

Work-Based Learning In Veterinary Education: Lesson Learned From The Internship Programme Of Chittagong Veterinary College

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Introduction

Work-based learning (WBL) is a form of learning that takes place in the workplace. In higher education, it is an arrangement whereby learners can obtain academic recognition for learning which takes place outside educational institutions. WBL can, therefore, be defined as linking learning to the work role (11). In this relation, three strands have been identified: learning for work, learning at work and learning through work (12). Although teaching and learning in higher education is about more than learning for work, such learning is an important part of the aims and objectives of educational programs. These include some quite traditional forms of professional education including veterinary medicine and sandwich courses. This type of educational practice can be related to broader themes concerning the organization of knowledge in society, the changing nature of work and career, the learning society and the implication it holds for individual workers, their employers and educational providers.

Why is WBL necessary? Any professional education including veterinary medicine has to ensure that learners are given an effective foundation for working life and are motivated to achieve their potential, to take more responsibility for their own development and continue to develop the skills they need. On-campus class room learning alone is not sufficient to develop all those qualities for which reason effective and flexible systems of training and education are sought which will achieve these ends. Work-based learning is a feature of training in many professions through which some of the aforementioned qualities can be achieved. It is but one aspect of complex and evolving relationships between higher education and work.

"Learning by doing" is one of the important traits of veterinary education all over the world. However, not one particular form of arrangement is being followed everywhere. Rather various approaches are being made by different veterinary schools to provide opportunities to their students to learn by doing.

Universities create their own working place, such as veterinary hospitals, farms etc to provide opportunities to the students. In addition to the own facilities, academic institutions develop partnership with practicing profession to use resources available to practitioners. Historically, "Seeing Practice" has been a requirement for all veterinary students of the UK since 1932 (17). The other schools to operate it are Guelph, Ontario and the Australian and New Zealand Schools (13). In Indian subcontinent, private veterinary practice is still in rudimentary stage. However, WBL learning in veterinary education in Indian Veterinary schools are made compulsory (1) and they operate this program mostly using government facilities. In Bangladesh, WBL in veterinary education is relatively a new practice and Chittagong Government veterinary College (CGVC) is the pioneer institution to initiate, develop and implement the WBL for veterinary undergraduate students. It is now a part of veterinary undergraduate curriculum in all veterinary schools in Bangladesh. In this article, attempt has been made to describe the lessons we learned during the development and implementation of the "Internship" program at CGVC.

Veterinary Education in Bangladesh

The need of introducing WBL in veterinary education in Bangladesh has evolved with the changes of veterinary education. The veterinary education in Bangladesh has undergone three major changes after the British colonial period (6). The first change was a transition from the demise of Diploma course to the emergence of Bachelor's course in veterinary medicine and animal husbandry during 1950s. Second change emerged in 1964 with the establishment of Agricultural University the main feature of which was to divide veterinary undergraduate course into two courses leading to the degree of Doctor of Veterinary Medicine and BSc in Animal Husbandry. At the beginning of 1990s a third change evolved in veterinary education three main elements of which were as follows:

- The curriculum of the DVM course was changed to include more basic and applied animal husbandry and social science knowledges.
- A new key element has been focused on learning at off-campus workplace as a contribution to undergraduate education.
- The duration of the veterinary undergraduate course has been extended to five years after higher secondary education. Earlier it was a four years course.

Aforementioned new vision in veterinary education prompted to the establishment of new veterinary colleges. Chittagong Government Veterinary College (CGVC) affiliated to the University of Chittagong was thus emerged in the map of veterinary education in 1994-95. At its inception, CGVC has made explicit what would be delivered by the veterinary undergraduate course in terms of knowledge, understanding and practical skills and concluded that it would not be possible to provide adequate preparation for graduates entering the veterinary profession by confining students to the tuition and experience available from the on-campus studies. A program was sought to involve the veterinary and animal husbandry services available outside the veterinary college to train up the veterinary undergraduate students. In that case, the major concern has been to find ways how to integrate work-based learning with academic course without damaging the existing educational base.

Development of the Internship Program for CGVC

In order to transform the new vision of veterinary education into action, an off-campus internship program was included in the veterinary undergraduate curriculum with the objective that students would get enough opportunities for hands on practice and real life exposure to the veterinary and animal husbandry activities. Although the concept of off-campus WBL is not new in the global context (4), evaluated practice per se is not prevalent in Bangladesh. Therefore, concern was being raised how to conceptualize the off-campus internship program in the context of Bangladesh. In 1999, CGVC initiated a British Council and DFID sponsored Higher Educational (HE) Link program with the Royal Veterinary College, London, the major objectives of which were as follows:

- To analyse the strength and weakness of veterinary and animal husbandry services

available in Bangladesh in relation to their suitability to undertake WBL.

- To prepare students, placement providers and faculty members to develop effective partnership for undertaking internship program.
- To ensure that quality of learning on placements would be enhanced and become effectively integrated into the degree course.
- To develop a framework of curriculum for learning, particularly through the identification of aims and objectives and including the setting of personal objectives.
- To support for learning- preparation, advice and mechanism to encourage learning
- To develop an appropriate assessment.

Many attempts at educational innovation fail, often because the complexity of the change process is underestimated and the problem and issues related to the development and implementation remain largely ignored (10). One of the crucial factors relates to the perceived practicality of innovation (8). Although veterinary profession is apparently unanimous in stressing the value and relevance of WBL, neither the academic institutions nor the practicing arms of the profession in Bangladesh have any experience in developing and implementing this type of program. In order to understand what would constitute a good practice of WBL, HE link was, therefore, a real opportunity to share the experience that the British veterinary education systems have gathered since 1932.

Strategy and Methods

To generate evidence regarding impact and to increase understanding of the effect of the program following methods and strategies were identified:

- Survey on current practices and a review of literature
- Development, piloting and modification of the program
- Implementation and evaluation of the program

The Survey Phase

The survey phase included visits to the institutions where WBL were being practiced, exchanging views with the academics and educationalists involved with WBL and collection and review of literature. UK and India were

the two countries where visits were made and in the UK, RVC, Royal College of Veterinary Surgeons (RCVS), Imperial College at Wye, Evaluation and Assessment Unit of Liverpool University, Agriculture College and the Veterinary Laboratory Agency (VLA) and Animal Health Institutes, Pirbright were visited to interact with the academics, practitioners, students and research staffs of the institutes. Similarly, four veterinary schools of India such as West Bengal University of Animal and Fisheries Sciences, Madras Veterinary College, Pondicherry Veterinary College and Bangalore Veterinary College were visited to observe the operation of internship program in each place. An in-depth discussion with senior academicians, clinicians and educationalists in two countries revealed that while the system of the operation in two countries varied to a great extent, there were agreement amongst practitioners, academics and students in both the countries that WBL experience was an essential and important component of veterinary undergraduate education.

A comparison on the time and duration of WBL experience revealed that Indian students embarked on WBL at the last semester of veterinary undergraduate course and duration of the placements were 26 weeks whereas it is extended from first year to final year over a period of 38 weeks in the UK. Review of literature revealed that similar to Indian approach, students of Ontario Veterinary College undertook an eight weeks long WBL at their final year (13). However, Melbourne Veterinary School follows a system similar to the British counterpart. Embarking on WBL at the final year of the course may have the benefit of attitude and skills of the matured students, whereas, the WBL placement distributed throughout the course period as in the UK may have the benefit to directly link their on-campus learning and vice-versa. Furthermore, duration of the placement was also variable; the longest one is in the UK veterinary schools and shortest one is in the Ontario Veterinary College, Canada. Indian Veterinary Schools are committed to spend 26 weeks on WBL and Melbourne Veterinary School spends 29 weeks. In addition, the other main focus, assessment and quality assurance of the learning. Information thus collected was analysed to relate the situation that prevails in Bangladesh. This was how an understanding and knowledge base was built among the CGVC faculty members about what will constitute a good practice of WBL for veterinary undergraduate students of CGVC. The knowledge and understanding gathered were disseminated to the students, faculty members and the probable placement providers including veterinary practitioners, farm

managers etc. through a series of workshop identifying the major issues associated with promoting off-campus learning. In this phase it was decided to make 40 weeks commitment to WBL by the CGVC and it was decided to be called it as Internship Programme.

Development Phase

Subsequent focus was on initiating the process of developing the scheme. More specifically the aims were

- To develop detailed aims and objectives for the placement to identify the learning potential and range of learning experiences associated with veterinary placements in Bangladesh.
- To prioritize the learning objectives and design a program for the decided period.
- To identify methods of assessment of students performance on placement.
- To identify College's responsibility in relation to student guidance and welfare and to develop systems and procedure to meet these needs.
- To identify the mechanisms to be adopted by the college to assure quality of the learning experience.

These aims were met in two ways:

- A series of workshops were held involving specific interest groups such as academic staffs, students and the practicing arms of the veterinary profession.
- A national survey was undertaken on current veterinary practices in Bangladesh.

Each workshop followed a similar format; with formal presentations from the program facilitators combined with group activity. Groups were set a series of tasks in relation to the aims of the development phase. A compilation of the participant responses has been done, with evidence of this provided a detailed of the program.

Outputs of the workshop

- Allocation of time for Internship program
- Internship programme
- Placement allocation
- Quality assurance
- Assessment
- Student welfare and guidance

Allocation of time for Internship program: All partners of the internship program- faculty members, students and practitioners- were of the opinion that a 40 week long internship program would be undertaken by the CGVC and it would be the integral part of the curriculum.

Internship programme development : Six aims and objectives have been developed to define the learning potential and the range of learning opportunities.

Six aims

- Clinical activity
- Animal Farm management
- Extension and development work
- Reproduction/ artificial insemination
- Meat hygiene
- Technical/scientific industry

Which areas an individual aim will cover were also identified. For example, the clinical placement will cover following objectives:

- Gaining a wide experience of a range of veterinary placement
- Linking theory with practice
- Strengthening the ability to identify and treat a range of disease
- Developing interpersonal skills
- Developing an appreciative of management and placement organization
- Gaining an insight into professional aspects of practice
- Gaining an insight into career development.

For other five broad aims, similar details objectives were identified based on which a handbook was published to be used by the intern students. That is how a framework for learning, particularly through the identification of aims and objectives, and including setting of personal objectives.

Placement allocation

The break down of the internship placement into placement type was based on feedbacks from the academic staffs and students and also on the basis of the

survey analysis of the current veterinary practices. Basic breakdown of the placements includes clinical veterinary works for 20 weeks, extension and livestock development work and farm management 7 weeks for each, artificial insemination and reproduction for 4 weeks, meat hygiene and vaccine production plant one week for each.

Quality assurance

CGVC has overall responsibility for the internship programme and will require a system to collect evidence relating to the quality of learning at each placement. The will enable the Internship Coordinator to establish a database to inform future decision regarding placements. Two approaches were identified: visits by the college faculty members and using students appraisals. The faculty visit will collect information on the presence of basic resources, the quality of professionalism of placement provider and enthusiasm to support student learning. Similarly students will be asked following four questions:

- To what extent was the practitioner responsive to the learning needs and questioning
- To what extent were opportunities given to learn by doing
- To what extent did practitioners provide feedback on student performance?
- To what extent did the practitioners set aside time to provide a record of progress, to be forwarded to the coordinator at the college.

Assessment

Principles of the assessment were identified with group activities of the workshop involving practitioners and faculty members. The overall responsibility of the assessment lies with the college. However, practitioners will be important in providing feedback to each student on progress. They will be able to identify for the students what aspects of performance are good, where improvement are needed and how the student can gain more experience to improve. Although the practitioners are invaluable for providing feedback, it is not possible to use them to give a reliable assessment of performance. An formative and summative assessment system will be required to assess the students for their 40 weeks performance.

Student welfare and guidance

CGVC has an obligation to provide students with support and guidance, in relation to its internship

program. To do this, the college will put in place systems and procedures to promote off-campus learning and ensure students safety and welfare. The systems and procedure will include that the College will establish and maintain contact with each placement provider. The coordinator will be the first point of contact should an emergency or severe problem arise. Each student will be assigned with a personal tutor to provide guidance and advice. The tutor will help the student explore how to get the best learning experience from each placement. He/she will provide advice on professional conduct. The college will produce handbooks, feedback forms. Before embarking on the program college will arrange training program to build awareness of the students about the internship program and prepare them for each of the activities. The appropriate funding to support students is made available on time and adequate accommodation is provided for the students. Students will be given advice and guidance on how to work safely while on placement and on how to avoid personal injury and ill-health.

Survey on current veterinary practices in Bangladesh

Internship program has been a major undertaking, requiring careful preparation and organization and a planned programme of training for all participants. To inform this process, the College has undertaken a survey to collect information from practitioners working in Bangladesh. A report was published providing an analysis of the evidence generated by the survey (16). Some of the salient features of the survey report are mentioned here.

The Responding Sample

Questionnaires were completed by 346 respondents (a response rate of 48%) and provided evidence in relation to a number of issues as below:

- Types of work and facilities available to students
- Details about the practice
- Impact of seasonal change
- Availability of resources
- Supporting student learning
- Helping students learn on practice

Types of work and facilities available to students

Participants were asked to indicate the types of work and facilities that were available in their practice. In this

way the survey provided some evidence of the range of learning environment available to students in the internship program, along with the measure of the quality of facilities.

From the evidence, almost all respondents (99% of the sample) indicated they could provide a veterinary clinical practice. Of these, approximately three-quarters of the sample (71%) believed their facilities to be basics. Three-quarters of the sample offered surgical facilities with, again the standard characterized as basic (61% of the sample) by the majority of the respondents. Attention switched to the works available other than clinical works. Again, a picture emerges of the range of opportunities offered by the internship programme in developing wide practical knowledge in the undergraduate. Two areas of work most commonly available to students were practical experience in relation to artificial insemination and extension activities. Just under three-quarters (72%) indicated that work involving artificial insemination was available, with just over three-fifths of the sample (63%) offering direct experience of extension activities.

About the Practice

In this section, the report provided further details about the respondents practice. The areas covered were: experience of the practitioners, other people working in the practice, time spent on different categories of work and types of species under treatment at the practice. From the evidence there was a broad range of experience represented in the responding sample. Just under a third of the sample (29%) had been involved in practice for less than ten years, almost two-fifths of participants (38%) had between ten and twenty years experiences and remaining third having been in practice for over twenty years. Respondents were asked to indicate the extent of different species of animals treated by their practice. Analysis indicated that direct exposure to cows, poultry and goats will dominate the students' off-campus learning experience.

Availability of Resources

Participants were asked to indicate what drugs and equipments were available in their hospital/dispensary. The results were indicated antibiotics, anthelmintics and sulphar-based drugs are mostly available. Six types of equipments were available to most practices and these are thermometer, syringe and needles, refrigerator stethoscopes, microscope and minimum surgical equipments.

Supporting Student Learning

In this section, attention switches away from a direct consideration of the work of practitioners and the resources available to support it, to focus on the student learning at the placement. Respondents were asked for their perceptions relating to the optimum time to be spent by students on the placement for them to gain benefit. They were also asked to identify the range of activities, which could be offered to students to promote their learning. Results indicated that differences of opinion exist and ascertaining the optimum time to promote student learning will be best judged after having several placements. Just under half of the sample (47%) identified two weeks at the placement as being an appropriate time to gain valuable knowledge. In addition, participants were then asked how they believed students would gain appropriate experience. It was also indicated that students would best gain experience by working under strict supervision. Clearly there was active support for having the students learn by doing, although the strict attention of the practitioners was a necessary prerequisite.

Helping students Learn on Practice

In this section, the practitioners' capacity to help student learning is explored in terms of their own levels of confidence in dealing with students, their ability to offer support and the time they have available each day to give feedback on the students' progress. Analysis shows that levels of confidence in helping students to learn were high with 45% of practitioners feeling fully confident in their role of helping students learn. Just under half of the sample (49%) indicated that they were quite confident but also need some guidance. About 80% of the sample were able to set aside more than 45 minutes each day to provide explanations and give feedback on student progress. Of these 51% would provide over an hour of their time for feedback.

Implementation and Evaluation Phase

A two-year programme of planning and development made CGVC ready to embark on the internship programme at the end of February 2002 with 32 veterinary undergraduate students of CGVC. The scheme extended over a 40 weeks and offered placements in 16 locations; giving participants direct experience of a variety of animal establishments and veterinary hospitals/dispensaries. Twelve months later, it was time to ascertain the impact of the first year rotation for which evidence was gathered from two questionnaires-one administered to students before they embarked on the scheme, the other

completed after 16 placements. Twenty-eight of the 31 students were able to complete both questionnaires and an analysis of the responses was done. Taylor & Debnath (15) produced a report on the evaluation and some of the results of that analysis are presented here to show the impact of the first rotation.

Students Perceptions: Before embarking on their placements, students were asked to use a six-point scale to give an overall impression of the extent they believed the college had prepared them to meet their learning needs. On returning to the college, one year later, students were asked to address the same question again. A comparison of student responses to the two questionnaires was remarkably similar, with the sample returning from placements proving slightly more positive.

Learning Across the Range of Placements: Students undertook a total of 16 placements and were asked to identify a learning that had taken place by identifying the number of placements in which students perceived they had learned a lot, learned something and learned nothing. All 28 respondents indicated that they had experienced placements from which they had learned a lot. A broadly similar profile emerged when students were asked to identify the number of placements from which they had learned something. Just over half of the sample (15 of the 28 students) indicated they had been on some placements where they felt they had 'learned nothing'. Based on the analysis, the composite picture would reveal that the student group had learned a great deal from just under half of the placements, with a similar proportion of the placements yielding some learning.

Factors Limiting Learning: A breakdown of the factors cited by students as limiting their learning fell into five categories: Twenty-two students felt that at some time placement providers had operated to limit their learning. At some cases they were too busy to give time to the students. Eight students felt that with certain placements too little time had been allocated to enable them to benefit from the experience. Problem with accommodation had been acute in some placements. Limited facilities in some placements restricted their learning.

The Most Improved Aspects: Students were asked to identify specific aspects of veterinary practice which they believed had improved very greatly as a result of their placements. Nine students chose to respond in general terms indicating that their confidence had grown and that they now felt capable of coping with common problems, able to make clinical judgment and were

equipped with necessary skills to undertake treatment. The remaining 19 students were more specific in their response indicating that the off-campus placement had had a positive impact across a range of education aims.

Aspects Most in Need of Improvement: A small number of respondents clearly need more experience in relation to basic surgery, writing prescription practice in relation to reproductive diseases. For the remainder, what seems to be missing is further exposure to specialist areas—veterinary practice in zoos, extension and laboratory work and meat hygiene.

The Impact of the Internship Programme: Evidence of this can be found by returning to the initial questionnaire and comparing the initial responses of the sample to the 12 aspects of veterinary practice with those obtained a year later. Twelve aspects of veterinary practice included:

- Work as a part of team,
- Communication with clients,
- Undertake clinical examination,
- Take a case history,
- Handle and restrain animals,
- Use clinical instruments,
- Carry out basic surgery,
- Understand how animal establishments are managed,
- Understand the role of vets in the animal industry and extension work,
- Understand meat hygiene
- Understand the technical or scientific industry.

Analysis of the responses provided impressive evidence of the positive shift by the internship scheme. It is clear that the placement had had positive impact in relation to 11 of the 12 aspects. In meat hygiene, they had least exposure. In many cases, the internship scheme has resulted in a complete reversal in responses. Where a considerable majority of students indicated they had little or no confidence in relation to veterinary practice, this has now replaced by a situation in which the majority now perceive their confidence to be very high. Changes have been dramatic in relation to a number of aspects. Marked increases in confidence have occurred in relation to working as part of team and with regard to

communicating with clients. There has been similar shifts for aspects such as undertaking a clinical examination, for taking a history and in relation to handling and restraining animals. Confidence is now much higher when using clinical instruments and when carrying out basic surgery. Shifts in confidence, however, although still positive, have occurred to a lesser extent in relation to understanding the technical/scientific industry, more especially with regard to meat hygiene.

Unexpected Development and Opportunity-Placements in Madras Veterinary College and Bangalore Veterinary College: Successful implementation occurs when institutions are able to adapt plans to take advantage of unexpected developments and opportunities. In our case such opportunities appeared when visit was made to observe the operation of internship program run by the Madras Veterinary College (MVC), India. MVC is one of the oldest veterinary schools in the Indian subcontinent and its reputation for veterinary education is well known to the veterinary profession. The visit helped find new opportunities for the newly planned internship program of the CGVC. Observing the impressive clinical facilities in the teaching veterinary hospital of MVC, CGVC made a proposition to the MVC authority to provide one month clinical attachments to the students to the MVC's Teaching Veterinary Hospital during the summer vacation with the understanding that during summer vacation MVC's undergraduate students remained on vacation and facilities could fully be utilized by CGVC's students. Finally it was agreed by both the institutes to provide placements at MVC. Over the last four years four cohorts consisting of 173 inter students have been placed in MVC. An evaluation of first three cohorts indicated a very positive results and that evaluation has shown that MVC appears to be the best placements among all the placements. In the fourth year, in collaboration with Commonwealth Veterinary Association, fourth cohort of intern students was also provided one month placement to Bangalore Veterinary College. While formal evaluation has yet to be made on the Bangalore placement, informal students' opinion appears to be very positive. A comparison between MVC and BVC will be interesting.

Conclusions

Internship program of CGVC has been running for the last four years and gradually it has been integrated with the undergraduate curriculum. The scheme has had two major phases: phase of development and phase of

implementation and evaluation. For this type of program, while a great deal of effort and energy was associated with the initiation and development, the problems and issues related to implementation remain largely ignored (3, 10). For CGVC, adoption has occurred but evidence regarding impact is still insufficient. Under this circumstance monitoring the process of change has become as important as measuring the outcomes and this involves having participants make explicit their perceptions of how the change affected them. To ensure that change becomes incorporated as on-going practice, a database is being developed and input is being taken to decision-making. There is now a vast literature on the management of change and from this it is possible to identify a system of variables that interact to determine success or failure.

During initial three years 243 placements were provided to 126 students and 159 placement providers supervised the works at workplaces. These indicate the magnitude and complexities of the involvement. Several interested parties are involved each with its own perception of what WBL is for. In addition, no two placements are identical and many factors affect their varied characteristics. To experience such variety remains one of the strengths of WBL for students. Nevertheless, such diversity poses problems for maintaining quality assurance. The first major step taken by the internship program of CGVC was to stress the importance of independent learning. Students were supported in setting personal objectives for each placement and practitioners were asked to assess their progress and to identify their need for further improvement. A monitoring system is put in place and evidence is obtained for their impact on student learning and of the strong support of veterinary practitioners. Quality is difficult to define and there is no simple and unambiguous statement of good quality in relation to WBL, which can provide such diversity of experience. Furthermore, having good quality assurance does not necessarily mean good provision. However, on the basis of practical experience, there is general agreement on some of the features of quality assurance systems which underpin good practice. Some important conclusions from literature relevant to WBL are summarized below (2, 5, 7, 9, 14, 18).

- When partnerships are involved, a system cannot be imposed by one group on another. In particular, it is important that each group can state what considers feasible and appropriate and that its opinion is taken into account. It is necessary to develop a common understanding of the nature and requirements of the proposed system.

- The primary focus of any system must be learning and teaching.
- Students must be able to express their views and have them taken into account.
- Robust communication and feedback mechanisms are essential and all parties must be determined to put things right should deficiencies be identified and strive to improve the system.

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Clinical Evaluation Of Infectious Bovine Keratoconjunctivitis

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Infectious keratoconjunctivitis is a highly contagious ocular infection affecting domestic and wild ruminants and transmitted by flies. The condition is caused by various bacteria and is characterised by epiphora, conjunctival inflammation, pigmental areas on the cornea, photophobia, blepharospasm and corneal ulcerations (1, 2). Published literature on various aspects of infectious keratoconjunctivitis in cattle is very scant in India. This paper records clinicopathological and therapeutic aspects of infectious keratoconjunctivitis in cattle.

Material And Methods

A total of 15 cattle (9 Jersey and 6 HF cross) of different age (1 to 5 years) were presented to the Veterinary Ambulatory Clinic, with a history of excessive lacrimation, corneal opacity, photophobia, corneal ulcers (12 animals), partial (3 animals) to complete blindness (10 animals) over a period of 2 - 4 days. Close clinical observations revealed severe conjunctivitis, corneal oedema, thickened cornea, whitish yellow opacity on centre of cornea (Fig. 1, 2), followed by corneal ulceration, mucopurulent ocular discharges (Fig. 3). The

affected eyes were either unilateral (7 animals) or bilateral (8 animals). The clinical parameters were within the normal limits with no change in appetite and defaecation.



Fig. 1. Bilaterally affected cattle - Corneal edema, opacity and epiphora

Samples were collected using separate pre-moistened sterile swabs inserting them into the conjunctival fornix, gently rolling and then inoculating the swab material initially into broth, and then transferring the samples

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