

Managing risks to health in wildlife and the wildlife trade.

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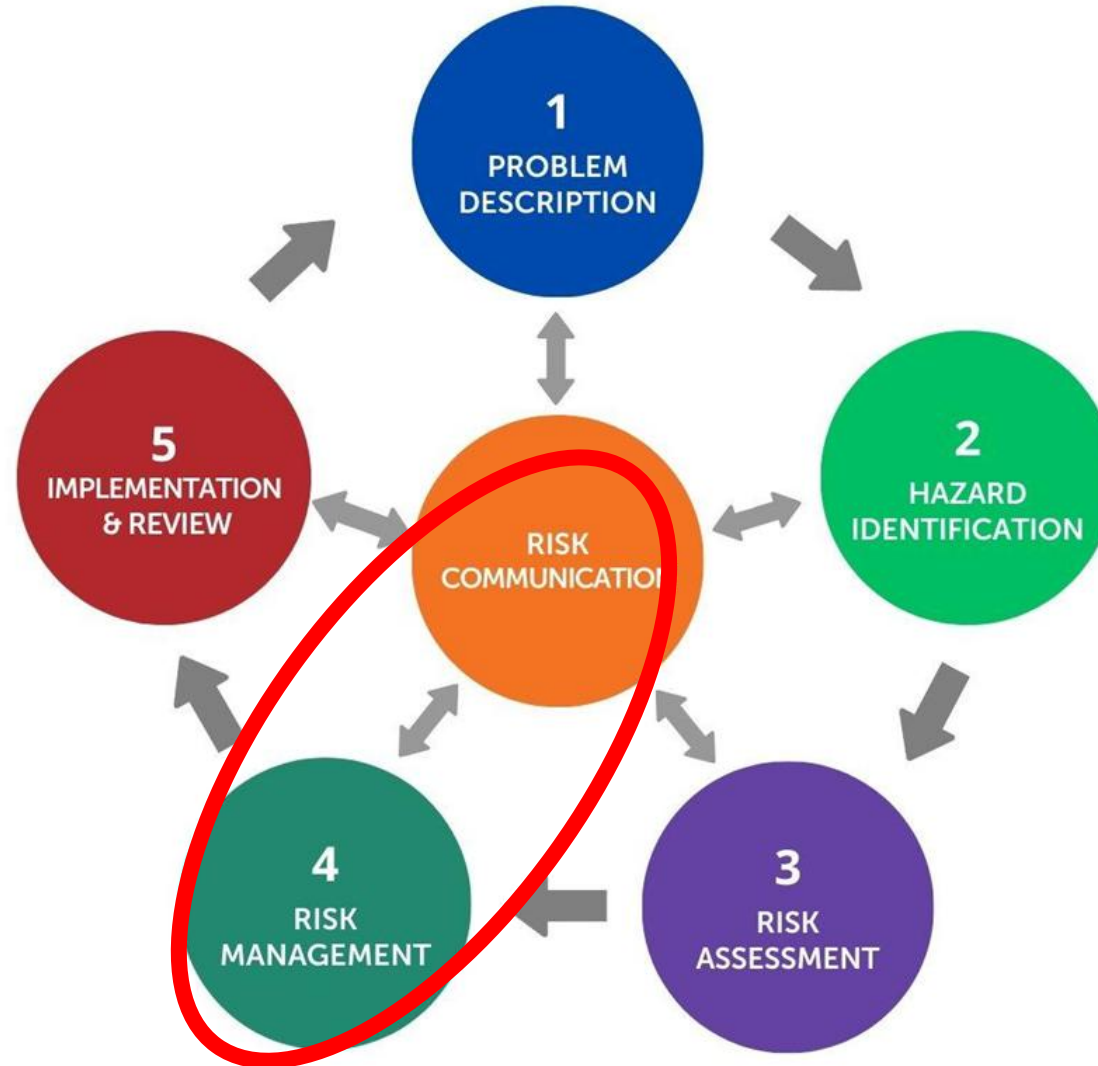
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IUCN CPSG



Doing Risk Management



<https://www.cpsg.org/our-work/capacity-building/courses/wildlife-disease-risk-analysis>



- 1** Stakeholder and expert identification
Communication strategy development
- 1** Context and justification
Formulate questions
Goals, scope, focus
Acceptable risks
- 2** Identification
Classification
Prioritisation
- 3** Release assessment
Exposure assessment
Consequence assessment
Risk estimation
- 4** Critical Control Points
Management options evaluation
Actions elaboration
Contingency plan
- 5** Governance structure
Implementation plan
Monitoring and review

Conclusions for effective and feasible risk management



Identify uncertainty and confidence to guide risk management plan



Troubleshoot governance and communications issues, good communication and governance = good risk management



CCP's within the trade supply chain/ pathway are critical to success

Presentation Flow

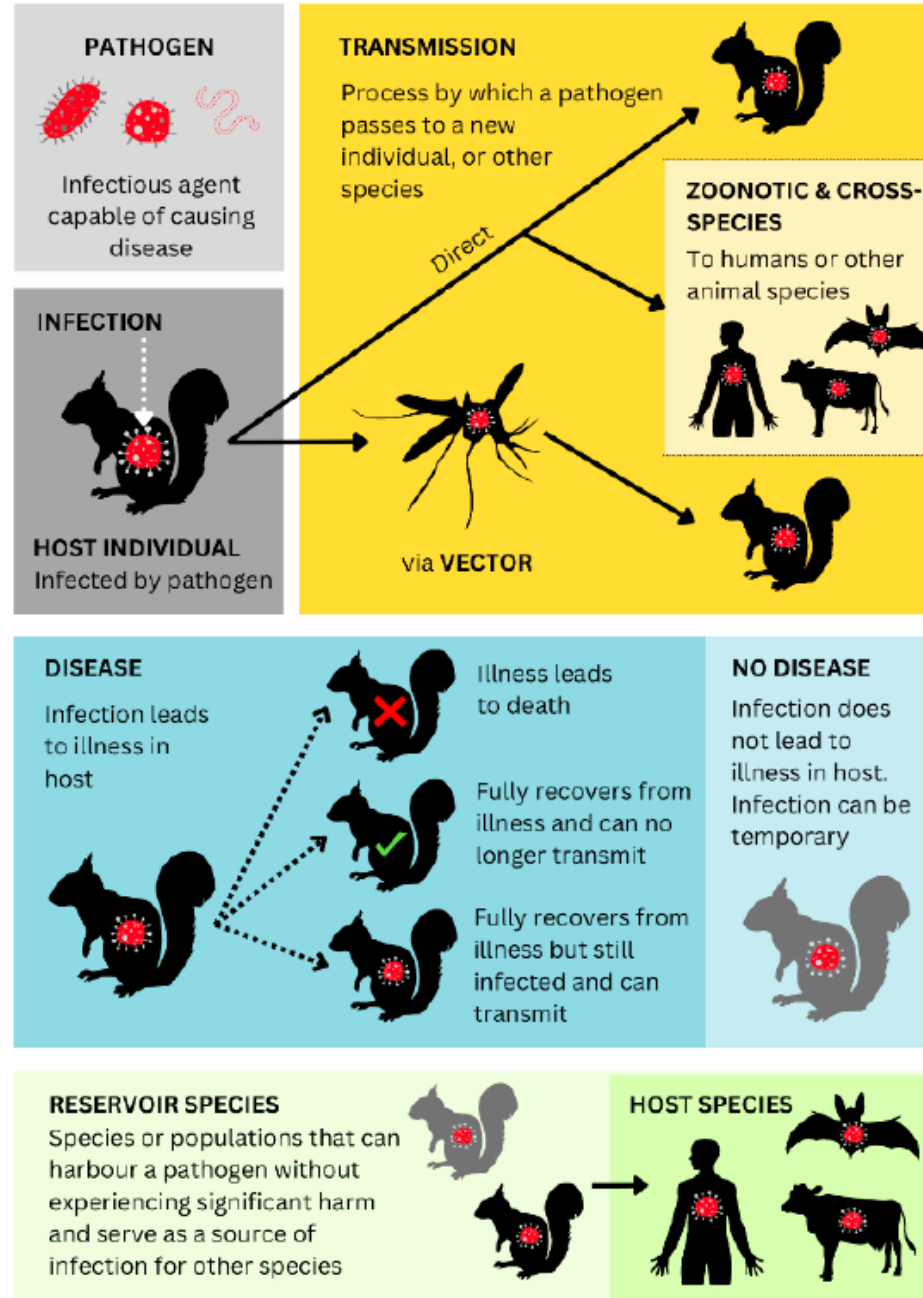
1. Some Key Principles
2. Risk Management Evaluation
3. Managing the Risk
 1. Biosafety and Biosecurity (Hierarchy of Controls)
 2. Reducing Uncertainty
 3. Risk management option evaluation
 4. (Contingency) Planning

1. For effective and feasible risk management, we need effective risk communication

Definitions

<https://www.woah.org/app/uploads/2024/09/2024-final-guidelines-disease-pathogen-toxin-surv-wildlife-v27.06.pdf>

INFECTIOUS DISEASE KEY TERMS



Pathogen – an organism that causes disease

Infection: When a pathogen invades a host (human or animal)

Disease: the symptoms seen of that pathogen infection – the bodies reaction to the pathogen

What is Risk?

Two components:

the **likelihood**, or probability, of something happening and, if it does happen

the **consequences**, of the deleterious activity



2. For effective and
feasible risk
management, we need
good Governance



WILDLIFE DISEASE OUTBREAK INVESTIGATION PREPAREDNESS ALIGNED WITH COMPONENTS OF DISASTER PREVENTION



GOOD GOVERNANCE

Examples:

- Legal and policy frameworks, reporting requirements understood, in place & upheld
- Clarity in leadership, command, reporting structures
- Effective inter-sectoral coordination & accountability, stakeholder engagement, roles & responsibilities confirmed
- Communication lines established, risk communication strategies in place for clear, consistent, timely and accurate information dissemination



EFFECTIVE SYSTEMS OF MANAGEMENT

Examples:

- Understand the system, problem and scope, appetite for risk, all-hazards approaches
- Emergency & Early Warning systems- integrate outbreak planning with monitoring & surveillance activities
- Technical guidelines to support outbreak investigation- preparedness & contingency plans, coordination mechanisms- e.g. notification pathways, triggers for investigation, chain of command structure
- Data & information management- systematic, timely, transparent, secure, platforms



ACCURATE & COMPLETE DOCUMENTATION

Examples:

- Standard Operating Procedures (SOPs) to support outbreak investigation e.g. PPE, sampling, decontamination, carcass removal
- Communication strategies in place, documented & transparent to reduce uncertainty and build trust
- Financial, human resource and equipment requirements outlined
- Risk Analysis, hazard identification, prioritisation and assessment for evidence based approaches to help mitigate health risks



STRENGTHEN CAPACITY & CAPABILITY

Examples:

- Human, physical & financial resourcing- trained personnel, access to physical resources (e.g. PPE)- build resilience, ensures swift mobilisation & surge capacity
- Surveillance plans, infrastructure & equipment accessible as needed
- Stakeholder collaboration & partnership development, MoU's
- Laboratory capacity development
- Risks managed effectively & feasibly



PROCESS PRACTICED

Examples:

- Simulation exercises- field and desktop to allow for testing & refinement of procedures
- After-action incident reviews- evaluate response, lessons learned, update processes
- Gap Analysis
- De-escalation & Recovery planning
- Aids in implementation, iterative emergency & contingency planning, monitoring and review

A photograph of three people hiking on a grassy trail towards a mountain at sunrise. The sun is low on the horizon, creating a warm, golden glow. The people are seen from behind, walking away from the camera. The sky is a mix of blue and orange.

If you want to go fast, go
ALONE.

If you want to go far, go
TOGETHER.

Governance is

...the process by which **decisions are made and communicated**, individual **roles and responsibilities** identified and assigned, and, ultimately, **how accountability is built** into a project.

Planning how **multiple stakeholders connect** with each other and their accountabilities help all to understand how the project will be managed.

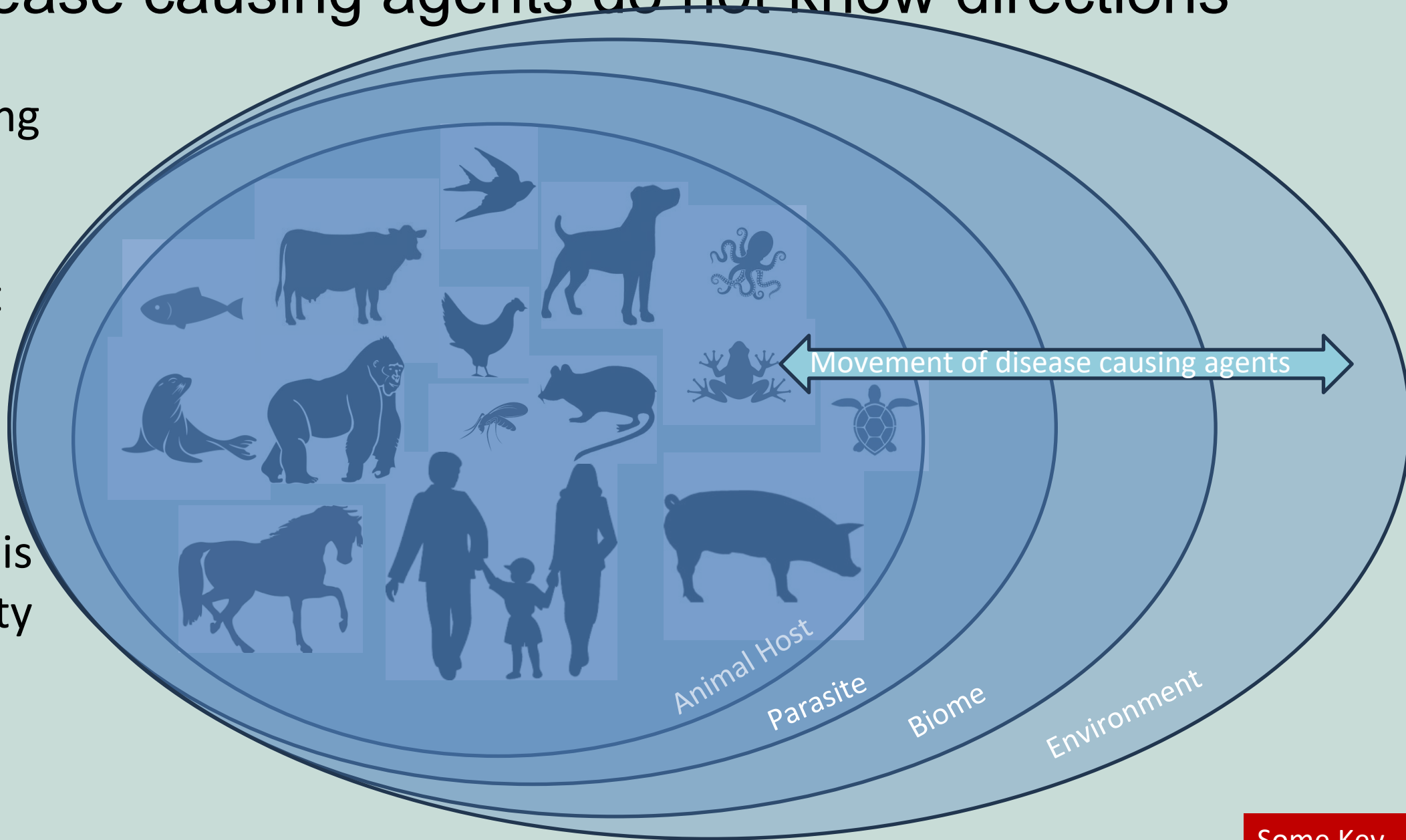
Copsey, J.; Lees, C. and Miller, P. (eds.). 2020

3. For effective and feasible risk management, we need an understanding of the system

Disease causing agents do not know directions

Understanding interactions with the environment are essential

Every new host encountered is an opportunity for pathogen adaptation



Evaluating Risk Management Options

There is no such
thing as zero risk

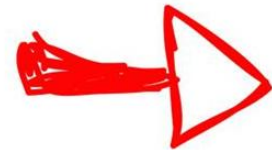
RISK MANAGEMENT



AVOID



REDUCE



TRANSFER



ACCEPT

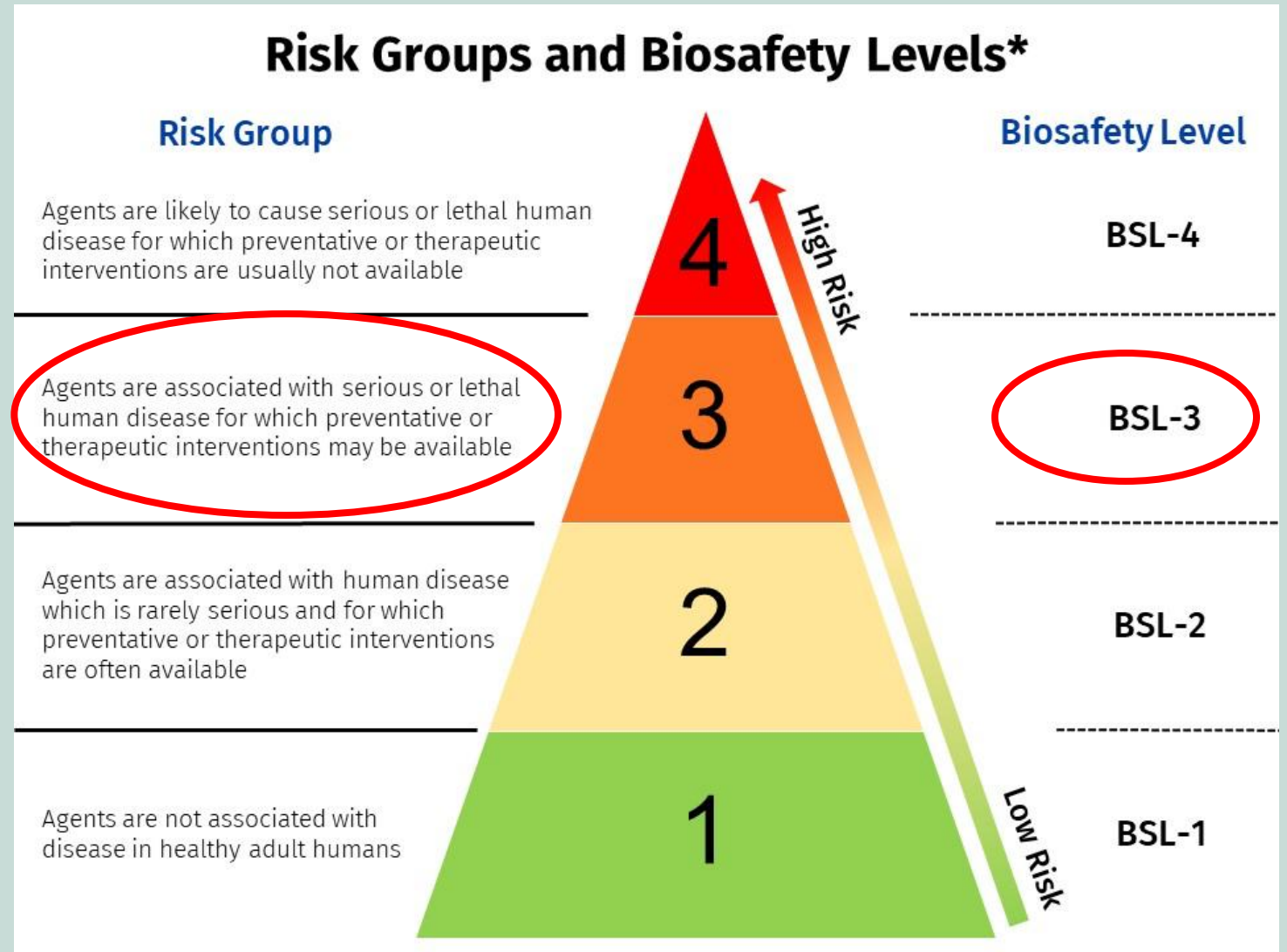
Risk Evaluation

- Are risk management measures needed given the agreed level of acceptable risk?
- Consider pre-disposing factors e.g. human, environmental, agent and host factors influencing transmission
- Risk evaluation and management approaches should be updated regularly
- Consider uncertainty!

Likelihood of entry and establishment and spread in the specified population	Consequence of entry, establishment and spread in the population				
		Negligible	Low	Moderate	High
	Very Low	Very Low	Very Low	Low	Low
	Low	Very low	Low	Low-Moderate	Moderate
	Moderate	Low	Low-Moderate	Moderate	High
	High	Low	Moderate	High	High

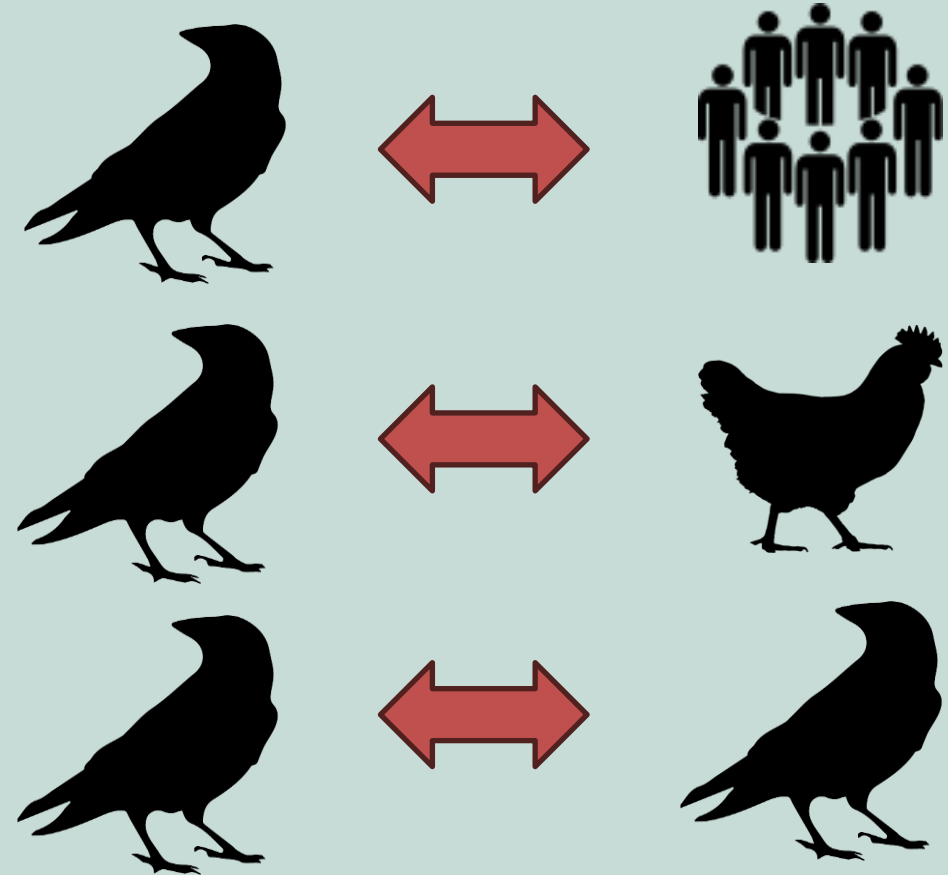
Actually managing the risk

- **Biosafety:** deals with the accidental or unintentional exposure to or release of biological agents. Biosafety often focuses on biological risks within laboratory or field environments
- **Biosecurity:** focuses on preventing the intentional or negligent release of biological materials or the acquisition of dangerous knowledge and technologies. It is the way we stop the introduction and spread of harmful organisms such as viruses, bacteria, animals, plants, pathogens and insects into our country and how we manage the impacts of those already here.



What is wildlife biosecurity/ biosafety?

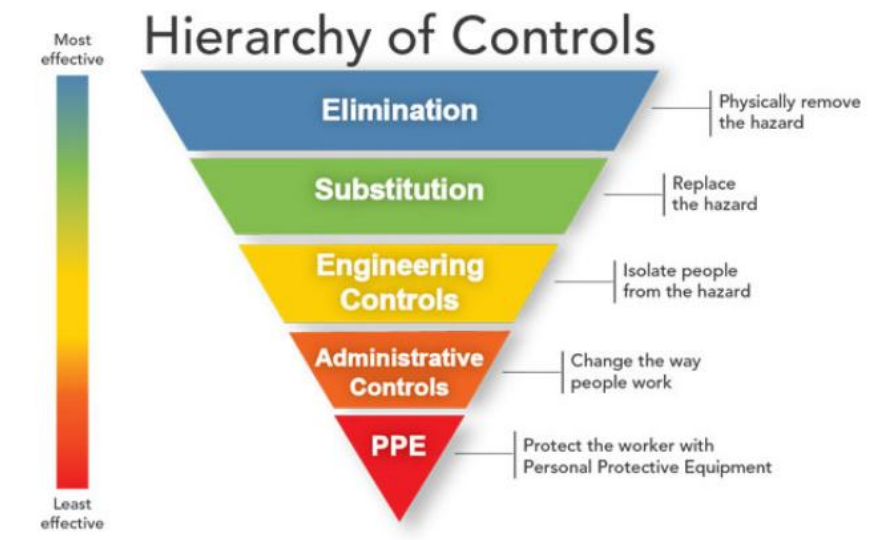
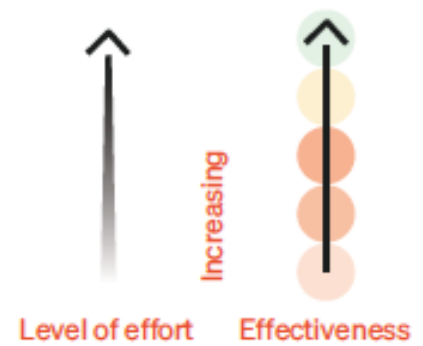
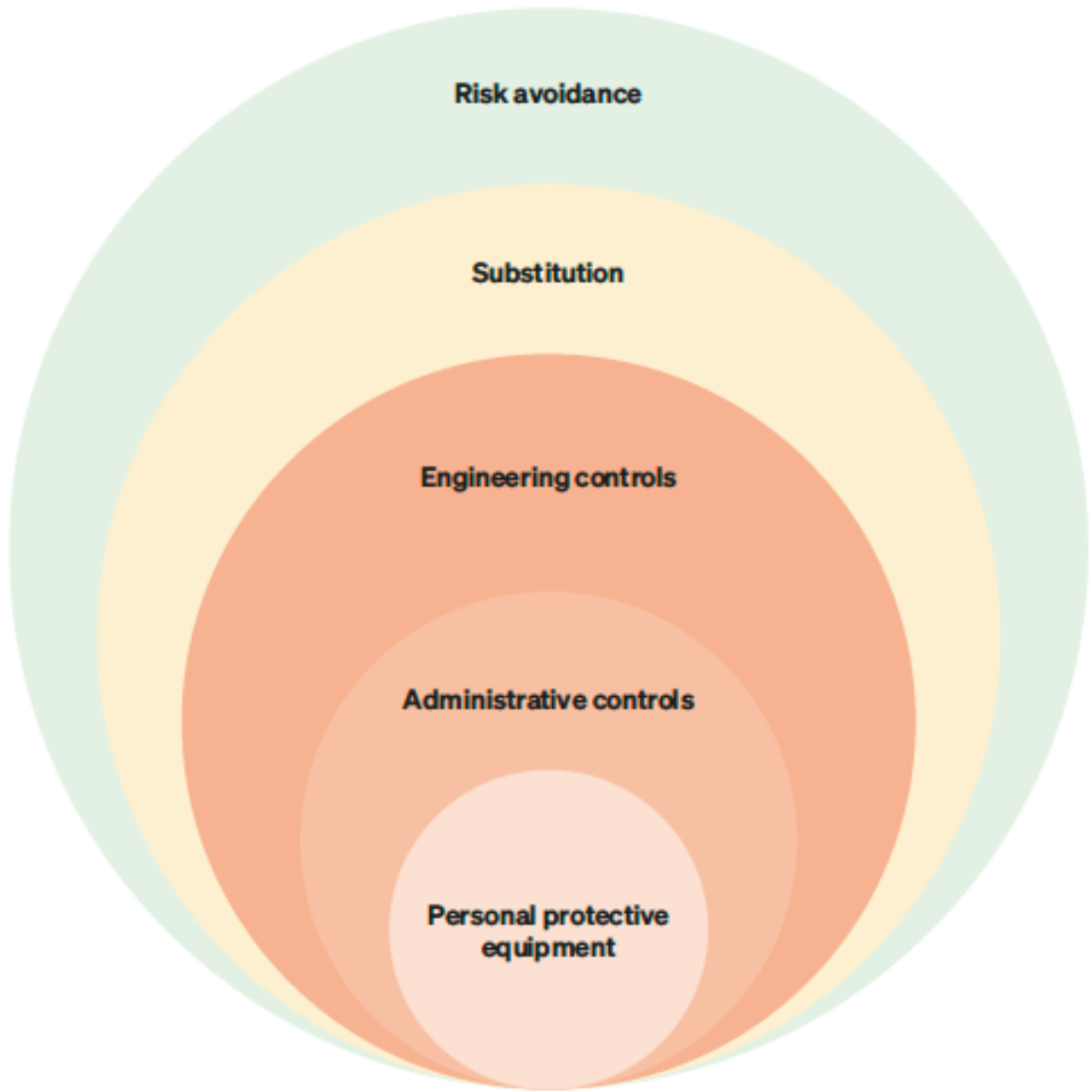
Wildlife biosecurity and biosafety focuses on **minimising and managing the risk** of infectious disease spreading from one individual or population to another and looks at practices which may play a role in decreasing the risk of infectious disease.



Aims of wildlife biosecurity and biosafety

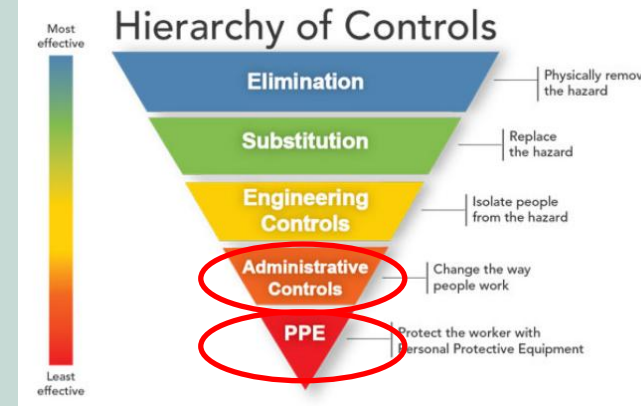
- **keep wildlife safe and healthy**
- keep workers, members of the public and their families safe and healthy
- keep domestic animals, including pets and livestock, safe and healthy
- minimise impacts of disease on individual animals and wildlife populations





<https://www.woah.org/app/uploads/2024/09/2024-final-guidelines-disease-pathogen-toxin-surv-wildlife-v27.06.pdf>

What BSL-3 biosafety looks like



<https://raptor.umn.edu/about-us/our-research/HPAI>



<https://www.usgs.gov/centers/nwhc/science/avian-influenza-surveillance>

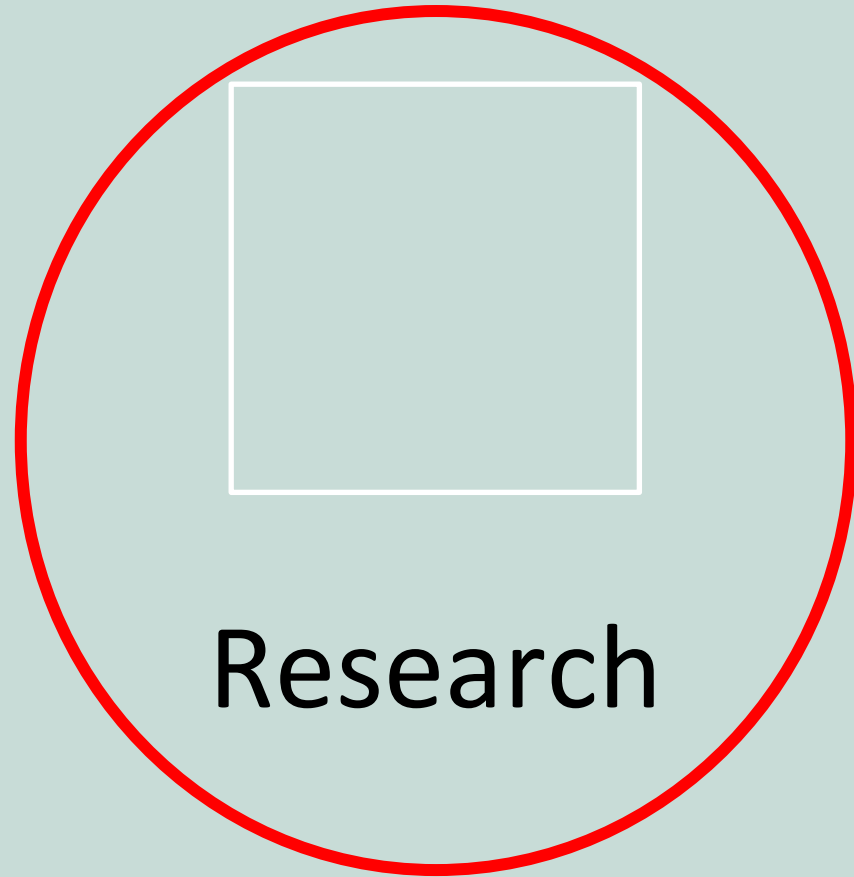


<https://www.sfchronicle.com/bayarea/article/Unprecedented-outbreak-of-avian-flu-killing-17657172.php>

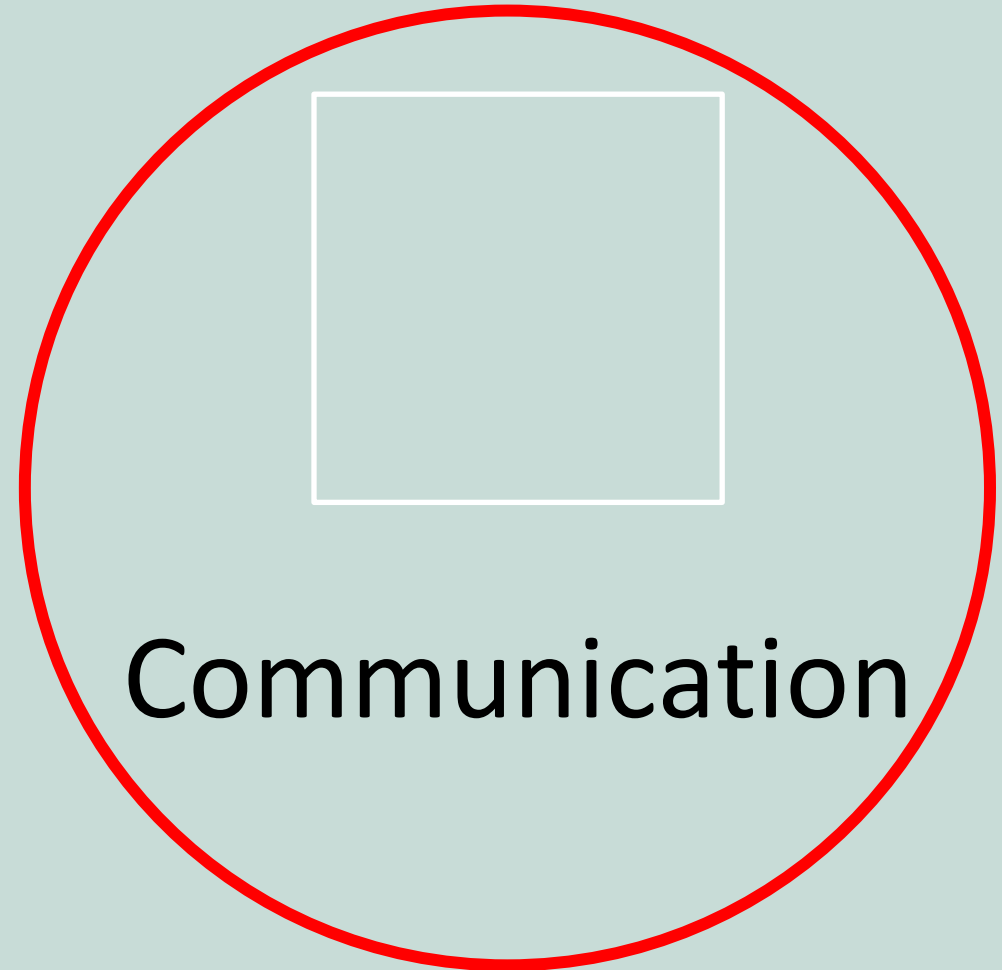


Proposed classification of level of uncertainty adapted from Wieland, Dhollander et al. (2011)	
Low	Solid and complete data available; strong evidence provided in multiple references
Medium	Some but no complete data available with some information gaps; evidence provided in small number of references.
High	Scarce or no data available with significant information gaps; evidence is not provided in references but rather in unpublished reports, based on observations, or personal communication.

Reducing Uncertainty



Research



Communication

Reducing Uncertainty



Research

RESEARCH ARTICLE | EVOLUTION | 

Intergenomic signatures of coevolution between Tasmanian devils and an infectious cancer

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March 11, 2024 | 121 (12) e2307780121 | <https://doi.org/10.1073/pnas.2307780121>

Strategy for managing
wildlife disease in the
Tasmanian Wilderness
World Heritage Area

[Lett Biomath.](#) Author manuscript; available in PMC 2023 Aug 31. PMCID: [3121111](#)
Published in final edited form as:
[Lett Biomath.](#) 2022 Feb 15; 9(1): 121–140. NIHMSID: [711111](#)
Published online 2022 Sep 1. doi: [10.30707/LIB9.1.1681913305.269822](https://doi.org/10.30707/LIB9.1.1681913305.269822)

Saving the Devils Is in the Details: Tasmanian Devil Facial Tumor Disease Can Be Eliminated with Interventions

[Brian Drawert](#),^a [Andrew S. Flies](#),^b [Sean Matthew](#),^a [Megan Powell](#),^c and [Bryan Rumsey](#)^a

Communication

It doesn't always go well...

 Biological Conservation
Volume 248, August 2020, 108635

Conservation trade-offs: Island introduction of a threatened predator suppresses invasive mesopredators but eliminates a seabird colony

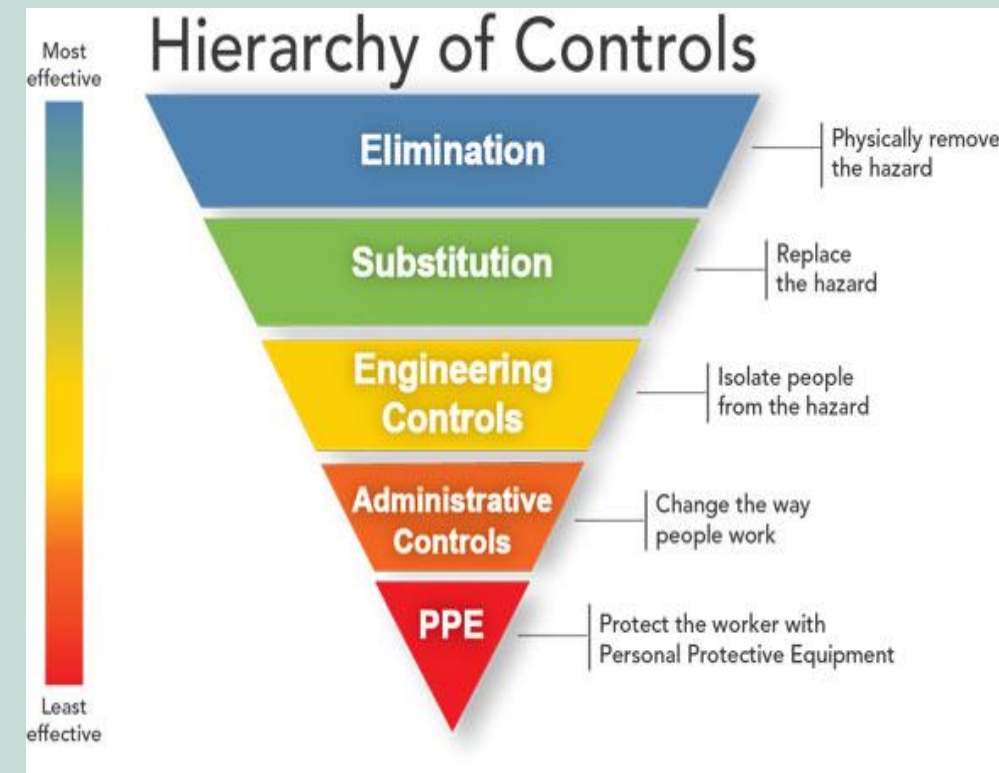
[Vincent P. Scleri](#)^b  , [Christopher N. Johnson](#)^a, [Peter Vertigan](#)^b, [Menna E. Jones](#)^b

**Tasmanian Devil PHVA
Final Report**

**3-6 July 2008
Tasmania, Australia**

Risk Management Option Evaluation

- Review **effectiveness** and **feasibility** of your risk management options (avoid, reduce, transfer, accept)
- Assisted by biological pathways for your hazards of concern:
 - Identify Critical Control Points (CCP's)
 - Tools like hierarchy of controls can assist decision-making



Example: Phillip Island little Penguins



Phillip Island (Mallowl) Little Penguin (*Eudyptula minor*)

Disease Risk Analysis

April 2024



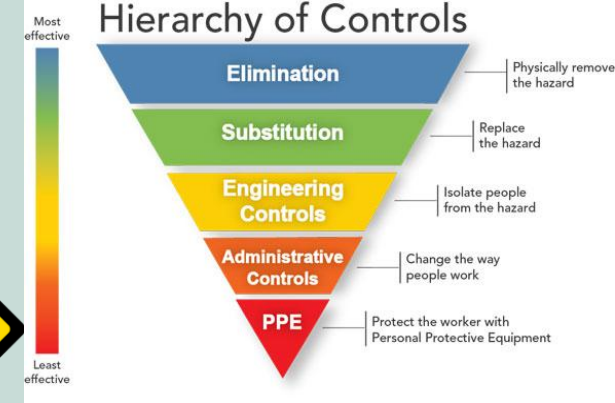
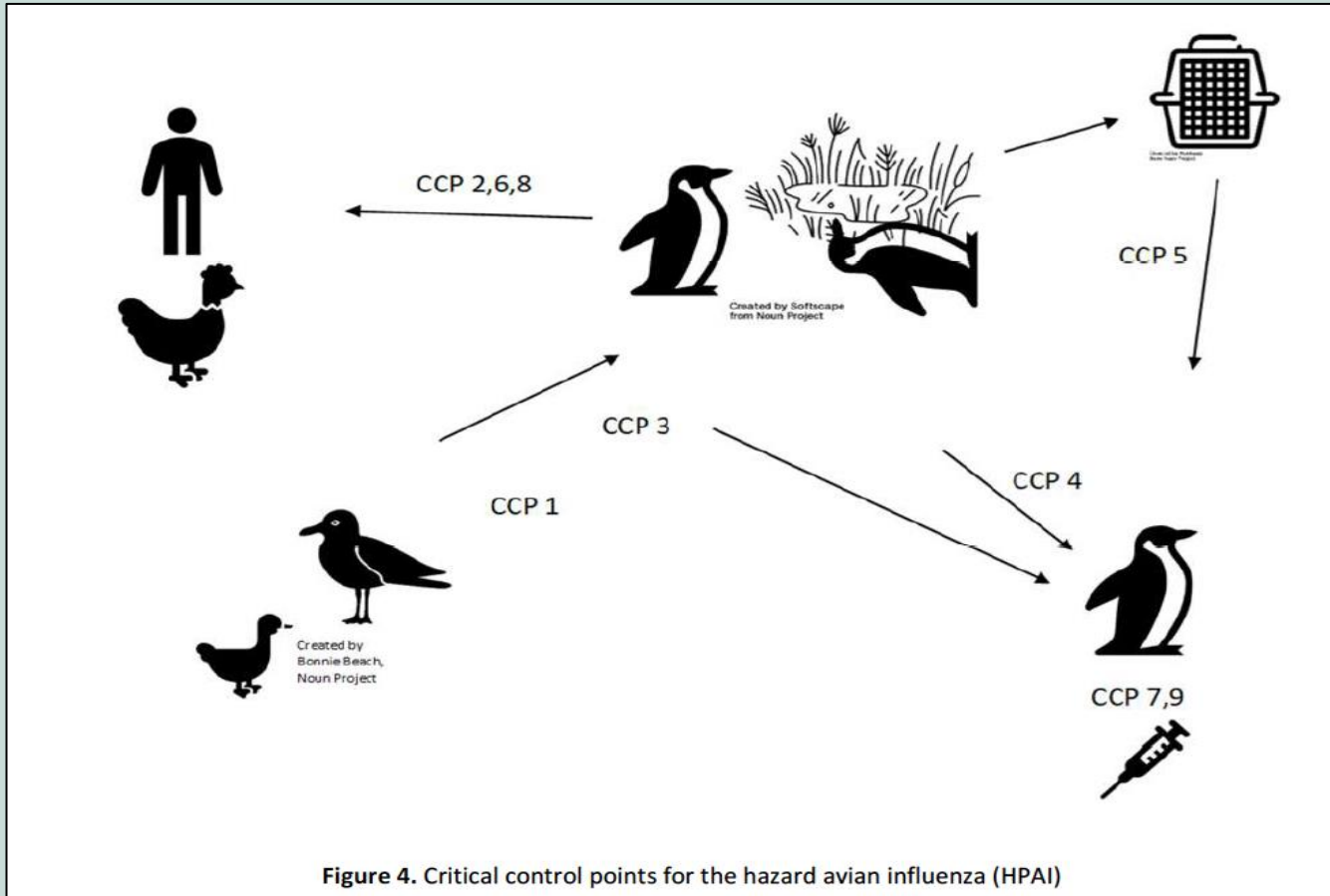
Source: Visit Victoria

Dr Rebecca Vaughan-Higgins, Prof Lee Skerratt, A/Prof Jasmin Hufschmid

- 80 Hazards of concern
 - infectious and non-infectious
- 5 high risk hazards:
 - HPAI, oiling, predation (marine & terrestrial) and wildfire
- 21 medium risk hazards
- Full Risk Assessment-15 medium and high-risk hazards

Risk Management Option Evaluation

Identify Critical Control Points



- CCP 1: Passive Surveillance
- CCP 2: Public communication
- CCP 3: Active Surveillance live birds
- CCP 4: Passive surveillance, carcass removal
- CCP 5: Avian biosecurity
- CCP 6: Human Biosecurity
- CCP 7: Treatment
- CCP 7: Routine Sample collection/ clinical examination cease at high-risk periods
- CCP 8: When Disease has been confirmed regionally
- CCP 9: Vaccination

Risk Management Option Evaluation

Is it Effective?

Is it Feasible?

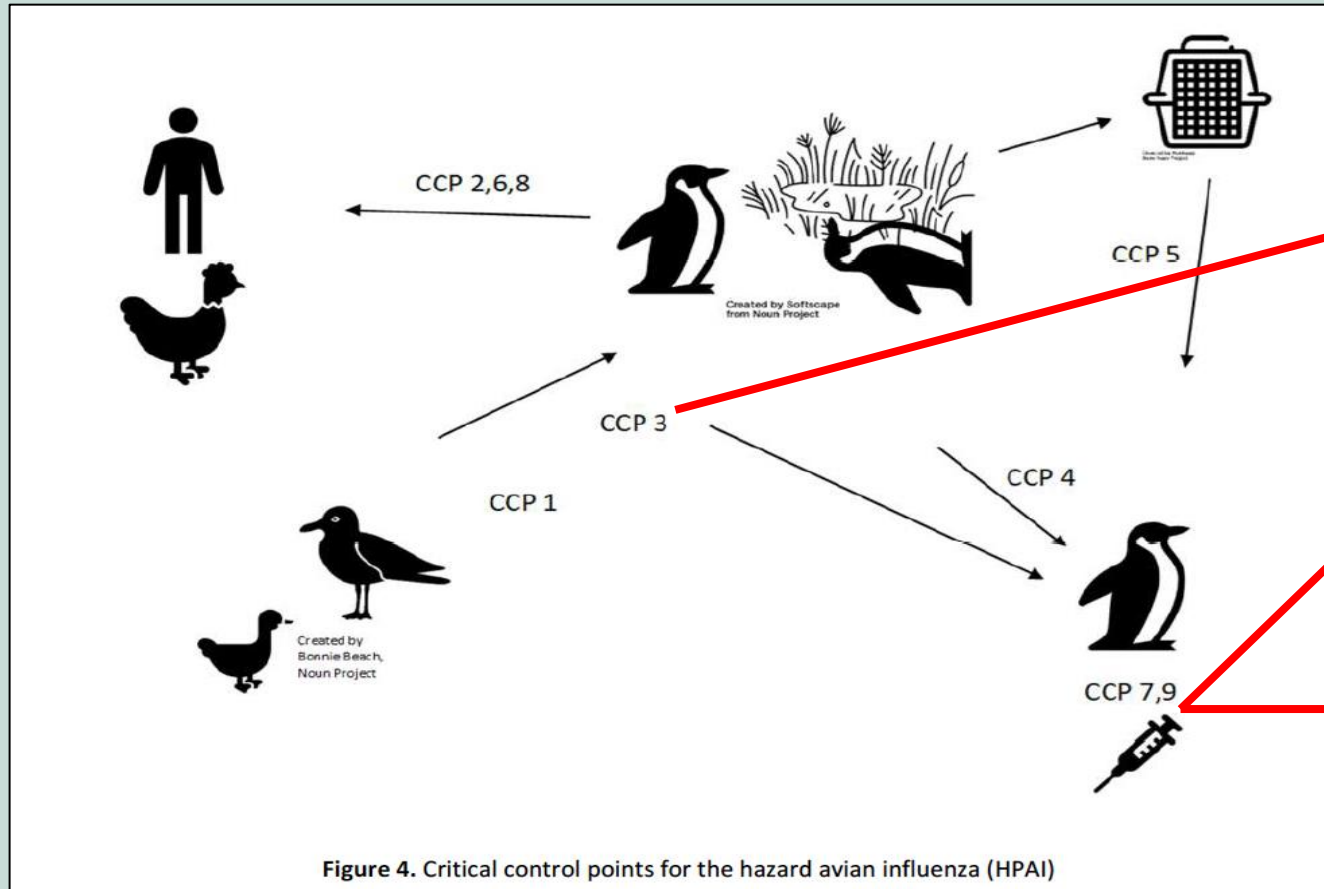


Figure 4. Critical control points for the hazard avian influenza (HPAI)

CCP 1: Passive Surveillance

CCP 2: Public communication

CCP 3: Active Surveillance live birds

CCP 4: Passive surveillance, carcass removal

CCP 5: Avian biosecurity

CCP 6: Human Biosecurity

CCP 7: Treatment

CCP 7: Routine Sample collection/ clinical examination cease at high-risk periods

CCP 8: When Disease has been confirmed regionally

CCP 9: Vaccination



Contingency plans

Set of actions that the WDRA team will follow if a predetermined risk materializes

It is designed to help an organization/team respond effectively to a significant future incident or unexpected events

Key elements: The elements that sets the plan in motion

- The immediate course of action to mitigate the effects
- Key tasks for the team and a timeline for their completion
- Who to contact when the contingency occurs

Contingency plans



**Emergency
preparedness**



Health protection



**Minimize economic
loss**

Conclusions for effective and feasible risk management



Identify uncertainty and confidence to guide risk management plan



Troubleshoot governance and communications issues, good communication and governance = good risk management



CCP's within the trade supply chain/ pathway are critical to success



Victoria Hall, The Raptor Centre.



Thank you for listening – participation time approaches

Thank you to the
wider WHA and
CPSG teams for
their inputs into
these presentations



Risk Management Option Evaluation

Risk management option evaluation for (Disease hazard: (African Swine Fever) to (Visayan Warty Pigs) from traded wild boar between islands of country X.

CCP#	Mitigation Options	Effectiveness *	Feasibility *	Explanation (include any relevant sources of information)	Recommendation (Y/N)
	Active surveillance	H	M	Required for reducing data gaps, but resources limited – assess trade-offs.	Y
	Public communication	H	L	Lack of resources. However, critical to risk management success. Solution: Food security angle + biodiversity angle messaging	Y
	Human and farm biosecurity	H	H	Proven effective (references). Policy needed to allow resourcing. Compensation arguments to discuss	Y
	Reduce interface between wild pig and local pig (commercial/ backyard farm)	H	H	Proven effective. Attach to above.	Y
	Control vectors (rodent and fly)	H	L	Resource heavy – uneconomic for return (evidence?)	N
	Vaccination	L	L	Watching brief needed on new developments. Risks of live attenuated vaccine currently outweigh evidence of vaccine effectiveness.	N
	Carcass removal	M	L	Good epidemiological evidence that this is an effective step to minimise spread. However, difficult to enforce/ enact.	Y

High – multi source/ multi situational peer reviewed evidence – high confidence/ low uncertainty

Medium - mixed source evidence peer reviewed/ experience/ grey literature

Low: Minimal/ no evidence – low confidence/ high uncertainty