COVID-19 Effects on Livestock Production: A One Welfare Issue

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Animals and COVID-19

The Journal of Pediatrics

Dog Bites in Children Surge during Coronavirus Disease-2019: A Case for Enhanced Prevention

Cinnamon A. Dixon, DO, MPH, and Rakesh D. Mistry, MD, MS

BBC News

When your ‘pandemic puppy’ doesn’t work out

By Ashitha Nagesh
BBC News

Coronavirus: Cat owners fear pets will make them sick

BBC News

ShelterWatch Report

As the world navigates through a new reality, our pet population remains vulnerable and in need.

Despite temporary closings and reduced shelter capacity, at least 798,789 new animals have arrived in the 1,191 shelters monitored by the 24Pet ShelterWatch Report since the start of the pandemic. This number is expected to surge in the coming months with an anticipated increase in relinquished and abandoned animals.

March 13 - September 11, 2020 compared to the same period in 2019
Bats and COVID-19

'Wet markets' likely launched the coronavirus. Here's what you need to know.

Most of the earliest COVID-19 cases trace back to one of these sites, but

Evidence for SARS-CoV-2 related coronaviruses circulating in bats and pangolins in Southeast Asia

Supaporn Wacharapluesadee, Chee Wah Tan, […] Lin-Fa Wang

Nature Communications 12, Article number: 972 (2021) | Cite this article
Our mental, physical, financial etc. health is connected to animals and through animals to our environment...
One Health

11,500 articles

147 articles

From SARS to COVID-19: A previously unknown SARS-related coronavirus (SARS-CoV-2) of pandemic potential infecting humans – Call for a One Health approach
Mohamed E. El Zowalaty, Josef D. Jirku

One welfare impacts of COVID-19 – A summary of key highlights within the one welfare framework
Rebeca Garcia Pintillos
Covid-19: One Welfare effects on farmed animals
Mink cull

Animals farmed
Mink farms a continuing Covid risk to humans and wildlife, warn EU experts

...gassing is a particularly cruel way to kill mink because they are semi-aquatic animals able to hold their breath for long periods. Recent Dutch video footage appears to show a mink that survived gassing being fished out of a container to be gassed again.

In the United States, more than 12,000 of the country’s three million farmed mink have died from COVID-19.
- Few, large farms, large numbers of animals
- Enclosed, climate controlled, automated
- Few stockpersons
- Max. output/operate at full capacity
- Impact of any disruption felt immediately up and downstream
Short term effects of Covid-19 on supply chains

- Panic buying (eggs, cheese and milk)
- ↑ meals prepared at home
- ↓ meals eaten ‘out’
- Food service industry vs supermarkets
- 12-15% ↓ in demand for dairy
- ↑ whole egg demand ↓ liquid egg
Covid-19 outbreaks in meat plants

- 40k cases, +420 plants, 40 states, 49 shutdowns

- Line speed waivers
- ↑ 140 to 175 birds/min
Covid-19 outbreaks in meat plants

- ↓ health/welfare of people sick with Covid-19
- Inequality issues
  - Migrant and minority workers
  - Language barriers
  - Working conditions
  - Food safety and zoonotic disease dictate hygiene practices
  - Animal, equipment and assault related injuries
  - Psychological stress/drug use
  - Poorly paid, poor healthcare, lack of sick leave, high density and low quality housing

Covid-19: We are not “all in it together”—less privileged in society are suffering the brunt of the damage

May 22, 2020
**Covid-19 outbreaks in meat plants: Plant shutdowns**

- **Plant workers**
  - Financial uncertainty, job losses
  - Increased workload/duties changed - ↑ injury and stress?

- **Farmers**
  - Financial losses
  - Psychological cost of depopulation

- **Public health**
  - Food safety
  - Carcass disposal (pathogens, odour, nuisance insects etc.)
Loss in processing capacity

- April ‘20 pig slaughter capacity 55% of normal
- 250k pigs at slaughter weight/day
- Executive order to re-open
- May 19th capacity at 80% but still 100k pigs/day
- Poultry: ↑ line speeds recaptured some loss in capacity
Poultry welfare

- Line speed waivers – incomplete stunning?
- Fast growth rates - overcrowding in 17 days
- High stocking density
  - ↓ walking ability and leg health
  - ↑ fearfulness, FPD and mortality
  - ↑ heat production ↓ air and bedding quality

- ↓ eggs in incubator ↓ bird nos. 3wks
- Destroy eggs/kill chicks at hatching (2 mths)
- Welfare, ethical and societal concerns
Pig welfare

- Fast growth rates = rapid overcrowding
- High stocking density
  - ↓ activity and comfort behaviour, leg health
  - ↑ aggression/skin injuries, tail biting and susceptibility to disease
  - ↓ growth ↑ heat production ↓ air quality

Mitigation strategies

- Removal of growth promoters (U.S. √ pig welfare)
- ‘Holding diets’ : ↓ energy diets ↑ fibre ↓ feed intake = ↑ hunger ↑ aggression
- ↓ feed availability = ↑ hunger ↑ aggression
- ↑ building temperature = ↑ heat stress
- Stop breeding, induce abortions
Mass emergency killing of animals

- Ideally euthanasia whereby animals have a ‘good death’ without pain or distress
- Emergency killings should observe same level of welfare as during slaughter
  - Minimal handling, immediate death, sedation or death while unconscious/stunned
- Difficult to achieve at scale
- Handling, stun/kill quality and confirmation of death prior to disposal
Mass emergency killing of animals

• As per September 2020
  – 600k pigs Iowa state alone
  – 10m birds
Mass emergency killing of animals

- Killing methods
  - (1) electrical; (2) mechanical; (3) gas mixtures; and (4) lethal injection (depends on size/age of pig)
  - AVMA – Ventilation shutdown (VSD) + heat or Co₂ (VSD Plus)

- Methods depends on production system (floor, cage, aviary)
  - Water based foam, whole/partial house or containerised gassing, cervical dislocation, mechanically assisted cervical dislocation, decapitation and captive bolt gun

- Method of choice
  - Whole house gassing with water based foam methods
Mass emergency killing of animals

- Hazards to poultry (29) and pig (28) welfare
- Mostly related to stun/kill quality
- Lack of staff skills and training, and poor-designed and constructed facilities
- Poultry
  - Insufficient time of exposure
  - Timing of ventilation shut-down (VSD)
- Negative impact on animal welfare
  - Pain, fear, impeded movement, respiratory distress
Animal transport

- $\uparrow$ transportation time = $\uparrow$ transport stress
  - Movement to alternative slaughter plants
  - Restrictions on movement between countries
Cull sow issues

- BE and NL: 60K sows/week
- Ireland: +50% of cull sows
- UK: Brexit + Covid-19
- Backlog of cull sows on farms
- Poor welfare of cull sows
Other threats to the welfare of livestock

• ↓ profit margins
• Disruptions in importing feed, vet. medicine
• Limitations on animal/human (vet) movement
• Poor record keeping
• Vet resources switched to Covid-19 (epidemiology, diagnostics etc.)
• Postponement of disease eradication schemes
• Others
One Health
One Welfare
Environmental welfare: Pollution risks

- Carcass disposal poses a pollution risk
  - Bodily fluids, chemical and biological leachate components
  - Hazardous gases ($\text{NH}_3$, $\text{H}_2\text{S}$, $\text{CH}_4$)
  - Air, surface and ground water contamination

- Disposal method
  - Un/lined burial and composting
  - Incineration and rendering
Environmental welfare: other considerations

• New ‘stream’ of pollution
• ‘Run-off’ from dead chicken compost (high in P)
• Risks to wildlife (#animalwelfare)
• Milk - high biochemical O₂ demand
• Involuntary culling ↑ GHG emissions
Short-term solutions

• Production
  – Alternative methods of mass euthanasia/disposal of animals
  – Mobile incineration units

• Processing
  – ↑ capacity: 5.4 to 7 days = 30% ↑
  – Local/mobile abattoirs
Short-term solutions

- Retail
  - ‘Slow food’, ‘local produce’
  - Direct to consumer retail models

- Consumption
  - Initial changes #Onewelfare benefits
    - ↑ basic ingredients/home prepared meals
    - ↑ plant based meat alternatives (???)
    - Shift from high meat to diet rich in unprocessed plant based foods
Long-term solutions

- Policy change
- Sustainable intensification
- Moderate demand for animal products
- ↓ food waste
Alternative production systems
One size fits none

PROCEEDINGS OF THE ROYAL SOCIETY

Sustainable, efficient livestock production with high biodiversity and good welfare for animals

D. M. Broom1, F. A. Galindo1,2 and E. Murguesio3

productive than pasture alone. When compared with widely used livestock production systems, silvopastoral systems can provide efficient feed conversion, higher biodiversity, enhanced connectivity between habitat patches and better animal welfare, so they can replace existing systems in many parts of the world and should be further developed.
#OneWelfare solutions
Central role of Animal Welfare

The Connection to Other Animals and Caring for Nature
Joanne Vining
Human Nature Research Laboratory
Department of Natural Resources and Environmental Sciences
University of Illinois at Urbana/Champaign
Urbana, IL 61801
USA

Animal welfare as preventative medicine
MS Dawkins

Review: current available strategies to mitigate greenhouse gas emissions in livestock systems: an animal welfare perspective
P. Llonch \textsuperscript{1a}, M. J. Haskell\textsuperscript{1}, R. J. Dewhurst\textsuperscript{2} and S. P. Parry\textsuperscript{1a}

Towards Farm Animal Welfare and Sustainability
Henry Buller \textsuperscript{1a}, Harry Blokhuis \textsuperscript{2}, Per Jensen \textsuperscript{3} and Linda Keeling \textsuperscript{2}
Conclusion

- Covid-19 raised a myriad of #OneWelfare concerns
- Highlighted fragility of food systems
- Unique opportunity for radical change
- To build resilience and ensure food security in the face of future challenges

#OneWelfare driven transformation of livestock production will ensure a safer, fairer and healthier environment for all
Thank you!