PPR, sheep and goat pox, anthrax, pasteurellosis, blackleg, Trypanosomiasis, babesiosis, helminthiasis, AHS,
- Reporting of notifiable diseases
- Type of samples collected for laboratory diagnosis of major farm animal diseases
- Management of specific animal diseases
- chemotherapy of infectious diseases
    - Unwanted consequences of irrational use of drugs
    - Residues in animal products
    - Resistance to antimicrobials and anthelmintics
    - Rational use of antimicrobials and anthelmintics in veterinary medicine
    - Drug withdrawal period
- Basic farm animal health management practices (6 hrs)
    - Hygienic practices
    - Biosecurity
    - Use of disinfectants and antiseptics,
    - Isolation, quarantine etc
- Management and prevention of mastitis (2 hrs)
- Pregnancy diagnosis (2 hrs)

9. Modes of instruction

The types of learning and teaching activities could be any of the following depending on the availability of resources and suitability for the trainees and the CPD provider. The CPD training provider should develop the training module containing all the required contents and get

approval by CPD accreditor. The mode of instruction could be one or different combinations of the following

- Lecture: face to face or online
- Seminar presentation by provider and attendance by trainees
- Practical exercise
- Collaborative studies
- Guided personal study
- Independent study

Training related to pregnancy diagnostic techniques should involve practical section where the trainees can be exposed to pregnant animals. It is also possible to arrange practical training separately for specific technique.

10. CPD curriculum implementation and evaluation

Once the CPD training is initiated, the training provider and the appropriate regulatory body should develop evaluation form to be filled by trainees after completion of the course for further improvement of the content and method of delivery of the training. In addition, impact of the delivered CPD training should be assessed.

11. List of reading materials

- Brown C. 2013. Afield manual of animal disease by syndromes: with emphasis on transboundary animal diseases, Boca Publications Group Inc., 700S. Federal Hwy, Suite 200 Boca Raton, FL, 33432
- Fricke PM, Ricci A, Giordano JO, Carvalho PD. 2016. Methods for and Implementation of Pregnancy Diagnosis in Dairy Cows. *Vet Clin North Am Food AnimPract.*32(1):165-80.
- Gomes F., Henriques M. 2016. Control of Bovine Mastitis: Old and Recent Therapeutic Approaches. *Curr. Microbiol.* 72(4):377-82.

D. Veterinary Laboratory Techniques

1. CPD course Code:
2. Credit point: 25
3. Eligibility of trainees

Veterinarians, veterinary assistants, Laboratory staffs including veterinarians and Laboratory technologists

4. Course description:

The courses teaches the fundamental theory and practice in a variety of laboratory techniques, and equip VPs and VPPs on the current knowledge and skills in Veterinary laboratory Techniques, including, but not limited to, bacterial identification; serological techniques such as ELISA, CFT etc.; parasitological identifications; and molecular techniques.

5. Course duration: 15 hours

6. Course objectives

- To understand basic laboratory equipment, clothing and safety procedures
- To understand the basic principles of common laboratory testing methods in parasitology, bacteriology, virology and serology.
- To understand the major steps followed on common laboratory techniquesin parasitology, bacteriology, virology and serology.
- To be familiar with the sample preparation, processing, and testing for selected diseases and have hands on practice on these.
- To equip participants with the knowledge and skills crucial in the analysis of different specimens in the laboratory for the diagnosis of animal diseases.

7. Learning outcomes

This course will provide the participants with basic knowledge and skills of laboratory techniques that helps to identify disease causing agents.

Up on completion of this CPD course the participants should be able to:

- Utilize common laboratory equipment, including the compound microscope, centrifuge, incubator and other common laboratory instruments.
- Value and practice safety in the laboratory.
- Perform diagnostic tests routinely used in veterinary parasitology and general bacteriology.
- Complete laboratory submission forms and be familiar with sample preparation for submission.
- Discuss basic principles of common laboratory techniques (such as parasitology, bacteriology, clinical pathology, and serology)
- Describe the major steps followed in common laboratory test methods
- To be able to conduct common diagnostic tests in parasitology, bacteriology, clinical pathology, and serology.
- To be able to understand and interpret test results for diagnostic tests in parasitology, bacteriology, and clinical pathology.

- Describe serology principles, accurate performance of common serological assay procedures and correct interpretation of test results, to make appropriate and effective on-the-job professional decisions.
- Perform various types of ELISA techniques, interpret results and report findings according to laboratory protocol.
- Perform CFT, interpret results and report findings according to laboratory protocol.
- Perform HA/HIA assays, interpret results and report findings according to laboratory protocol.
- To be able to describe common molecular techniques particularly polymerase chain reaction (PCR) techniques that are relevant to animal disease diagnostics.

8. Course content

The major topics in the course include the following:

Laboratory basics:

- Function, operating procedures, and care of major equipment
- The need for calibrating laboratory instruments
- Familiarization of laboratory setup, working space, and persuasions.
- Principles of biosafety and biosecurity in veterinary laboratories.
- Laboratory clothing, cleaning and waste disposals.
- Accurate record keeping and completion of laboratory requisition form

Parasitology:

- Floatation and sedimentation for parasite identification techniques
- Identification ectoparasites of veterinary importance
- Gross and microscopic identification of helminth parasites

Clinical Pathology (techniques relevant to identify protozoal diseases):

- Methodology of sample collection, separation, and preparation for analysis
- Whole and deferential blood count
- Buffy coat analysis and hemoglobin testing
- Packed cell volume determination
- Preparation of blood films, including staining
- Identification of major blood protozoal parasites, including trypanosome spp, babesia spp, and theleria spp.

Histopathology

- Tissue sample collection and preservation methods
- Tissue processing, sectioning, and staining
- Demonstration of selected slides for major animal diseases
- Introduction on advanced histopathological techniques (immunohistochemistry and in situ-hybridization)

Bacteriology

- Bacterial and fungal growth patterns, morphology, and testing techniques
- Culture media preparation, quality control, and storage
- Gross colony and microscopic organism evaluation, with coverage of staining techniques
- Biochemical analysis
- Common tests utilized in detecting antimicrobial resistance
- Precaution in handling and manipulation of pathogens with zoonotic potential such as Anthrax

Virology

- Principles of cell culture and its role in disease diagnosis
- Facilities required in cell culture
- Type of samples and sampling procedures for major animal diseases: FMD, IBR, AHS, LSD, PPR, rabies, and viral poultry diseases
- Transport of viral samples (field/isolates), including the need of transport media, cold chain, and packaging principles

Serology

- Equipment required for serological testing and how to work with this equipment.
- Type and collection of serological samples
- Packaging, transporting, and storage of serological samples
- Type of serological tests: various ELISA techniques **(**indirect, direct, sandwich, and competitive), CFT, HA/HI)
- Principle of ELISA techniques
- Principles of CFT
- Principle of HA/HI assays

Molecular techniques

- Equipment required for PCR test and how to work with this equipment.
- Type of sample required for major animal diseases (FMD, IBR, PPR, AHS, NCD, AI, Marek's)
- Packaging, transporting, and storage of samples for molecular testing
- Sample processing, genome extraction, storage of PCR samples
- Principles of PCR tests
- Current update on available molecular techniques

9. Modes of instruction

The types of learning and teaching activities could be any of the following depending on the availability of resources and suitability for the participants and the CPD provider. The CPD training provider should develop the training module containing all the required contents and get approval by CPD CC. The mode of instruction could be one or different combinations of the following

- Lecture: face to face or online
- Seminar presentation by provider and attendance by participants
- Practical exercise
- Collaborative studies
- Guided personal study
- Independent study

This course should involve demonstration and practice in the established and recognized laboratory. It is also possible to arrange separate practical trainings for specific technique.

10. CPD curriculum implementation and evaluation

Once the CPD training is initiated, the training provider and the appropriate regulatory should develop evaluation form to be filled by participants after completion of the course for further improvement of the content and method of delivery of the training. In addition impact of the delivered CPD training should be assessed.

11. Required reading materials

- Manual of Diagnostic Tests and Vaccines for Terrestrial Animals 2018, Volume 1, eighth edition, URL:https://www.oie.int/standard-setting/terrestrial-manual/
- Ananthanarayan, R., Pnike, C.K.J., 2006. Text book of microbiology. Orient Longman, 7th Ed.
- Taylor, M.A., Coop, R.L., Wall, R.L., 2007. Veterinary Parasitology. Blackwell publishing, 3rd Ed.

E. Animal welfare

1. CPD course Code: AW-CPD 104
2. Credit points: 10
3. Eligibility of trainees

Field veterinarians, para-veterinary professionals, Laboratory technologists, animal production professionals, animal nutritionists, veterinary researchers

4. Course Description:

Animal welfare is a complex and multi-faceted subject with scientific, ethical, economic, cultural, social, religious and political dimensions. Animal welfare is getting growing interest and is one of the priorities of OIE, understanding basic principles of animal welfare and improving knowledge, attitudes and practices professionals to the level of international standard is required. This course attempts to equip VP, VPP and animal production professionals on the principles and practices of animal welfare. The course will cover basic components of animal right such as freedom from hunger, fear, distress, physical discomfort, pain, injury and freedom to express normal patterns of behavior.

5. Course duration: 10 hours
6. Course objectives
    - To understand the guiding principles of animal welfare
    - To understand the basic rights of animals
    - To understand different aspects of animal welfare
    - To be familiar with general principles of animal welfare in livestock production systems, transportation, slaughter etc.
7. Learning outcomes

This course will enable trainees to cope up with the current international standards on animal welfare and assist them to know what is expected from them in contributing to physical and mental state of animals in relation to the conditions in which animals live and die. Trainees will acquire what they should do in their daily professional activities with respect to animal welfare.

By the end of this CPD course the trainee should be able to:

- Discuss basic principles of animal welfare
- Be able to describe the relationship of animal health and animal welfare

- Describe the five major rights of animals
- Be able to explain the five freedoms of animals
- Explain major animal welfare requirements of animal transport, slaughter and killing
- Understand and make use of international guiding principles in use of animals for research
- Explain the available methods of managing pain in animals where painful procedures cannot be avoided

8. Course content
    - Introduction to the principles of animal welfare
    - Animal health and welfare
    - Why animal welfare?
    - Major freedoms of animals
    - Welfare practices in production and handling of dairy cattle, beef cattle, poultry
    - Welfare of working equids
    - Animal welfare requirements during transportation
    - Animal welfare requirements during slaughtering
    - Humane killing of animals
    - Requirements for use of animals in research (principles of 3Rs)
    - Managing pain in animals where painful procedures cannot be avoided

9. Modes of instruction

The types of learning and teaching activities could be any of the following depending on the availability of resources and suitability for the trainees and the CPD provider. The CPD training provider should develop the training module containing all the required contents and get approval by CPD accreditor. The mode of instruction could be one or different combinations of the following

- Lecture: face to face or online
- Seminar presentation by provider and attendance by trainees
- Practical exercise
- Collaborative studies
- Guided personal study
- Independent study

10. CPD curriculum implementation and evaluation

Once the CPD training is initiated, the training provider and the appropriate regulatory body should develop evaluation form to be filled by trainees after completion of the course for further improvement of the content and method of delivery of the training. In addition impact of the delivered CPD training should be assessed.

11. List of reading materials

- OIE. 2019. World Organization for Animal Health, Terrestrial Animal Health Code, Animal welfare section. https://www.oie.int/en/standard-setting/terrestrial-code/access-online/?htmfile=titre_1.7.htm
- Appleby MC, Olsson, IAS, Galindo F. 2018. Animal Welfare, CABI, 3rd ed,

F. Ethics of research involving animals

1. CPD course Code: ARE-CPD 105
2. Credit points: 10
3. Eligibility of trainees

Field veterinarians, para-veterinary professionals, Laboratory technologists, animal production professionals, animal nutritionists

4. Course Description:

In most of the developed countries, the use of laboratory animals is governed by regulations relating to the use of animals in research which emanates from national animal welfare act. Although, Ethiopia as a country does not have National Guidelines for Animal Welfare and the Use of Animals in Research, Ministry of Science and Higher Education together with other institutions is currently developing national guideline. Once this guideline is developed and implemented, complying with the guideline will be mandatory in conducting research involving animals and violating the guidelines can lead to legal sanctions. The purpose of this course is to equip veterinary and para-veterinary professionals VP and VPP who are conducting or planning to conduct experiments on animals with a set of internationally and nationally acceptable ethical responsibility required to protect animals used for research.

5. Course duration: 10 hours

6. Course objectives
    - To increase the awareness on animal welfare

- To encourage continued discussion about research that involves animals
- To stipulate principles and considerations in balancing between harm and benefit in use of animals for research
- To create awareness on the established principles of 3Rs(replace, reduce and refine)
- To understand ethical issues associated with the use of genetically modified animals in research
- To enable trainees on the methods of reducing pain to animals when conducting painful procedures
- To create awareness on principles of regulating the ethical use of animals for research

7. Learning outcomes

This course will enable trainees to cope up with the current international standards on ethics associated with use of animals for research and assist them to know what is expected from them to comply with the regulations when conducting research involving animals and to take responsibility of caring for the right of animals.

By the end of this CPD course the trainee should be able to:

- Discuss basic principles of animal welfare
- Be able to discuss the benefits and harms of using animals for research
- Explains the principles of animal use in for research 3Rs (replace, reduce and refine)
- Understand and make use of international guiding principles in use of animals for research
- Explain ethical issues associated with the use of genetically modified animals in research
- Explain the available methods of managing pain in animals where painful procedures cannot be avoided.

8. Course content
    - Introduction to regulations related animal research ethics
    - Criteria for using or not using animals for research
    - Handling of animals during breeding for research and during experimentation
    - Feed, water and shelter requirements of the animals
    - Moral, legal and ethical issues in use of animals for research
    - Concept of 3Rs (Reduction, Refinement, Replacement)
    - Responsibilities of animal research ethics committee
    - Acceptable methods of euthanasia (Humane killing) of animals
    - Managing pain in animals where painful procedures cannot be avoided.

9. Modes of instruction

The types of learning and teaching activities could be any of the following depending on the availability of resources and suitability for the trainees and the CPD provider. The CPD training provider should develop the training module containing all the required contents and get approval by CPD accreditor. The mode of instruction could be one or different combinations of the following

- Lecture: face to face or online (e-learning)
- Seminar presentation by provider and attendance by trainees
- Collaborative studies
- Guided personal study
- Independent study

10. CPD curriculum implementation and evaluation

Once the CPD training is initiated, the training provider and the appropriate regulatory body should develop evaluation form to be filled by trainees after completion of the course for further improvement of the content and method of delivery of the training. In addition impact of the delivered CPD training should be assessed.

11. List of reading materials

AAALAC. 2019. International Standards for the Care and Use of Laboratory Animals, Association for the Assessment and Accreditation of Laboratory Animal Care International, https://www.kentscientific.com/blog/international-standards-for-the-care-and-use-of-laboratory-animals/

- GEUAR. 2011. Guidelines for the ethical use of animals in research and teaching, Department of Primary Industries 1 Spring Street, Melbourne 3000, https://www.vu.edu.au/sites/default/files/research/pdfs/Guidelines-animal-use-research-teaching.pdf
- OIE. 2019. World Organization for Animal Health, Terresterial Animal Health Code, Animal welfare section. https://www.oie.int/en/standard-setting/terrestrial-code/access-online/?htmfile=titre_1.7.htm

G. **One Health Concept: understanding** and application

1. CPD course Code: OH-CPD 106
2. Credit points: 10
3. Eligibility of trainees

Field veterinarians, para-veterinary professionals, laboratory technologists, Environmental science professionals, Human health professionals.

4. Course Description:

One Health is an approach that recognizes the health of people is closely connected to the health of animals and our shared environment. In Ethiopia and in many other African countries, livelihoods of the people are highly dependent on livestock. There is strong cultural, social and economical connection between humans and animals in the region posing easy transmission of diseases from animals to humans affecting health, wealth and nutrition of the human population. The purpose of this course is to familiarize trainees with the current global concepts of One Health, and the need for closer cooperation between human, animal health and environmental science professionals. This course explores how One Health works in practice, bringing together different scientific perspectives.

5. Course duration: 10 hours

6. Course objectives
   - To understand the concept of one health approach and its advantages
   - To comprehend the common One Health issues from perspectives of various sectors
   - To understand principles of disease transmission dynamics between humans and animals
   - To clarify how a One Health approach works
   - To understand the major food-borne pathogens transmitted from humans to animals and how to control using One Health approach

     To elaborate the application of One Health approach in monitoring and controlling public health
7. Learning outcomes

This course will enable trainees to understand the current international views on the concept of One Health approach and its application for control of public, animal and environmental health.

The trainees should be able to understand the concepts of One Health and the need and ways of cooperation and collaboration of different professionals.

By the end of this CPD course the trainee should be able to:

- Explain the concept of One Health approach and its advantages in control of public and animal health problems
- Discuss the major food-borne pathogens transmitted from animals to humans and how to control using One Health approach
- Explain how the transmission of diseases from livestock to human and vise versa can be prevented
- Describe the common One Health issues from various perspectives
- Explain the advantages of a closer cooperation between human and animal health
- Describe the One Health approach and principles of multisectoral collaboration.
- Provide examples of how a One Health approach may be taken to address a health threat or disease event.

8. Course content
    - Introduction to the principles of One Health concept
    - Complex disease ecology: human , animal and the environment
    - He added value of One Health approach
    - Concepts of epidemiology focusing on the One Health approach
    - Integrated surveillance and control
    - Specific Zoonoses and Integrated Control
    - Transdisciplinary of One Heath and its governance

9. Modes of instruction

The types of learning and teaching activities could be any of the following depending on the availability of resources and suitability for the trainees and the CPD provider. The CPD training provider should develop the training module containing all the required contents and gets approval by recognized CPD accrediting institution. The mode of instruction could be one or different combinations of the following

- Lecture: face to face or online (e-learning)
- Seminar presentation by provider and attendance by trainees
- Collaborative studies

- Guided personal study
- Independent study

10. CPD curriculum implementation and evaluation

Once the CPD training is initiated, the training provider and the appropriate regulatory body should develop evaluation form to be filled by trainees after completion of the course for further improvement of the content and method of delivery of the training. In addition impact of the delivered CPD training should be assessed.

11. List of reading materials

- Amuguni, H., Bikaako W., Naigaga, I., Bazeyo, W.2019. Building a framework for the design and implementation of One Health curricula in East and Central Africa: OHCEAs One Health Training Modules Development Process. *One Health*, 9: 10003.
- Christian T. K.-H. Stadtländer. 2015. One Health: people, animals, and the environment. Infection Ecology and Epidemiology 5(1).
- Sharon L. Deem, Kelly E. Lane-deGraaf, Elizabeth A. Rayhel. 2019. Introduction to One Health: An Interdisciplinary Approach to Planetary Health.