Orangutan Veterinary Advisory Group

HYBRID

Workshop 2022

Prepared with organizing committee of the Orangutan Veterinary Advisory Group: R. Commitante, Waluyo Jati, R. Jaya, Nancy Lung, Wendi Prameswari,P.Nagalingam, C. Nente, Y. Saraswati, Nur Nabila binti Sarkawi, Soedarmanto Indarjulianto, Agnes Pratamiutami Sriningsih,S. Sugnaseelan, F. Sulistyo, S. Unwin,

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Orangutan Veterinary Advisory Group HYBRID Workshop 2022

Copies of all the Orangutan Veterinary Advisory Group (OVAG) Workshop Report of Proceedings can be found on the Orangutan Conservancy website, www.orangutan.com and the official OVAG website: www.ovag.org

All materials relating to this Hybrid 2022 Workshop can be found at

https://umnadvet.instructure.com/login/canvas

with proper login information sponsored by the

University of Minnesota College of Veterinary Medicine, U.S.

Participating Organizations/Groups In Person:

Borneo Orangutan Survival Foundation – Samboja Lestari, Nyaru Menteng (Indonesia)

Sumatran Orangutan Conservation Programme – YEL (Indonesia)

Universitas Gadjah Mada, Veterinary Faculty (Indonesia)

Sintang Orangutan Center (Indonesia)

Sepilok-Sabah Wildlife Dept (Malaysia)

Sunway Lagoon Wildlife Park (Malaysia)

Wildlife Health Australia

Universiti Putra Malaysia

International Animal Rescue -Bogor (Indonesia)

Wildlife Study Club - UGM (Indonesia)

Ministry of Health, Indonesia

Conservation Action Network

Biological Park Itanagar, India

Jaringan Satwa Indonesia

Jakarta Animal Aid Network (Indonesia)

Gibbon Conservation Society

The Aspinall Foundation Indonesia Program

Kalaweit (Indonesia)

Iucn Section on Small Apes

Zoetis Deutschland (Germany)

Orangutan Veterinary AID (United Kingdom)

Wildlife Impact

Hutan (Malaysia)

Balai Konservasi Sumber Daya Alam (BKSDA) Kalimantan Timur

HURO PROGRAMME

University of Birmingham, The Orangutan Enclosure Design Tool Project (United Kingdom)

Semenggoh Wildlife Centre (Malaysia)

Pusat Studi Satwa Primata (Indonesia)

Pusat Penyelamatan Satwa Cikananga (Indonesia)

Sumatran Rescue Alliance (Indonesia)

Centre for Orangutan Protection (Indonesia)

YEL PKRO-SIBOLANGIT (Indonesia)

Wildlife Rescue Unit Sabah (Malaysia)

Sarawak Forestry Corporation Matang (Malaysia)

Yayasan Jejak Pulang (Indonesia)

Frankfurt Zoological Society Jambi (Indonesia)

Orangutan Foundation International (Indonesia)

HOCRU-ORANGUTAN INFORMATION CENTRE (Indonesia)

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LEUSER CONSERVATION FORUM (Indonesia)

Pusat Suaka Orangutan– ARSARI, Yayasan ARSARI Djojohadikusumo (Indonesia)

Yayasan Inisiasi Alam Rehabilitasi Indonesia (IAR-Indonesia)

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Centre for Orangutan Protection

National Jewish health

North Carolina Zoo

Hutan

Postdoctoral Research Fellow (University of Geneva) Visiting Scientist (Rutgers University)

Chester Zoo

World Organization for Animal Health

Fort Wayne Children's Zoo

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Wildlife Rescue Unit Sabah

International Animal Rescue Indonesia

IPB Primatology Graduate Study Program

Matang Wildlife Centre

Abaxis /Zoetis

Gibbon Conservation Society

Indianapolis Zoo

Frankfurt Zoological Socieity Jambi

Universitas Gadjah Mada

The Aspinall Foundation Indonesia Program

Orangutan Foundation-UK Indonesia

Jaringan Satwa Indonesia (JSI / JAAN)

Tasikoki Wildlife Rescue Centre

University of Birmingham

Yayasan Owa Jawa

PowPow Pet Care

Yayasan Inisiasi Alam Rehabilitasi Indonesia (IAR-Indonesia)

Singapore zoo

Chimfunshi Wildlife Orphanage Trust

Yayasan Kalaweit

Bali Wildlife Rescue Center

BBKSDA Riau

IUCN Section on Small Apes

Tasikoki Wildlife Rescue Centre

Jakarta Animal Aid Network / Sumatra wildlife center

Sumatran Rescue Alliance (SRA)

YEL SRO-JANTHO

(BKSDA) Bengkulu - Lampung site / Amanah Veterinary Services

Yayasan Konservasi Alam Yogyakarta – Wildlife Rescue Centre Jogja

Veterinary Society for Wildlife Conservation

Yayasan Jejak Pulang

Michigan State University

Orangutan Foundation -UK

University of Minnesota College of Veterinary Medicine

Supporting Organizations:

Orangutan Conservancy, United States **Chester Zoo/NEZS, United Kingdom**

Arcus Foundation (US) **Fort Wayne Children's Zoo (US)** **The Orangutan Project (TOP) Australia**

And our in country host:

Gadjah Mada University

HOSTED VIRTUALLY ON CANVAS BY:

University of Minnesota, U.S.

The OVAG community also continues to contribute to our Canvas site with materials provided by:

Orangutan Veterinary Advisory Group Workshop

17 – 21 July 2022

Table of Contents

Orangutan Veterinary Advisory Group Workshop

17 – 21 July 2022

Section One

Executive Summary

Budget

Executive Summary

Welcome back OVAG Community (sort of),

Finally for our 2022 workshop, some of us were able to meet in person again (52) while many more of us were able to join virtually (67)! As promised last year, while returning to an in-person format, we still maintained our virtual presence to continue to reach as many interested members as possible in our growing conservation/one health community.

This year, our OVAG committee has grown, and we welcomed some new brain power!!! Waluyo Jati, Agnes Pratamiutami Sriningsih, Wendi Prameswari, and Nur Nabila binti Sarkawi have agreed to join our fabulous committee. This year also marked the very first time a group of OVAG participants traveled to Africa to join a PASA workshop. Hopefully this will usher in an era of more personal global collaboration.

As has become our normal, multiple topics of shared importance were covered at our workshop. These included continued infectious disease concerns and surveillance, nutrition, enrichment, pain and wound management, rescues and translocations, respiratory issues, dentistry, management of un-releasable orangutans, snake bites and bee stings, emergency and critical care, fluid therapy and of course our own mental health. Summaries of this year's workshop topics are presented in this report, however we encourage you to check our Canvas OVAG CPD (https://umnadvet.instructure.com/courses/321) to get the full materials and recorded sessions of the workshop.

We are glad to report that our WhatsApp Group has been active all year long and is continuing to be an amazing resource for us all to stay connected and to enable us to reach out as needed to our growing community for assistance and support. We are also continuing to load our Canvas platform with new and developing information so please remember to check back often throughout the year. Your OVAG committee will continue to meet regularly throughout the year to plan upcoming webinars, develop strategies for our own growth and effectiveness, and of course to organize OVAG 2023!!!!!!!.

Speaking of 2023, OVAG will be entering a new phase, and at the workshop, we asked to hear from you on how you want the network to continue. We incorporated all your suggestions into an updated Theory of Change,and have sent it to all in December 2022 for final input before ratification at the beginning of 2023. We will soon be forming a new collaboration with Wildlife Health Australia (WHA), World Organization for Animal Health (WOAH), Wildlife Disease Association (WDA) and Wildlife Conservation Society (WCS) to assist in a South East Asian region-wide disease surveillance network – more on that to come soon!

Once again, we wish to thank everyone for participating, contributing to and supporting the important work we all do and in making and sustaining OVAG!

In solidarity,

Raffaella Commitante, PhD (Cantab)
Steve Unwin, B.Sc., B.V.Sc., Dipl ECZM, MRCVS
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Waluyo Jati,drh.
Agnes Pratamiutami Sriningsih,drh.
Wendi Prameswari,drh.
Nur Nabila binti Sarkawi,DVM
and Gavo (our mascot)

2022 Budget

(US Dollar after approximate conversion from Australian Dollar, British Pound Sterling and Indonesia Rupiah)

International air fares	1,000.00*
Regional airfares	9,900.00
Ground transportation	250.00
Hotel accommodation	12,000.00
Office expenses/T-shirts,semnar kit, etc.	910.00
Miscellaneous (CoVid Preventive Measures, medications, etc.)	200.00
Multimedia Live Streaming	1,200.00
Regional Admin Assistance (F.Sulistyo)	5,000.00
Workshop Total	30.460.00
PASA Total (Flights 17,200/Accommodation 10,000)	27,200.00
TOTAL 2022	57,660.00

* A portion of Steve Unwin's travel was paid for by Wildlife Health Australia and Raffaella Commitante was not able to attend due to illness.

Orangutan Veterinary Advisory Group Workshop

17 – 21 July 2022

Section Two

Agenda

Participant Contact list

Live Sessions Agenda

	OVAG WORKSHOP 2022 TENTATIVE AGENDA				
	Sunday, July 17th 2022	**Monday, July 18th 2022**	**Tuesday, July 19th 2022**	**Wednesday, July 20th 2022**	**Thursday, July 21th 2022**
	REHABILITATION	**CLINICAL 1: MORNING GROUP PHOTO - WEAR OVAG T-SHIRT**	**CLINICAL 2**	**HUSBANDRY & ANIMAL WELFARE**	**STRATEGIC MEETING & MENTAL HEALTH**
08.30 - 09.00	Welcome Session	EMERGENCY & CRITICAL CARE: 1. Brainstorming session 2.. Case study presentations 3. Panel discussion.	RESPIRATORY DISEASE IN ORANGUTANS: 1. Brainstorming session 2. Panel discussion 3. Reporting back from PASA Workshop	NUTRITION: 1. Brainstorming session 2.. Case study presentations 3. Lecture: Barbara Toddes & Astri Zulfa 4. Panel discussion.	ENRICHMENT: 1. Brainstorming session 2. Break out group discussion 3. Big group discussion & wrap up
09.00 - 09.30					
09.30 - 10.00	Ice Breaker & Introduction to OVAG Strategic Meeting				
10.00 - 10.30	coffee break		coffee break		
10.30 - 11.00	RESCUE & TRANSPORTATION PROTOCOLS 1. Brainstorming session 2.. Case study presentations 3. Talk: IUCN SGA 4. Panel discussion.	coffee break	GLOBAL MOVEMENTS ON COVID-19 IN ANIMAL 1. Brainstorming session 2. Talk: Wildlife Health Australia 3. Talk: OIE (WOAH) Indonesian wildlife focal point 4. Panel discussion	coffee break	coffee break
11.00 - 11.30		FLUID THERAPY: 1. Brainstorming session 2. Lecture: Lily Parkinson, DVM, Dipl ACZM. 3. Discussion		PAIN MANAGEMENT: 1. Brainstorming session 2. Lecture: Dr. Raffaella Commitante 3. Panel discussion.	MENTAL HEALTH: 1. Presentation from 2021 Mental Health Survey 2. Padlet sharing session 3. Presentation from Biro Psikologi Intuisi, Jogja 4. Discussion
11.30 - 12.00					
12.00 - 12.30					
12.30 - 13.00	LUNCH	LUNCH & GROUP PHOTO	LUNCH	LUNCH - HALF DAY FREE ACTIVITY	LUNCH
13.00 - 13.30					
13.30 - 14.00	NON-RELEASABLE ORANGUTANS IN REHAB CENTERS: 1. Brainstorming session 2. Case study presentations 3. Panel discussion	WILDLIFE DENTISTRY: 1. Case study 2. Lecture: drg. Ozi 3. Panel discussion 4. Review of available materials	DISEASE SURVEILLANCE: FIELD SAMPLING 1. Brainstorming session 2. Lecture: Dr. Steve Unwin 3. Panel Discussion		OVAG STRATEGIC MEETING: 1. Discuss post-it notes from day 1 (2 questions) 2. Break out group into 4-5 groups. 3. Open discussion.
14.00 - 14.30					
14.30 - 15.00					
15.00 - 15.30					
15.30 - 16.00	coffee break	coffee break	coffee break		coffee break
16.00 - 16.30	VENOM & BEE STING MANAGEMENT: 1. Case study presentations 2. Lecture: Dr. dr. Tri Maharani 3. Discussion	GIBBON REHABILITATION & REINTRODUCTION: Dr. Susan Cheyne	WOUND MANAGEMENT: 1. Lecture: drh. Fransiska S & BOSF Vets 2. Break out group discussion 3. Big group discussion & wrap up		GAMES: JEOPARDY & KAHOOT
16.30 - 17.00					
17.00 - 17.30					Closing discussion: what for next year.
17.30 - 18.00					
19. 00	DINNER	DINNER	DINNER: LEISURE ACTIVITY	DINNER BY RESERVATION	CONFERENCE DINNER:

ALL SESSIONS WERE RECORDED AND UPLOADED ONTO THE OVAG 2021 MODULE, CANVAS PLATFORM UNIVERSITY OF MINNESOTA

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Orangutan Veterinary Advisory Group Workshop

17 – 21 July 2022

Section Three

Proceedings

Day One Sunday, 17 July 2022

Welcome from the OVAG Committee and Ice Breaker

THEME OF THE DAY: REHABILITATION

1. Rescue And Transportation Protocols

- Brainstorming session
- Case study presentations (OIC, IUCN SGA, FZS, and Jogja WRC)
- Panel discussion

Case studies were given by Zulhilmi on Rescue and Transportation Protocols, Wild to Wild Translocations: Issues, Impacts and IUCN Guidance by Marc Ancrenaz and Julie Sherman, Rescue and Transportation of Sumatran Orangutan Bukit Tigah Pulu Landscape by Riris Prawesti SOCP and Darting by Irna Irhamna Jogja Wildlife Center

Non-Releasable Orangutans In Rehab Centers

- **Brainstorming session:**

In the process of animal rehabilitation, we will be faced with a condition where the animals under our care do not have the opportunity to be released due to several conditions. During this session 3 panelists explained their un-releasable Orangutan condition at their centers and 2 online panelists joined for the discussion.

Learning Objectives from this session were:

- addressing the reasons and conditions for un-releasable animals
- understanding how to deal with long term animal husbandry to improve their welfare
- sharing knowledge and information on medical issues that will be faced in long term care or in dealing with un-releasable animals

- **Case study presentations:**

a. Nabilla Sarkawi (Sepilok Orangutan Rehabilitation Center): "Non-Releasable Orangutan in Sepilok Orangutan Rehabilitation Center"

b. Sandy Ling Choo (Sarawak Forestry Corporation: "Non-Releasable Bornean Orangutans in Matang Wildlife Center, Sarawak, Malaysia: What does the future hold for them?"

c. Komara (YIARI Ketapang, Indonesia): "Husbandry Care for Unreleasable Orangutan at YIARI Ketapang"

- **Panelists:**

Invited to the panel discussion online were:

1. Dr. Ian Singleton (--- Sumatran Orangutan Conservation Programme – Paneco)
2. Dr. Nancy Lung (Orangutan ---- SSP Advisor, AAZV)

Discussion Summary:

The majority all centers have un-releasable Orangutans/Gibbons. The main reasons are because of:

a. Spend too long in the cage b. Are too old c. Obesity

Also, abnormal Behaviors: The abnormal behaviors in question are that they are becoming too humanized, are being too aggressive to humans- which means that orangutans try to attract humans, and do not exhibit wild behavior.

What is the parameter/ indicator for OU un-releasable? It is an ethical issued, if animals cannot survive in the wild because of some reason, then it may be necessary to classify them as being un- releasable. The parameters in each center have different points, that is why we need to improve - to produce the same parameters for un-releasable Orangutans in all centers.

How do we manage the husbandry for un releasable orangutan? Design the enclosure properly for long term animal care – we should be thinking about how animal's express their behavior-should have room for climbing, hanging etc. Husbandry should be combined with enclosure, enrichment, health management, animal diet and human resource management too. We should have the same goals if we want to achieve the best for the orangutans. On others side, a training program is one of the best tools to improve animal welfare as we will be working with long term animals in a captive situation. With a training program, the animal will feel more comfortable and have a positive binding with their keepers. The important thing we are still thinking about is not to humanize the animals. In other countries, they have a studbook keeper, but not in Indonesia.

What is the conservation value of un-releasable orangutan? Un-releasable animals still have conservation value because we can breed them and the next generation can be released in the wild, others we can use them as education tool to spread awareness in humans.

<u>VENOM & BEE STING MANAGEMENT</u>

- Case study presentations
- 2. Lecture: Dr. dr. Tri Maharani
- 3. Discussion

Envenomation from snakes and wasps is almost always an emergency case, due to the acute and fatal effect of the venom. Indonesia, being a tropical country with mega-biodiversity, houses 350 species of snakes and just over 20% of

them are venomous. Human encroachment into wildlife habitats, complemented by the lack of public information on venomous animals and their management, contributes to the fact that Indonesia has the highest rate of envenomation in the world. Traditional methods of dealing with these cases often do not help, and even cause a more severe impact. Early and prompt diagnosis and treatment are very important to reduce mortality in cases of wasp stings and snake bites.

Within orangutan rehabilitation, snake and wasp envenomation could also cause a significant impact. Practitioners have witnessed incidences when a rehabilitated or reintroduced orangutan was found dead due to suspected or confirmed snake envenomation. Animal keepers and monitoring staff are also at high risk of this danger when they are working in the forest; therefore, it is deemed important that we discuss this issue within OVAG.

Dr. Tri Maharani, SpEM, is the only Indonesian medical doctor who is specialized in the management of animal envenomation. She gave two talks about management of snake envenomation and management of wasp envenomation which can be viewed on our Canvas Site as are all OVAG presentations).

On Canvas, there is also ppt material on snake and wasp identification, presented by Dr. drh. Slamet Raharjo, from the Faculty of Veterinary Medicine, UGM.

Case studies on snake and wasp envenomation that happened in orangutans and gibbons were given by Vivi Dwi santi, Ni Nyoman Janipa, Utami Fitriariwati, Sandy Ling and Adisa Prayoga.

Discussion Summary:

What are the basic things that practitioners need to remember when dealing with a possible case of animal envenomation? Try to identify the species of the snake/wasp, and make sure if those are venomous/non-venomous. If it is venomous: check if the envenomation is in the local phase or systemic phase. If it is a local phase, no need for antivenom If find any systemic indications, need antivenom that is specific to the species

For wasp sting: unfortunately, there is yet anti-venom for this, so treatment should include analgesic, antipyretic, and anti-inflammatory. Other supportive treatments such as bronchodilator or oxygen supply may also be needed for signs of respiratory distress for orangutan envenomation, it is necessary to give anti-histamine? In the IAR case, no. The effective treatment is the specific anti-venom.

Panelists' responses to the case studies: Snake Envenomation at BOSF: Pay attention to the onset of symptoms. Only neurotoxin from (Elapidae: krait/ welang, weling, and Naja/cobra) causes acute death Critical time 6-12 hours. Animals will be found dead without any symptoms. Hemotoxin, e.g., caused by Viperidae has the onset of symptoms within 24-48 hours. It causes persistent bleeding from bite wound, swellness (within 6 hours), and blisters (within 12 hours) Necropsy needs to be done carefully to identify these signs. Pay attention to the characteristic of the suspected snakes. Bungarus sp, which has the highest venom, is a shy species, it naturally would choose to slip away when alarmed and won't bite unless triggered. King cobra is more temperamental but is selective with attacking animal that is not prey or might cause harm. While Bornean Cobra (Naja sumatrana) is temperamental and attacks easily upon slight stimulation. The gross necropsy clearly suggested changes due to the 4 main toxins produced by Naja sp: necrotoxin, neurotoxin, cardiotoxin, and cytotoxin. Based on history, necropsy findings, and location, it is more likely this case was caused by Naja sumatrana. Necropsy pictures of non-human primate deaths caused by envenomation are needed to enrich human medical management of snake envenomation. Snake Envenomation at IAR: Based on symptoms, the snake identification is correct for Bungarus sp. Ptosis is one of the most specific signs of neurotoxic envenomation. Would be good to conduct surveillance to identify species around the location. Strategically, this is good information to provide the specific anti-venom. Wasp Envenomation at Kalaweit: Based on the clinical signs provided, this case is actually a wasp envenomation. Remember that bees can only sting once, and they only produce allergenic protein, not venom. Wasps, on the other hand, can sting multiple times and produce venom protein; therefore, they are more dangerous than bees. In repeated episodes of wasp envenomation, there needs to be a mitigation effort to prevent this in the future. Identify species of wasps, the location of nests to the cage, and be aware of the seasonal dynamic. At the beginning of the dry season, wasps are more temperamental because food is scarcer to find, and culturally more people go to the forest to harvest forest products.

Day Two, Monday, 18 July 2022

THEME OF THE DAY: CLINICAL

1. EMERGENCY & CRITICAL CARE:

This session was run as a panel discussion with both in person and online panelists. The session was opened with an introductory lecture on Triage followed by 3 case studies.

Panelists:

1. Lily Parkinson, DVM, DACZM, Cert Aq V, CWR, DACVECC, certified in Emergency and Critical Care, Zoological Medicine, and Aquatic Veterinary Medicine. She is also a certified wildlife rehabilitator.
2. Nancy Lung, DVM, MS, a senior zoo veterinarian and veterinary advisor for the Orangutan Species Survival Plan, AAZV.
3. drh. Jati Waluyo from Sintang Orangutan Center
4. drh. Nur Nabila binti Sarkawi from Sepilok Orangutan Rehabilitation Center
5. drh. Ida Masnur from Javan Gibbon Center, The Aspinall Foundation - Indonesian Project
6. drh. Yenny Saraswati from Sumatran Orangutan Conservation Programme - Yayasan Ekosistem Lestari

Case Studies Presentations:

Case 1. Nikon, Abandoned Pet Macaca Fascicularis With Tetra Paresis/Paralysis. Presented by Habib Maulana of Jakarta Animal Aid Network.

Case 2. Abses Multisistemik Pada Macaca Fascicularis Dengan Infeksi Klebsiella Pneumonia Di Pusat Studi Satwa Primata LPPM IPB. Presented by Silvia A Prabandari from Pusat Studi Satwa Primata, Institut Pertanian Bogor.

Case 3. Multiple Injuries in a Wild Bornean Orangutan Caused by Human Conflict. Presented by Waluyo Jati, Sintang Orangutan Center.

Discussion Summary:

For a condition, there could be multiple diagnosis that should be considered that could occur simultaneously. Therefore, it is important to address each sign before coming up to a (several) conclusive diagnosis (Problem Oriented Approach). Feedback from participants who shared their ECC cases on Sticky notes: many experienced the situation where vets were presented with wildlife with unknown history (e.g., just rescued) and they came unconscious / low conscious level, weak, or having seizures. This condition is indeed stressful for vets, and there is a chance of missing some important signs which lead to misdiagnoses and mis-treatment. The suggested approach for this situation is using the Triage Protocol (Lily's lecture) which allow vets to systematically assess vital organ systems and immediately plan on stabilizing the animal. Once stabilized, a more thorough examinations can be initiated. The other example of ECC is when vets had to take care of young/infant orphan primates. It is challenging to establish IV line and intubate in the small patients.

Triage Protocol is also an important tool to manage resources. When working with a small team of vets/vet nurses, everyone in the team must have the same understanding about this protocol (education and training is needed). Emergency bag and emergency medicine should also be arranged/equipped with tools and drugs that are aimed at stabilizing patients. When dealing with ECC case in wildlife, often they are weak, but still not weak enough to be treated without chemical restrain (sedation or anesthesia). This is a challenging situation since anesthesia poses additional risk to the animal's already weak condition. Low dose anesthetic agent can be given continuously, e.g., via IV fluid (Constant Rate Infusion) and remember to closely monitor the animal's vital signs. Intraosseous catheter is a technique that can be very useful to be done on ECC cases. It is not as difficult as it sounds, and it has good absorption level just like intravenous catheter. After performing a successful CPR, some vets experience that once stabilized, the animal had difficulty in breathing again, and upon x-ray, the image suggested an Acute Respiration Distress Syndrome (collection of fluid in the alveoli). The complication post CPR is actually very common. There are several possibilities besides ARDS: Lung hemorrhage: In weak animals, the pressure given by a PCR procedure may cause bleeding in the lungs, either from poor agglutination process, or from fractured ribs.

Neurologic pulmonary oedema. In critical condition, the brain (pituitary) may experience decrease in oxygen supply which will make it send some stress signal to the lung and it causes sudden flow of fluid into the lung, causing oedema. There are 4-5 other cause to complication post-CPR and it is very common, so the key is to keep breathing for the animal (could be for up to 24 hours) until it is confirmed stable. Anesthetic drugs used in animals with depressed respiratory: ketamine as induction, then a good combination is ketamine-midazolam by CRI. It is advised to have separate fluid lines for drug-infused fluid and normal fluid, so that the vet can separately calculate fluid rate and drug rate.

2. FLUID THERAPY:

- Brainstorming session
- Lecture: Lily Parkinson, DVM, Dipl ACZM (Canvas Site).
- General Discussion

Discussion Summary:

- 60-70% of the body weight of animals is made of fluids. Fluids in blood, around organs, brain, cells, etc.
- Fluids are made up of cells, proteins & electrolytes and these proportions differ in each liquid/fluid type.
- 40 % made up Intracellular fluids, 20% made up of extracellular fluids (5% Plasma + 15 % Interstitial fluids)
- Fluids from blood travel to plasma – Interstitial fluid- intracellular fluid
- Fluids at extracellular fluids – high sodium, Chlorine, and low potassium
- Subcutaneous fluids get directly into interstitial fluids mostly
- Take blood before running fluids, for more accurate results
- Compare heart rate & blood pressure- if blood pressure low, IV bolus(replacement fluids): 10ml/kg – 10-15 mins. Repeat until pressure improves.
- 5 % dextrose is just water without electrolytes. Unless mixed don't give as maintenance.
- Non-emergency fluids – maintenance fluids(60-90 ml/kg/day- adults 90-120ml/kg/day-babies) & Replacement fluids(count fluid rate & Iv Bolus)
- Potassium is given Oral Or IV, NOT SQ.

Q & A:

In what condition wouldn't you give IV fluids – Congestive Heart Failure / Can you give rectal fluids in Infants for the long term and is there any limit to the amount of fluids- try 20ml/kg if other forms of fluids administration fail, limit is until fluids are not absorbed. / Subcut sites in OU- in between shoulder blade,- inguinal and axillary (under anesthesia)/ Human albumin used in other species should be safe in OU. Some vets don't see good results when used in young or sick animals. Vets in Jejak Pulang see good results when used in young orangutans. Whole blood can be given but can give just albumin if the animal is edematous. / Milk replacement for primate young- Nutri baby – human milk product (low lactogen) - Soy Milk for babies that have an allergy / IO catheter placement can be checked via X-ray. If improper placement, a subcutaneous bubble can be seen / Mahmudi's Q Is D5 +LR good fluid option-Does have a need to be used unless want to increase blood glucose, and should spike up the LR content. 50% :50%. Not recommended to dilute LR solution. / Siti's Q: Low Albumin cases – improve nutrition, don't overdo fluid therapy, albumin therapy.

3. WILDLIFE DENTISTRY:

- Case study
- Lecture: drg. Ozi (Canvas Site)

- 3. Panel discussion
- 4. Review of available materials

Moderated by drh. Agnes Pratamiutami Sriningsih and was aimed at refreshing knowledge about dentistry in wild animals in a captive setting.

A case study about dental procedures in orangutans and sun bears was presented by BOSF team which was the base of the whole session.

Discussion Summary:

- *Dental care is essential since dental problems can be related to more serious diseases such as cardiovascular disease, kidney disease, etc.*

- *Dental care should be done regularly, or opportunistically when there is a procedure that needs an orangutan anesthetized.*

- *Dental problems in orangutans in a captive setting is mainly caused by inappropriate nutrition, while in small primate such as slow loris dental infection is mostly caused by tooth clipping.*

- *Dental record keeping is very useful to help us keep track of the history and make a plan when we find any dental issues.*

- *Taking images using X-ray can be very helpful especially to see the dental root (length, number of roots, condition) and ensure the abscess.*

- *Body X-rays can be an alternative when there is no dental X-ray available. Using a special technique, a body X-ray can be useful to see dental decay (Canvas Site).*

- *Besides general anesthesia, injection of local anesthesia has to be administered since it blocks more specific nerves.*

- *Tartar and calculus can be solved by performing dental scaling to avoid dental decay being more severe. The only way to solve dental issues (caries and fractures) in the orangutan currently is to extract the tooth. Root canal has not been a good choice so far.*

Q & A

How do we assess recovery post a dental extraction in orangutans? How do they normally behave post-extraction? Attempt to check the oral cavity periodically (need to train orangutans to be willing to open their mouth voluntarily). Try offering food with different consistency, observing how they chew, as well as their food preference (e.g., do they prefer to pick the soft ones over the hard ones?), compared with their behavior before extraction. A more detailed observation using an ethogram might be useful; note that orangutans WILL eventually adapt to their teeth condition sooner or later. An ethogram should be carefully designed to observe any pain/discomfort condition that warrants the need for an intervention. Every individual shows different responses. Some orangutans showed signs of pain for a couple of days, some do not seem to be bothered. However, animals with multiple extractions take a longer time to adapt. Again, careful observation should be done so that their welfare is not compromised during this adaptation period. Is there a need for extraction in orangutans to be released? Dental extraction should be considered as a last resort, as incomplete dentition may compromise wild animals' ability to forage and process food. However, it is better to have no teeth than to have loose teeth. Orangutans (and other animals) can adapt by using their jaw strength to breakdown food. Yenny shared a case of multiple dental extractions in a rehabilitated orangutan in Jambi. Nine teeth were extracted due to severe caries and gingivitis. After the procedure, she was returned to the reintroduction site, but unfortunately, it was unsuccessful. The team hypothesized that her incomplete dentition may have compromised her ability to forage and process food in the forest. Is there value in adding calcium & vitamin D supplementation for recovery from surgery? Not necessary if the animal has a proper diet but cannot do any harm by adding. How often

should we conduct dental checks? Every 1-2 years is good practice. Train animals to voluntarily open their mouths to allow visual checks.

4. Gibbon Rehabilitation & Reintroduction:

Moderated by Dr. Susan Cheyne, IUCN Section on Small Apes.

OVAG and IUCN SSA session on gibbon conservation for all the OVAG participants hoping to encourage networking and sharing of knowledge among practitioners who are working in the same area, regardless of the species they are focusing on.

Dr. Susan Cheyne opened the session by sharing the 20 Actions to Save 20 Species, a conservation planning initiated by the IUCN SSA (Canvas Site). There are several actions that were highlighted:

- A global campaign to stop the illegal wildlife trade of gibbons
- Joining the OVAG annual workshops to encourage networking.
- The development of a standardized genetic test to identify gibbon species
- Strengthening resilience and capacity building for Gibbon conservation practitioners
- Holding the 3rd Gibbon Husbandry Meeting (October 2022, to be confirmed)
- International Gibbon Day: October 24th
- Improve the IUCN SSA social media to raise awareness

IUCN SSA also shared their ongoing project of creating Best Practice Guidelines on Health and Disease Monitoring. For more information on this project and how you can contribute, please contact Susan Cheyne at section.small.apes@gmail.com and Amy Richardson at amynicole@btinternet.com

Case Studies:

1. A Review of Activity Budgets in Captive Gibbons Housed at the Gibbon Rehabilitation Project (GReP): A Case Study from Malaysia;
2. Husbandry And Conservation Breeding Of Hoolock Gibbon At Biological Park, Itanagar, India;
3. Acupuncture Technique For Javan Gibbon (Hylobates Moloch) At Javan Primate Rehabilitation Center The Aspinall Foundation – Indonesia Program; Disabled Javan Gibbon (Hylobates Moloch) At Javan Primate Rehabilitation Center The Aspinall Foundation – Indonesia Program;
4. Identifikasi Spesies Satwa Owa Di Pps Long Sam - Berau.
5. Bee Sting Case In Macaca Nemestrina at PPS Sumatra Wildlife Center

Day Three, Tuesday 19 July 2022

THEME OF THE DAY: CLINICAL

1. RESPIRATORY DISEASE IN ORANGUTANS:

- Brainstorming session / Case Studies
- Panel discussion
- Reporting back from Pan African Sanctuary Alliance (PASA) Workshop

Panelists:

1. Dr. Nancy Lung
2. Dr. Jennifer Taylor-Cousar
3. drh. Agnes Pratamiutami Sriningsih
4. drh. Nur Nabila Sarkawi

Discussion Summary:

There's a case of pyogenic respiratory infection in an orangutan that ended in death. From gross necropsy, one differential diagnosis is melioidosis, but on bacterial culture, the lab gave a result of Burkholderia cepacia.

What are the panelists' thoughts on this?

Response: JTC: B. pseudomallei is indeed more commonly caused disease, but B. cepacia, which is also an environmental bacteria, may opportunistically cause fatality, especially in immunocompromised humans, e.g. cystic fibrosis patients. Further investigation is required to better understand the role of B.cepacia in orangutans and other non-human primates.

A center experienced a case of relapsing airsacculitis. Any suggestion:

Response: APS: as we know, orangutans do have the tendency to develop a chronic respiratory infection, the one that we termed ORDS. When we see a relapsing airsacculitis, then it is suggestive to start the treatment protocol for ORDS (see page ORDS) as the chance for recovery is bigger when treatment is started early. Interrupted antibiotic courses usually are not enough to eradicate the infection.

Annual influenza in young orangutans: APS: this is indeed common. Few points to be carefully looked at: type of mucous (clear indicate viral or seasonal symptoms, thick or colored may indicate a more serious problem like sinusitis), time of symptoms (is it 'flu season' in the human population?).

How do we differentiate between 'common bacterial infection' with ORDS?

APS/NL/JTC: this is indeed a growing investigation. Many factors should be considered such as parental lineage, time/duration of sickness, severity, location of the infection (upper, middle, or lower respiratory), and repetition. Do not forget also that recurrent influenza may develop into ORDS in some cases. Understanding the trend of the individual is also important. When we see that there is deterioration over the years, or the frequency is getting more often, then probably it is time to consider a more rigorous examination and treatment. There are so many gaps of knowledge at the moment, so if every single center could participate in doing a detailed recording and sample collection for further research, that is something impactful that we can do together.

Herbal medicine: onion juice made of onion and sugar to be given to orangutans with influenza syndrome: BOSF: this is done at BOSF NM with good outcomes. Others have not heard about this.

The best method to detect respiratory problems in orangutans/gibbons? NS: It is very important to do daily observation and keep a record of it. Annual health checks could include a chest x-ray for initial screening. Understanding the pattern of symptoms is additional information to detecting disease. Vets and keepers can be trained to watch how their animal breathe. Breathing should be effortless, anything beyond that should be carefully checked.

How do you train orangutans to get daily nebulization? APS: build a good relationship with the orangutans, and make them trust their keepers first. Once it is achieved, then positive reinforcement training can be initiated. Keep in mind to keep training sessions short, engaging, and rewarding for both the keeper and the animal. Of course, there will be challenges, but keeping it consistent is key. There was a case on a particularly difficult animal who got ORDS but couldn't be treated for many years, but finally, she was receptive to training and got nebulized.

TB case question: how to decide if an animal still has Tuberculosis or not? SU/FS: decisions should be made based on hard data and analysis. For tuberculosis, as you have heard in the talk from the PASA workshop, a combination of tests will increase the sensitivity and specificity, and the results should be discussed with decision makers. Define an acceptable risk that the stakeholders would take. Here in OVAG and PASA, there is a wealth of collective knowledge on many things, but at the end of the day, a decision should be made by the organization itself.

Is pneumonia infectious? SU/JTC: yes, if it is caused by an infectious pathogen. In the case of ORDS, it is not infectious like Tuberculosis, but mixing orangutans with respiratory problems together might increase the chance of them re-infecting each other.

2. REPORT FROM PASA WORKSHOP, KENYA 2022:

Following PASA delegates attending OVAG 2019, a delegation from OVAG went to the 2022 African workshop held with PASA, Kenya Wildlife Service, Ol Pejeta Conservancy, University of Minnesota and Arcus Foundation to expand our community of practice. The workshop concentrated on capacity building, using tuberculosis as an infectious disease example.

Aspects that were covered included:

One Health / Systems management – thinking and mapping / Disease risk analysis – stakeholder engagement and problem description / Wildlife Epidemiology and TB Immunology / Tuberculosis risk management utilizing the five areas of preparedness / Disease surveillance, diagnostic interpretation / Record Keeping / Anesthesia and Emergency Drug / Nutrition / Interpretation of Hematology and chemistry reports / Tuberculosis and Diagnostic Test / Parasitology Management

Attended by OVAG practitioners: drh. Yenny Saraswati (SOCP), drh. Agnes Pratamiutami S (BOSF SL), drh. Popowati (OFI), drh. Waluyo Jati (SOC), drh. Temia Twin Pangesti (YJP), drh. Komara (IAR), drh. Nur Nabila Sarkawi (SORC).

3. Global Movements On Covid-19 In Animal:

- Brainstorming session
- Talk: Wildlife Health Australia
- Panel discussion

In 2022, an update on what had been found recently in animals with SARS CoV2 was covered. This remains an ongoing discussion and follows on to the information on disease surveillance in general in the following link: https://umnadvet.instructure.com/courses/321/pages/sars-cov2-in-the-orangutan-human-interface?module_item_id=15328

4. Disease Surveillance: Field Sampling

- Brainstorming session
- Lecture: Dr. Steve Unwin
- Panel Discussion

The importance of effective wildlife disease surveillance in the Anthropocene cannot be overstated, highlighting the need for good data management principles in wildlife disease surveillance (more info on Canvas Site from Wildlife Health Australia and as a tool in the prevention of pandemics).

For historic details from the OVAG archives on diagnostic techniques, sampling and parasitology please visit the Diagnostics module and Parasitology module on our Canvas Site.

Free external links on Canvas to Animal Disease Surveillance CPD that you might find of interest: Emergency Animal Disease Surveillance Online Training, developed collaboratively by all Australian Veterinary Schools, and Animal Health Australia has produced a number of eLearning modules on Emerging Animal Diseases.

Steve Unwin provided an introduction to disease surveillance, using material from the human health field as well as in wildlife. All materials can be found on our Canvas Site.

5. Wound Management:

- Lecture: drh. Fransiska Sulistyo (moderator) and BOSF Vets
- Break out group discussion
- Big group discussion and wrap up

This session served as a basic refresher on the wound healing process and choosing wound dressing.

Wound Healing:

The wound healing process happens when the skin structure is broken, usually by a trauma. There are three phases of wound healing: inflammatory, proliferative, and maturation. In an ideal condition, these phases will progress (overlapping each other) in a timely manner and usually wound recover within weeks. When there is a delay in wound healing, that's when vets need to intervene.

The healing process will be delayed when there are infection, foreign material, desiccation or maceration, and necrosis. When presented with a wound, vets must conduct a wound assessment in order to be able to decide the best treatment.

Wound management starts with cleaning the wound from visible dirt. Use copious isotonic fluid (Lactated Ringer) to dilute contamination. Once cleaned, vets need to decide the approach of wound management that they want to aim for. New, clean cuts can usually be managed on primary intention, while infected or chronic wounds can be aimed for delayed primary intention or secondary intention. More sophisticated techniques like skin graft and skin flap can also be investigated if skill and resources allow.

The key to effective wound management is using the right dressing at the right time to maintain an appropriate moist wound environment.

WOUND DRESSING: There is a vast array of options for wound dressing. There is a graph is graph below that provides a simple categorization of wound dressings, based on their functions.
https://umnadvet.instructure.com/courses/321/pages/wound-management?module_item_id=15444

drh. Arga (BOSF), also gave a presentation about the management of two wound cases.

Discussion Summary:

A burnt wound case in an orangutan was attempted for primary healing, but the stitches were opened later, so it was aimed for secondary intention. Any suggestion for treatment? Usually, after surgery, it is recommended to put a bandage to cover it, preventing the orangutan from picking up the stitches. It is indeed very challenging to keep bandages and stitches intact in orangutans, so the approach must be comprehensive. Make sure that the wound is not infected, therefore causing pain; provide enough pain killer so that the animal is comfortable, and avoid boredom on the animal.

If you aim for secondary infection, make sure you assess the wound's condition and stage, so that you use the right dressing. There are options of protecting dressing with adhesive around it, so it can stick on the skin around the granulation bed. Another suggestion is to put on a hard protective structure such as a plastic bottle of a piece of PVC pipe if the surgical site/wound allows (e.g., on limbs). Make sure to provide enough air circulation by putting small holes in the plastic container/pipe.

Is it better to use Iodine 10% or 1%? For wound cleansing, iodine 0.1% - 1% is recommended. The formula sold in bottles (e.g., Betadine) is usually 10%, which is toxic for live tissue, so it needs to be diluted 10-100 times before being used to wash wounds.

A vet expressed his doubt when using so many drugs on animals. What are the considerations for choosing drugs? Do we do an antimicrobial resistance test before prescribing antibiotics? Is there any drug that can be given as a single

dose? The answer is very much dependent on the condition. A veterinarian should make a comprehensive assessment of the wound, as well as on the animal. Consider the possibility of infection (remember the golden period for a wound

to be contaminated), the animal's condition (good/malnourished? A baby/an adult? Etc). Based on their assessment, a vet should create a treatment plan, which in general covers the infection (antibiotic), promote healing (anti-inflammatory, dressing & bandage), addresses any underlying condition (anthelminthic for parasite infection, extra protein for malnourishment, etc), and not to forget gives adequate pain killer.

An antimicrobial sensitivity test is useful if the facility allows it, but if that is not possible, vets can still make a sound decision based on their knowledge on what are the most likely type of bacteria that will be found in the wound. This information can be found in the literature. Consider chronicity of the wound, depth of the wound, whether pus is seen or not, and other factors. When there is a delay in wound healing that could be caused by prolonged infection, then a bacterial culture & sensitivity test should be done (take a sterile swab sample from the wound, and send it to a microbiology lab)

When rescuing injured wildlife with a chance for release/translocation, then the vets should consider the length of time for treatment and prepare the appropriate facility to temporarily treat them without keeping wildlife too long with humans. Make sure biosecurity measures are put in place to prevent disease transmission between humans and wildlife.

Day Four 20 July 2022

THEM OF THE DAY: HUSBANDRY AND ANIMAL WELFARE

1. NUTRITION:

- Brainstorming session
- Case study presentations
- Lecture: Barbara Toddes & Astri Zulfa
- Panel discussion.

This year, the nutrition session was focused on 2 topics: dietary preference and nutrition in wild orangutans and nutrition mismanagement in orangutans in a captive setting.

The talk about diet and nutrition in wild orangutan was given by Astri Zulfa, who is a researcher from Universitas Nasional. The second talk about nutrition in zoos was given by Barbara Toddes, Nutrition Director of the Philadelphia Zoo.

One case study on nutrition was presented by Siti Badriyah from Yayasan Jejak Pulang, discussing about the development of feeding competence in orphan orangutans.

2. Pain Management:

- Brainstorming session
- Lecture: Dr. Raffaella Commitante
- Panel discussion

This session (as a follow up from info given in 2021) focused on identifying pain from the orangutan by looking at behavior or their expression. The session begins by introducing the materials available on Canvas from 2021 session, after that, a post-it notes activity to gather some questions, ideas, and thoughts from the offline participants, and continued with a recorded presentation by Rafaella Commitante entitled Identifying pain. This was followed by a panel discussion from 3 expert panelists moderated by Nabila Sarkawi.

Panelists:

1. Dr. Nancy Lung – OVAG
2. Dr. Signe Preuschoft- Four Paws International / Yayasan Jejak Pulang
3. drh. Popowati – Orangutan Foundation International

Discussion Summary:

How do you evaluate pain in your animals?

1. Wild orangutan - Extremely difficult to assess pain, Slow locomotion, More resting, More cautious

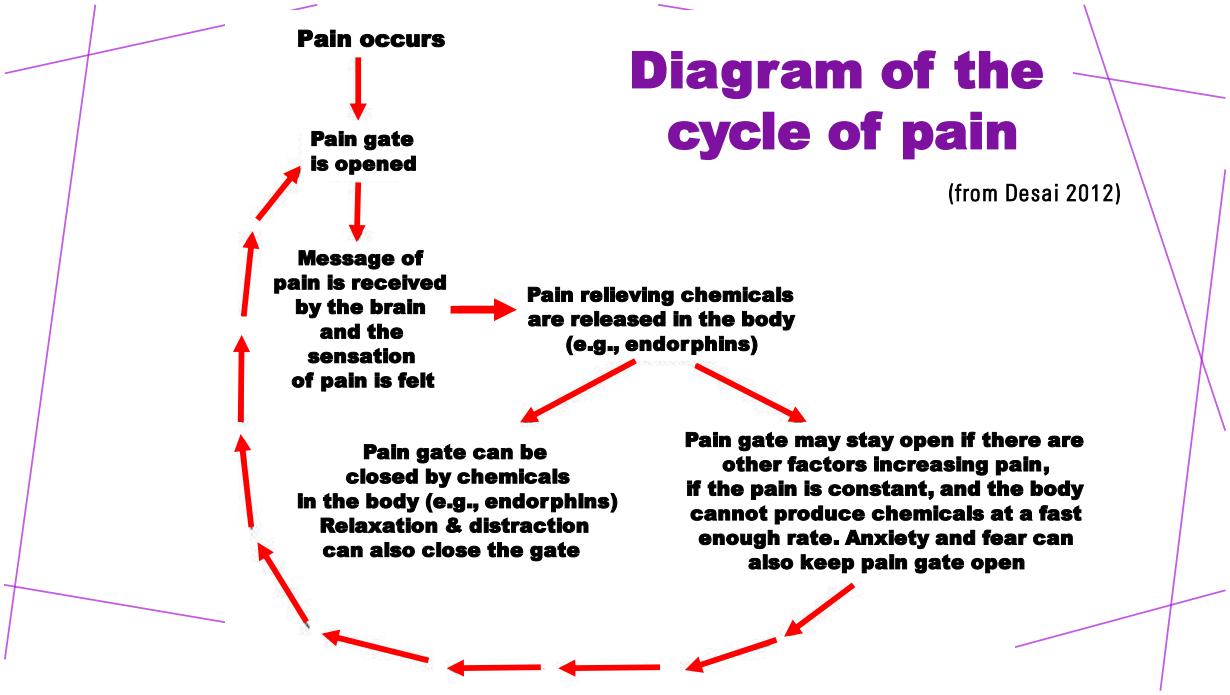
Fecal sampling: evaluate fecal score and do fecal microscopy to check for parasite

Urine sampling: urine dipstick to check for leukocyte, ketone, and glucose

2. Body posture: Holding their head with hand, closed eyes, no movement, biting cage bar, grinding teeth

3. Monitor activity, and behavior (aggressiveness, refusing to eat, response when being touched)
4. Facial expression: anxious
5. Self-medication: eating something to counter the pain
6. Comparative case: compare to human case
7. Pain scale FLACC

Assessing pain when under sedation: general check-up, fecal examination, blood check, checking heart rate and respiratory rate, body temperature, palpation.



Day Five 21 July 2022

THEME OF THE DAY: ENRICHMENT, MENTAL HEALTH AND STRATEGIC MEETING

1. Enrichment:

- Brainstorming session
- Break out group discussion
- Big group discussion & wrap up

2. Mental Health:

- Presentation from 2021 Mental Health Survey
- Padlet sharing session
- Presentation from Biro Psikologi Intuisi, Jogja
- Discussion

Mental Health Survey:

As a continuation from the 2021 survey on mental health that was distributed to all OVAG participants, Dr. Steve Unwin presented a preliminary result of the survey. Two key messages from the 2021 survey (N=145) were that 59% of respondents agreed that their work is a calling and 77% thought it is meaningful; and that although most practitioners are often exposed to verbal and physical threats, 75% of respondents feel hopeful all or most of the time. Effective mental health promotion strategies need to be implemented to reduce the risk factors for burnout and compassion fatigue, and having a supportive professional network is paramount. Over 65% of the participants confirmed that they perceive OVAG as a trusted environment (Unwin et al 2021). Capacity building of OVAG participants combines mindfulness-based training: a supportive forum with technical wildlife health skill training to help all become resilient in current and future challenges in conservation medicine. OVAG is committed to helping individuals and organizations create a healthier work environment, improve staff retention, and ultimately sustaining their conservation outcomes.

As a follow up, the OVAG Committee will do a full statistical analysis on the survey and publish a scientific paper discussing how OVAG as a support system can help improve compassion resilience among the participants.

Talk from Biro Psikologi Intuisi, Jogja:

The Intuisi Psychological Bureau is a professional counterpart of OVAG in providing support for the well-being of OVAG participants. In the workshop, they gave a talk about how to recognize signs of distress in one's own self and how to cope with it, either as self-help or by seeking professional assistance. This is a very important topic to discuss since we at OVAG believe that a sustainable conservation effort may only be achieved by practitioners who are mentally resilient and in a good state of well-being.

3. OVAG STRATEGIC MEETING:

- Discuss post-it notes
- Break out group into 4-5 groups.
- Open discussion

This session discussed about the 3rd phase for OVAG as a professional forum. We are in the process of developing our Theory of Change (ToC) for the 3rd 5-year cycle, 2023-2027. A final ToC document will be available on early 2023 for our working map in the next 5 years.

4. EVALUATION: JEOPARDY GAME

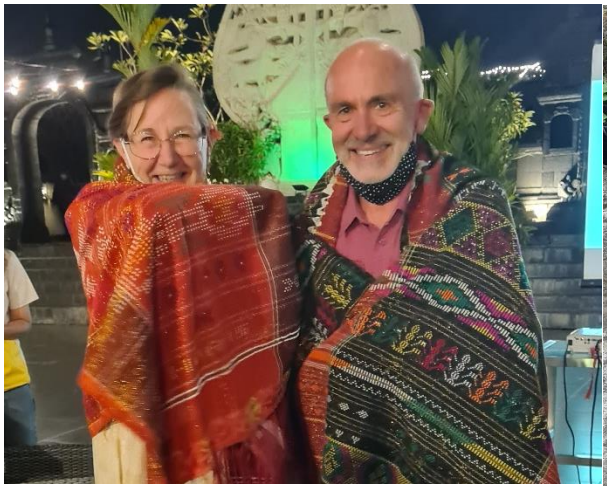
As an evaluation tool, we run a game based on the TV show Jeopardy, where the participants are divided into 5 groups and compete. Questions for the quiz were taken from workshop materials. It is a fun and educational way to allow the workshop participants to refresh their memory of what was been learned during the workshop.

CLOSING

Thank you to everyone at the 2022 workshop who provided us with your ideas and thoughts for OVAG's future. The committee is collating these at the moment, and we will incorporate into a new Theory of Change (ToC) before the end of 2022 to all OVAG participants for further input. Once we have heard from all of you, a final version of the new ToC will be produced and shared.

Just recently, in October 2022, OVAG had the chance to participate in the Asian Society on Conservation Medicine (ASCM) Conference in Chiang Mai, Thailand. In the event, we presented a talk about OVAG's community practice, which is to invest in people and be a support system (Presentation given is on Canvas Site).

Our updated Padlet, only available to OVAG network participants is a site for anonymous postings as you need. We are also in the process of authoring a paper on health assessment for Indonesia and Malaysia for wildlife health practitioners beyond OVAG.



Thank you to our loving community!!!!!

Orangutan Veterinary Advisory Group Workshop

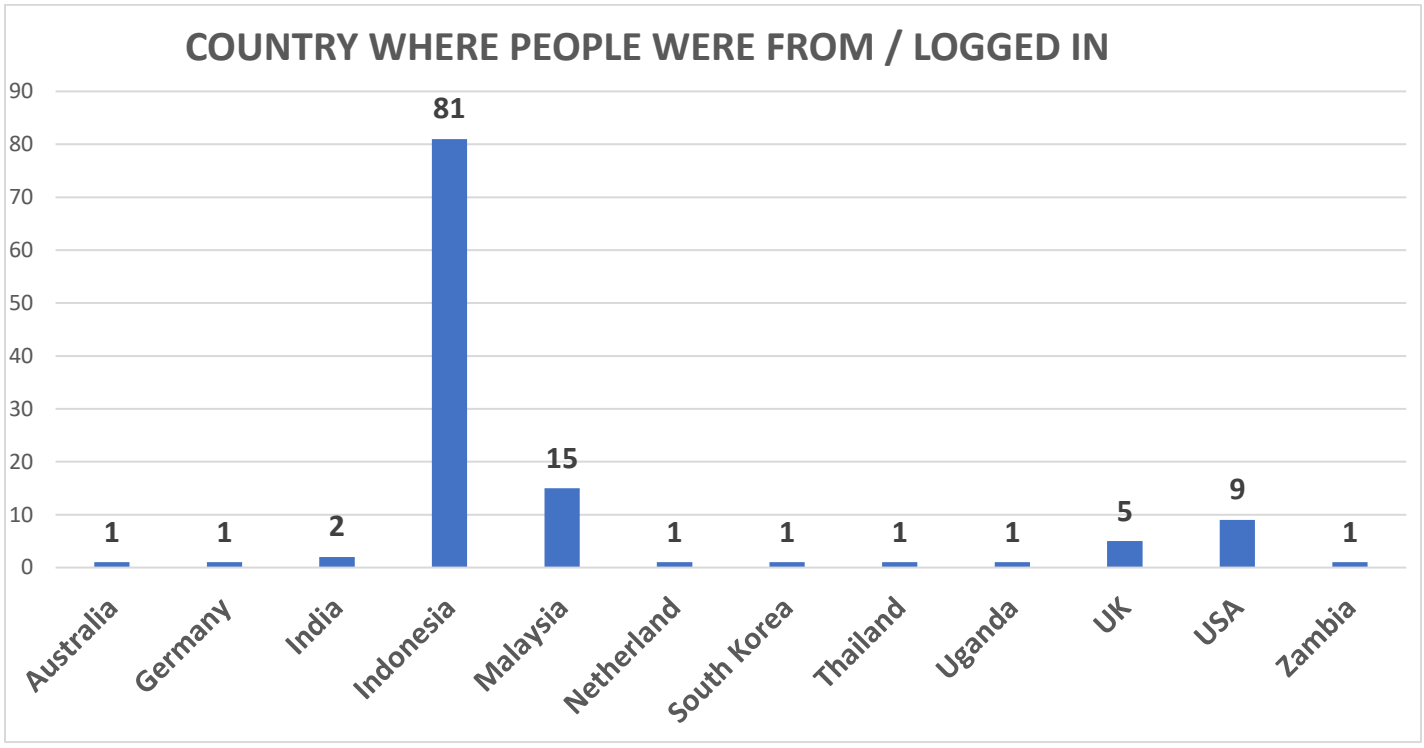
17 – 21 July 2022

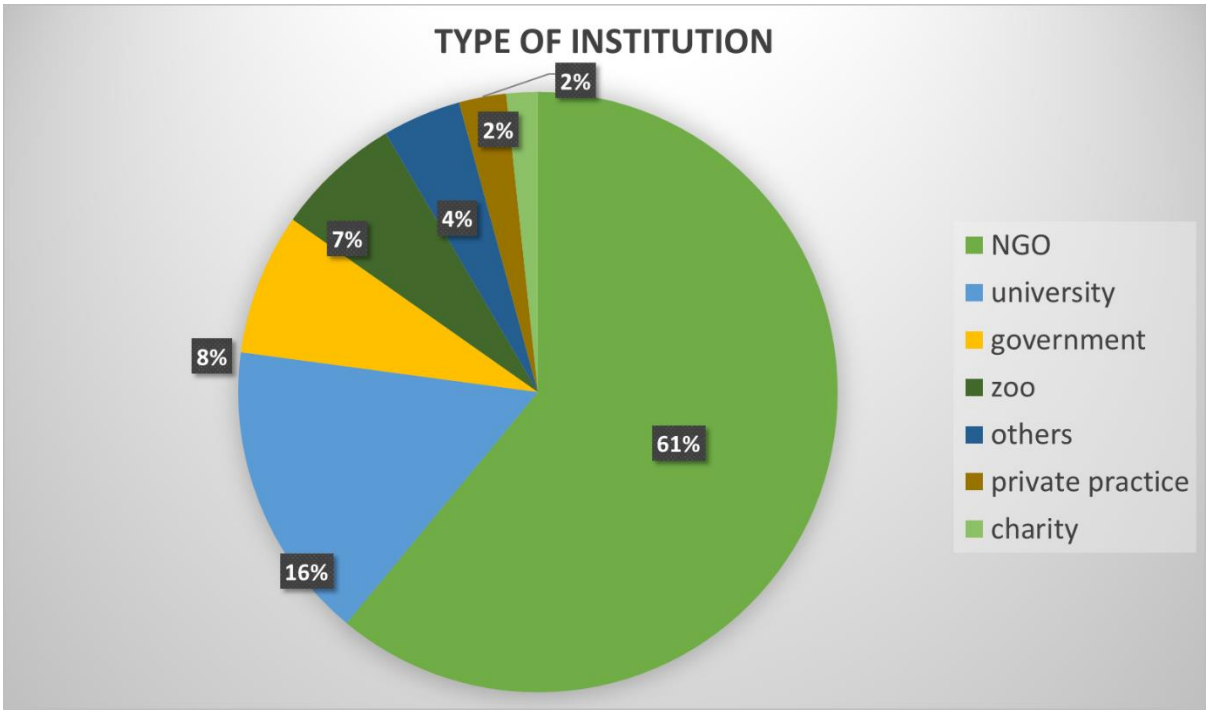
Section Four

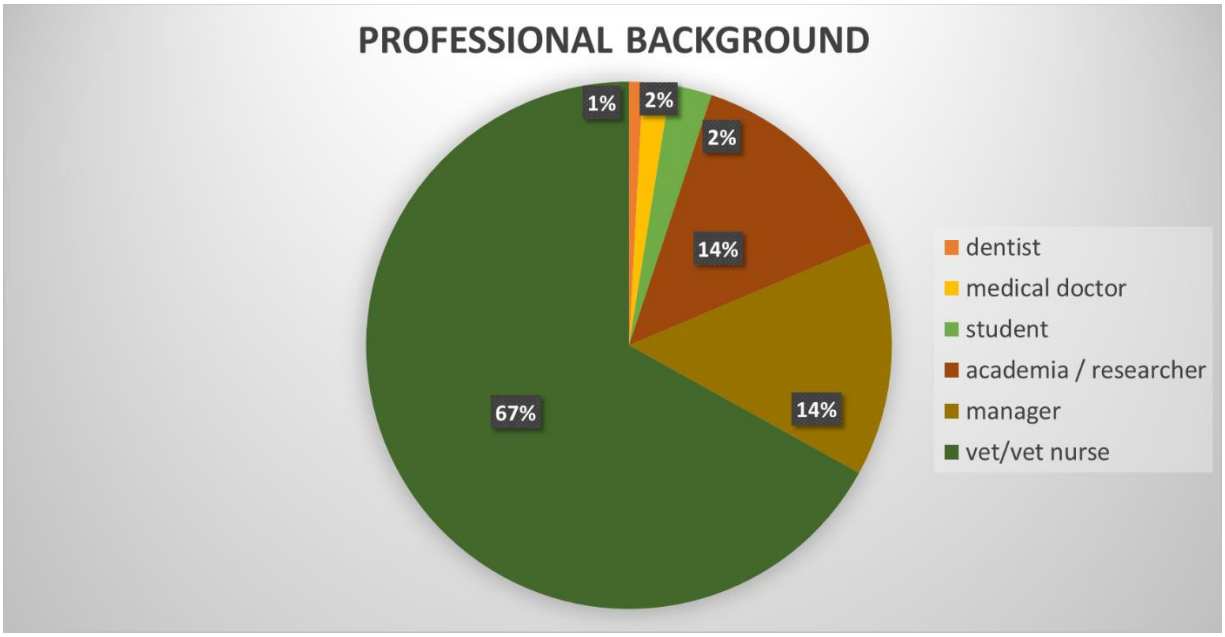
Appendices

Overall Stats

International coverage:



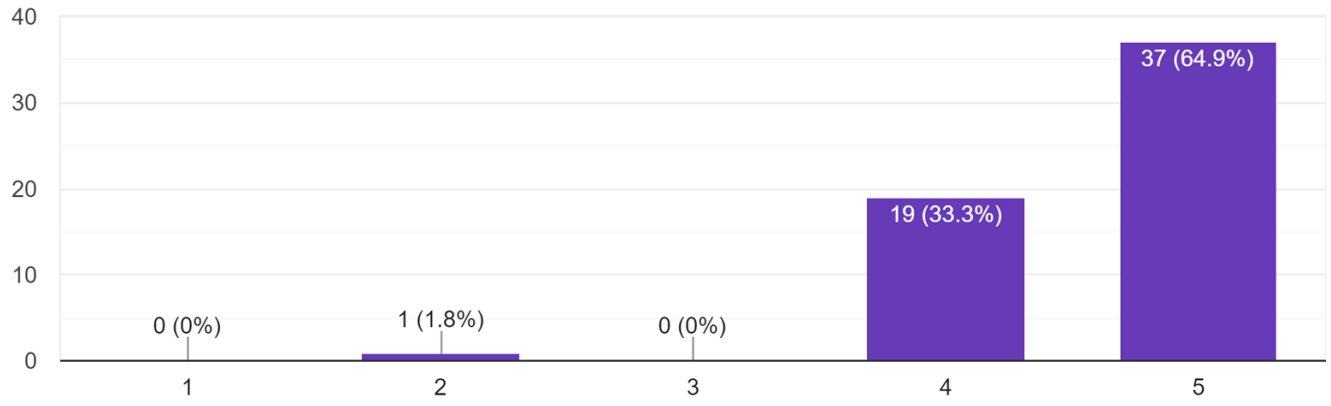

TYPE OF INSTITUTION
2%
2%
4%
7%
8%
61%
16%
NGO
university
government
zoo
others
private practice
charity


PROFESSIONAL BACKGROUND
1%
2%
2%
14%
14%
67%
dentist
medical doctor
student
academia / researcher
manager
vet/vet nurse

Participant Evaluation:

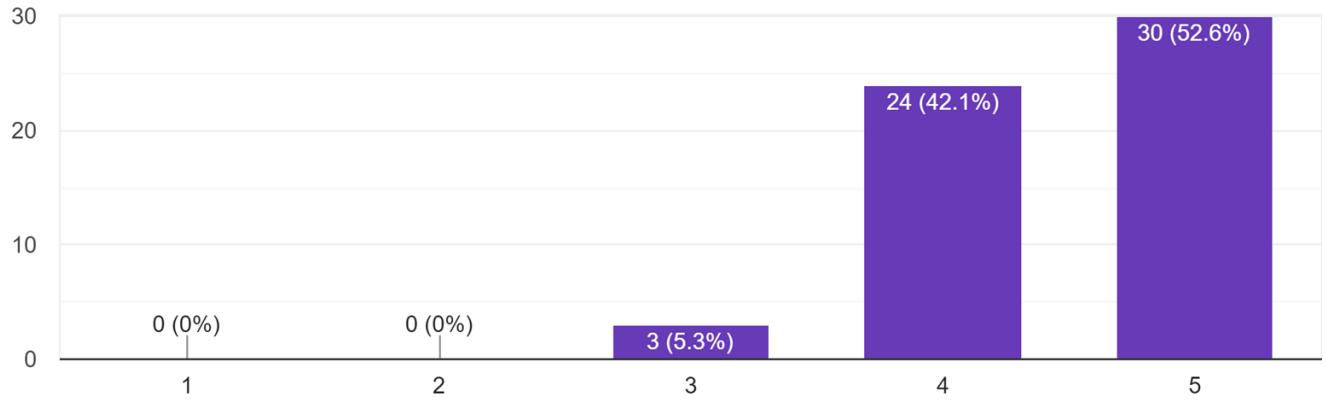
New Knowledge: Did I gain useful knowledge?

57 responses



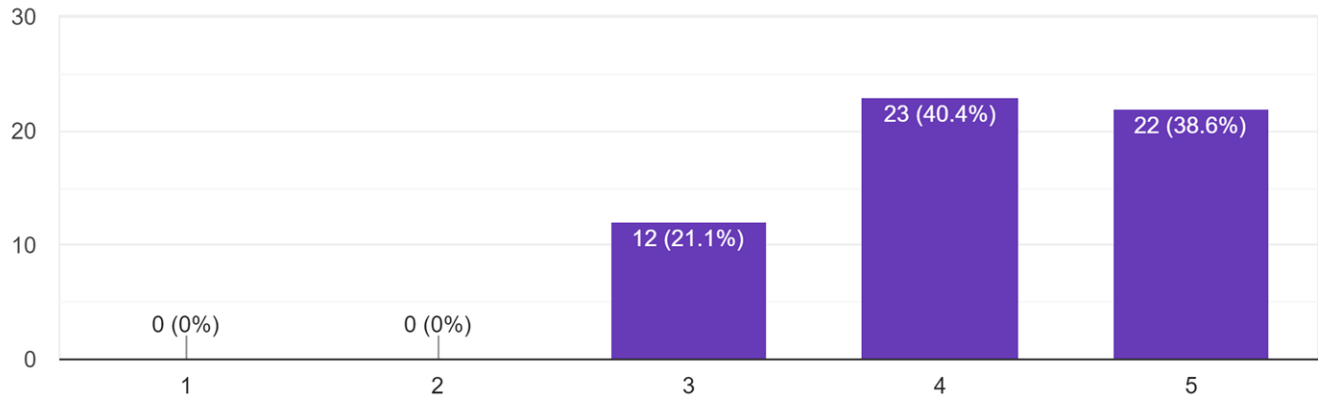
Applying the learning: Will I use the information?

57 responses



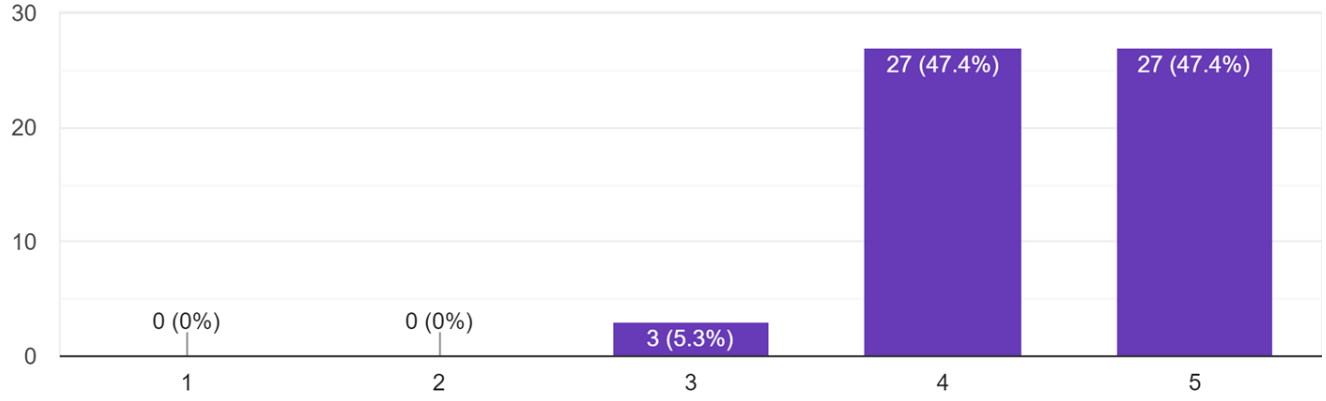
Applying the learning: Have I been shown how to impart this knowledge to colleagues and managers?

57 responses



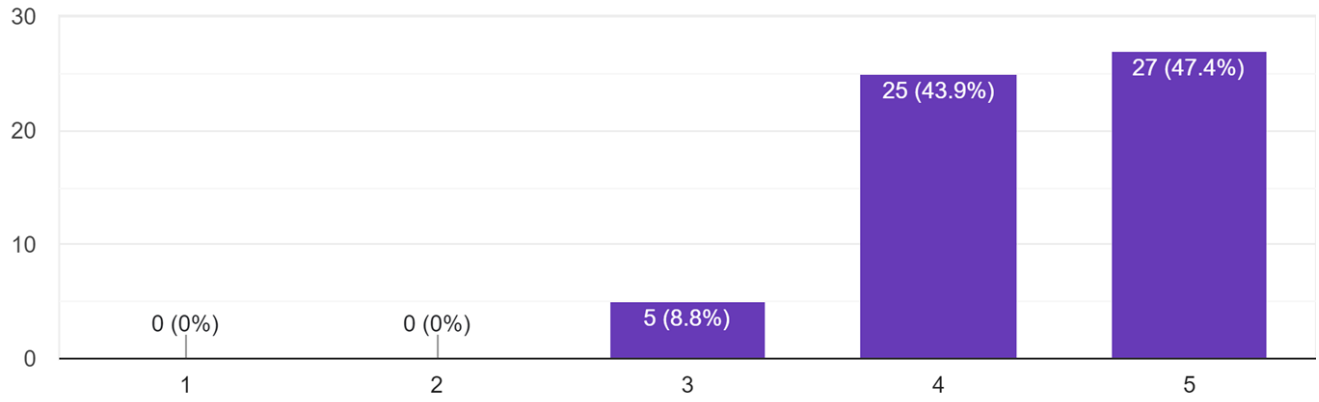
Effect on results: Do I think the ideas and information provided at this workshop will improve the way I do my job?

57 responses



Effect on results: Do I think the ideas and information provided at this workshop will improve the health of the animals under my care?

57 responses



BEST THING

- Topic: interesting, new, useful, nicely delivered, providing new insights (14x)
- Networking, meeting new people/organization, bonding like family (17x)
- Sharing new cases (10x)
- Discussion in groups & with panelists (5x)
- Hybrid workshop (3x)
- Emergency & critical care
- Snake bite & wasp envenomation
- Mental health
- Nutrition
- Fluid therapy

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- Mental health
- Nutrition
- Fluid therapy

THINGS TO IMPROVE

- Technicality: quality of video, audio, management of online participants (5x)
- More group discussion (3x)
- Time management (3x) : 2 responses suggested max 6 hours daily
- Food & venue (3x)
- Language issue (2x)
- Presentation skill (3x)
- Refresher from last year's material, pre-workshop session for new vets (2x)
- Repetitive from last year
- More games, fun session in-between main sessions.
- Practical session (MANY)

TOPICS FOR NEXT YEAR

- Behaviour: how to assess readiness for release, how to address abnormalbehaviour, how to do behaviour observation, mental assessment on animals (9x)
- Wildlife forensic (7x)
- Emergency & Critical Care (4x)
- Anesthesia (3x)
- Surgery (ortho & soft tissue) (6x)
- Dental management (3x)
- Respiratory problem (3x)
- Mental health (2x)
- Radioimaging (2x)
- Diagnostic test (2x)
- Parasite (2x)
- Acupuncture, physiotherapy
- Pain management
- Wound management
- Disease surveillance (2x)
- Husbandry of gibbons (orphans and rehab)
- Un-releasable orangutans & sanctuary
- Gastrointestinal problems
- Wildlife trade
- Animal welfare