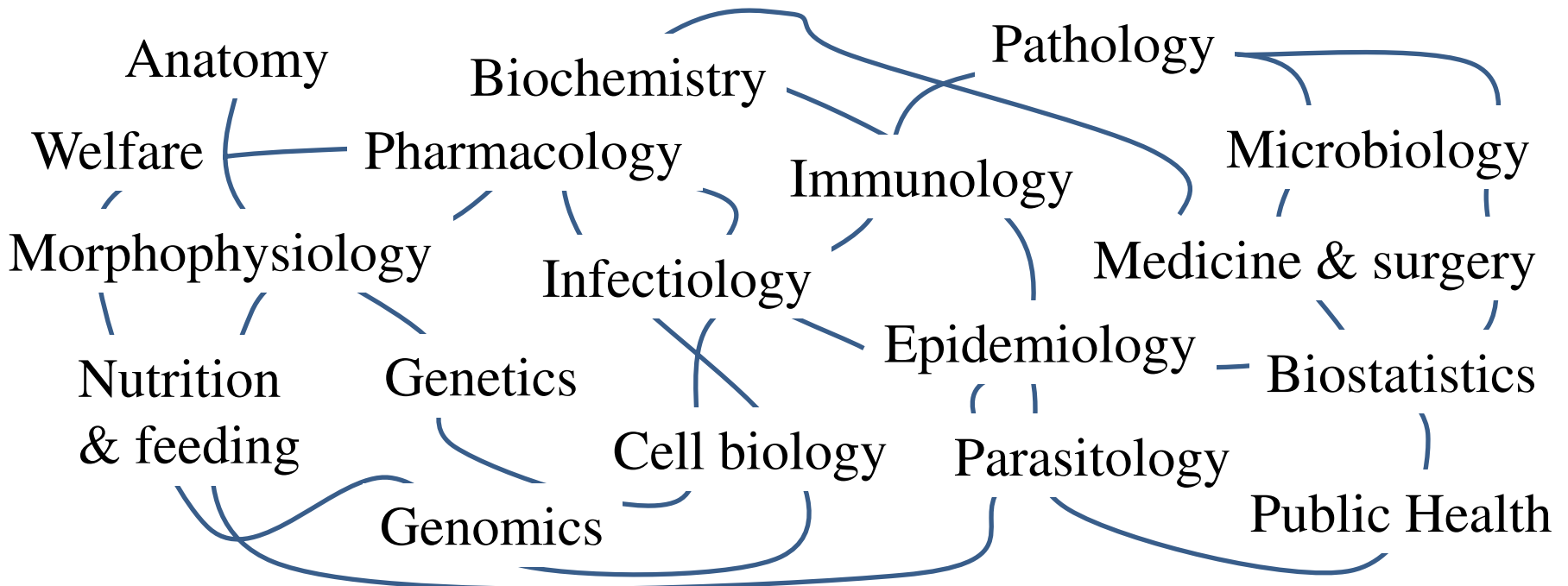
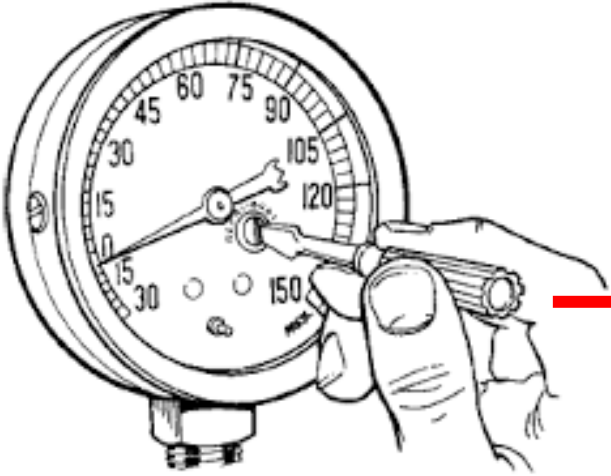
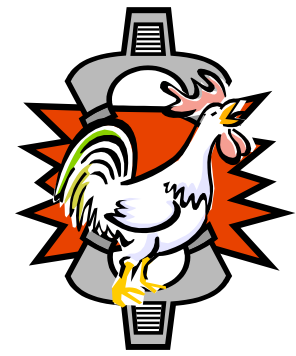




A veterinarian's duty



Reducing infection pressure



Hygiene



Biosecurity

Other than hygiene



Management

Environment

Nutrition

Immunity



Key components to achieve a successful biosecurity strategy

COMMUNICATION

Training – what, how and why

Proper equipment

Easy to comply

Sanitation



Farm design

products

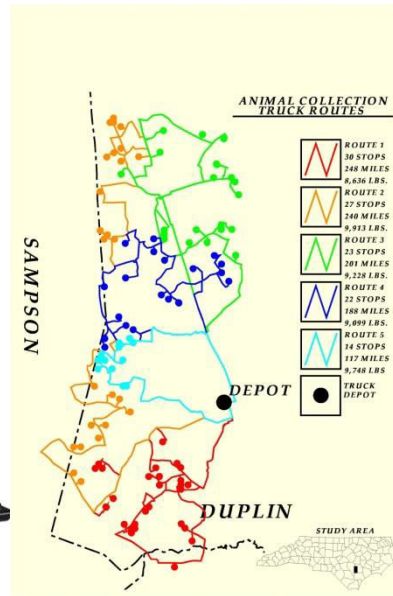
Surveillance

Feedback to all personnel

Sanitation monitoring



...and the present



Diagnostics, interventions, etc.

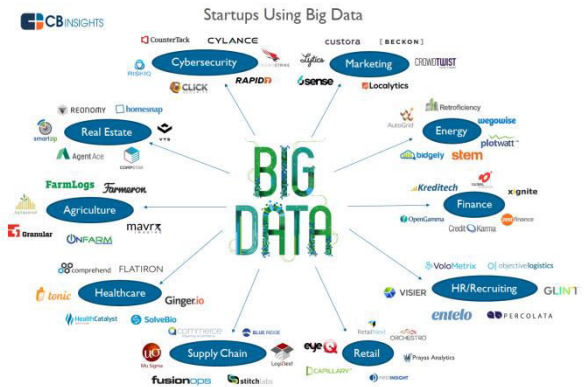
Omics: Fulfilling the Promise

Supersize me: how whole-genome sequencing and big data are transforming epidemiology

Rowland R. Kao¹, Daniel T. Haydon¹, Samantha J. Lycett¹, and Pablo R. Murcia²

¹ Boyd Orr Centre for Population and Ecosystem Health, College of Medical Veterinary and Life Sciences, University of Glasgow, G61 1QH, UK

² Medical Research Council (MRC) Centre for Virus Research, College of Medical, Veterinary and Life Sciences, University of Glasgow, G61 1QH, UK



“A confluence of this technology with sophisticated mathematical and statistical approaches has the potential to produce a paradigm shift in our understanding of infectious disease transmission and control.”

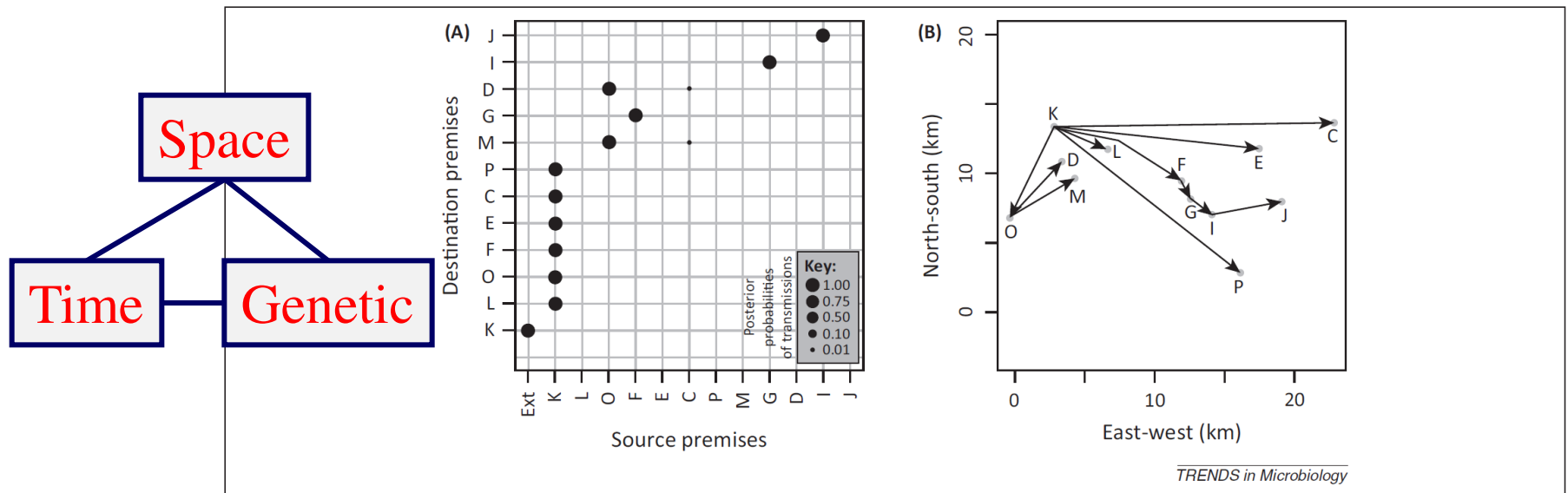
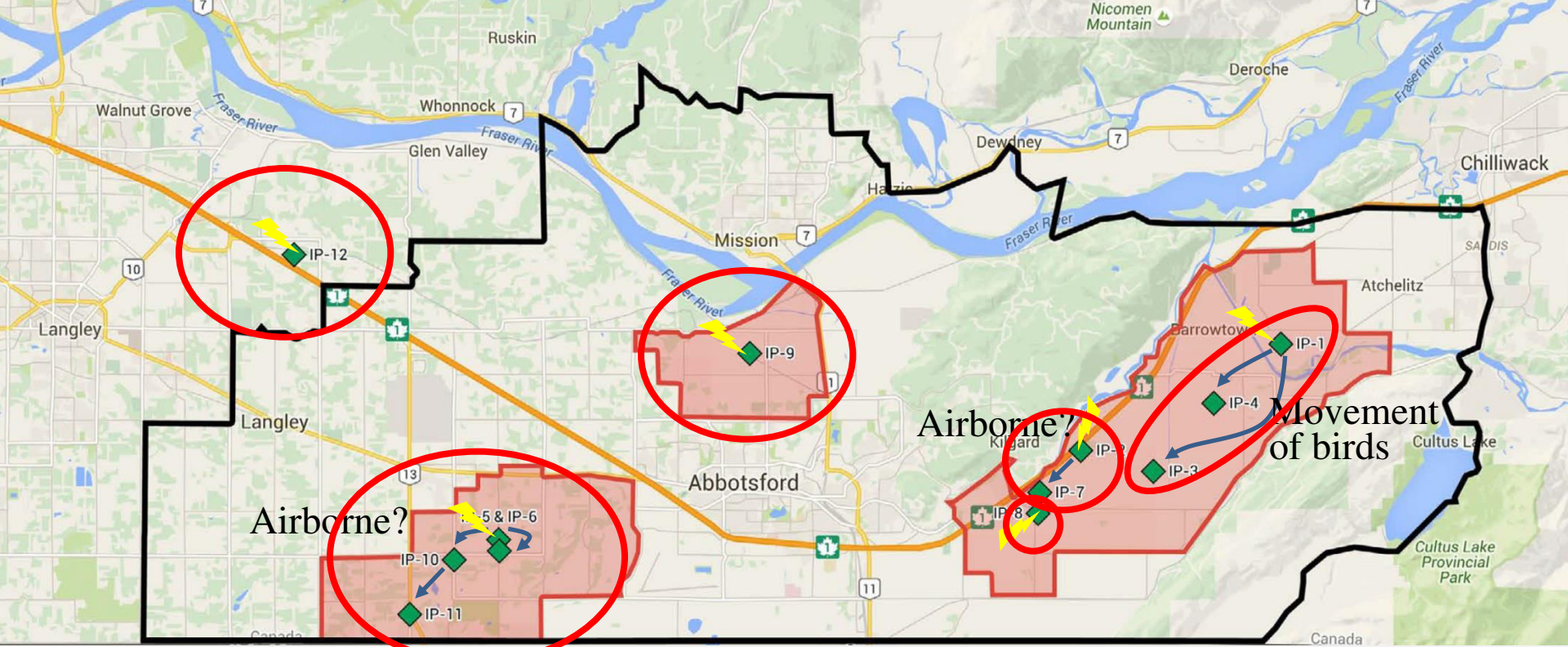


Figure 2. Phylodynamic reconstruction of a foot-and-mouth disease (FMD) epidemic. (A) Identified likelihood that a particular infected premises was the source of another infected premises based on a space–time–genetic model. Circle size is proportional to the relative likelihood of that event. (B) Spatial relationships among premises in the dataset. Reproduced from [11], with permission of the corresponding author.



Airborne?

Airborne?

Movement of birds

“virus evolution over the course of an outbreak is rapid enough to permit the use of genetic data to reconstruct inter-farm transmission.”

IP#	Submission#	Type of birds	#Birds in affected barn	First clinical signs	Detection (H5) ¹	Destruction Completed
1	FAV8 and FAV9	Broiler breeder	13,000	Nov. 28	Dec. 1	Dec. 5
2	FAV10	Turkey	28,000	Nov. 27	Dec. 1	Dec. 6
3	FAV15	Broiler breeder	14,000	Dec. 3	Dec. 3	Dec. 7
4	FAV17	Broiler breeder	27,000	Dec. 1	Dec. 2	Dec. 8
5	FAV14	Turkey	30,000	Dec. 4	Dec. 6	Dec. 10
6	FAV19	Turkey	30,000	Dec. 7	Dec. 9	Dec. 11
7	FAV20	Broiler breeder	18,000	Dec. 8	Dec. 10	Dec. 13
8	FAV21	Broiler breeder	9,000	Dec. 9	Dec. 10	Dec. 13
9	FAV22	Broiler breeder	6,000	Dec. 9	Dec. 10	Dec. 14
10	FAV23	Table Egg Layer	53,000	Dec. 13	Dec. 13	Dec. 16
11	FAV24	Broiler breeder	12,000	Dec. 17	Dec. 17	Dec. 19
12	FAV25	Non-commercial	85	Dec. 17	Dec. 19	Dec. 20

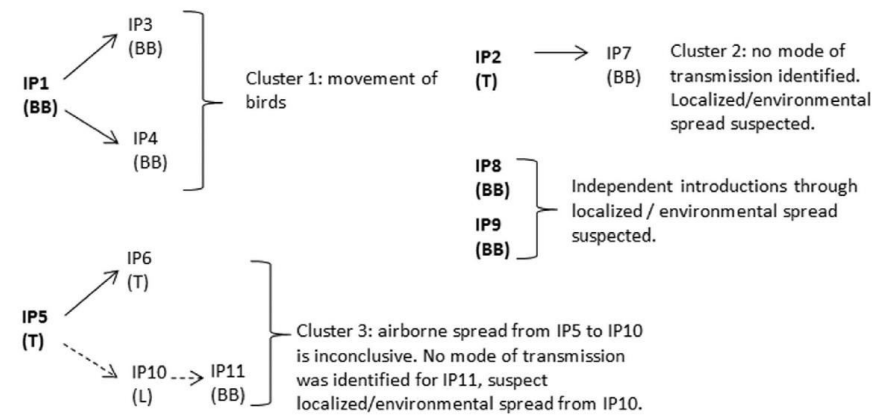
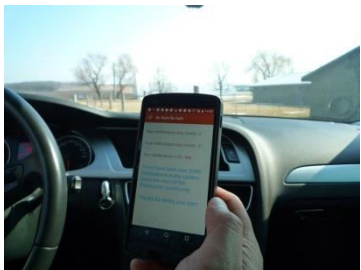
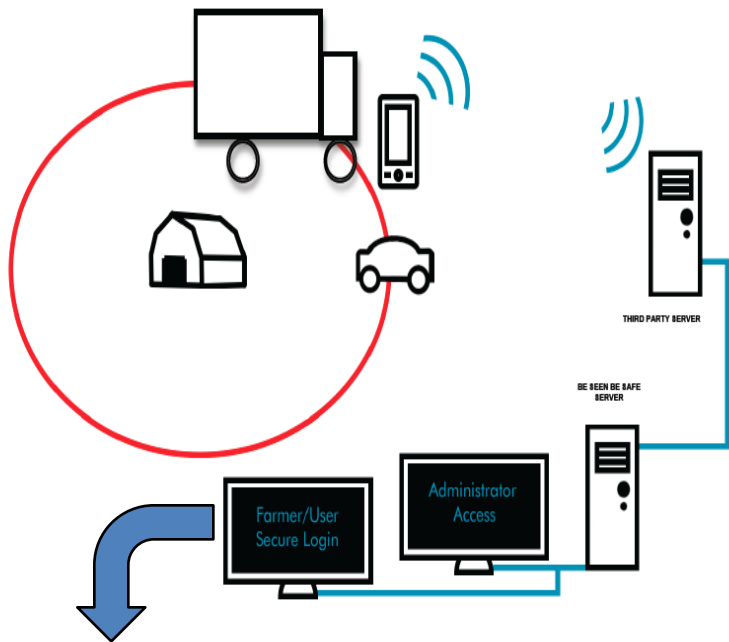


Figure 7. Final transmission network of the HPAI H5N2 outbreak in British Columbia based on epidemiological and genetic data analysis. IP: infected premises, BB: broiler breeder, L: Layer.

BE SEEN • BE SAFE

FARM
HEALTH
MONITOR



Geo-fencing




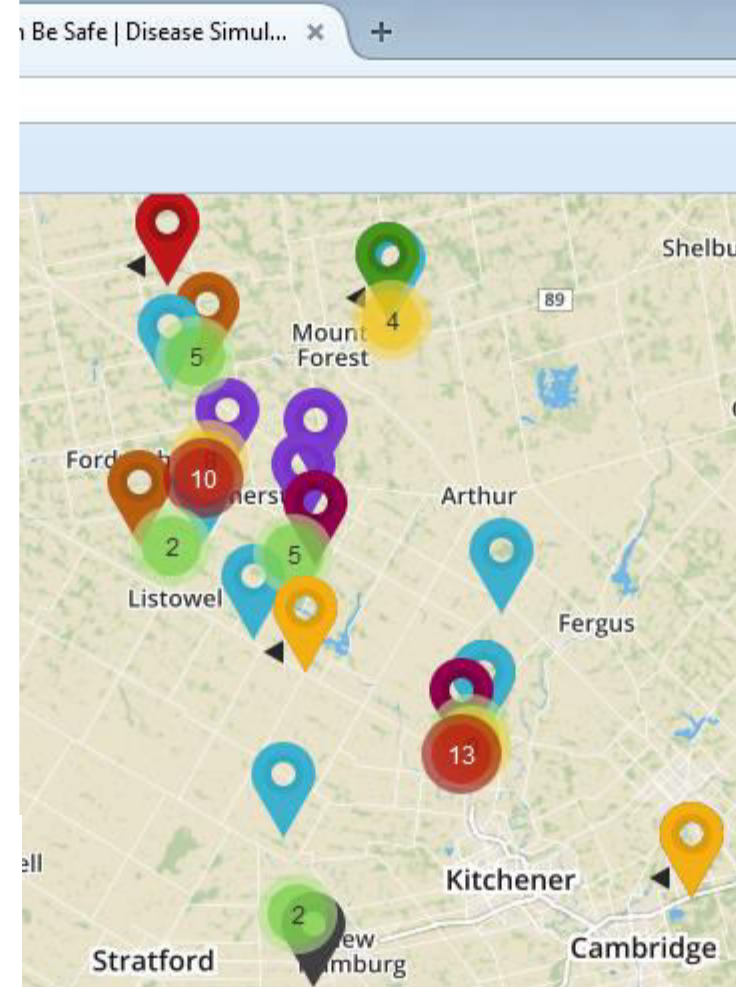
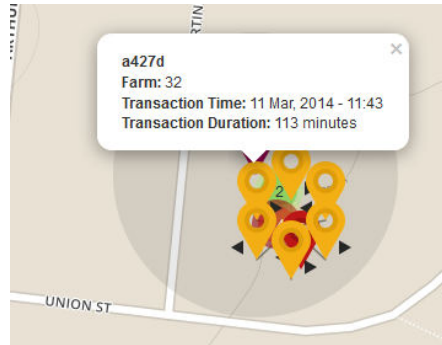
“To win wars, one must know where and how to concentrate efforts...quickly” Napoleon

Property Profile – encrypted/password

- Property type (farm/abattoir/hatchery)
- Owner details – name, cell no., email.
- For farms: Livestock/poultry on farm
- Physical address

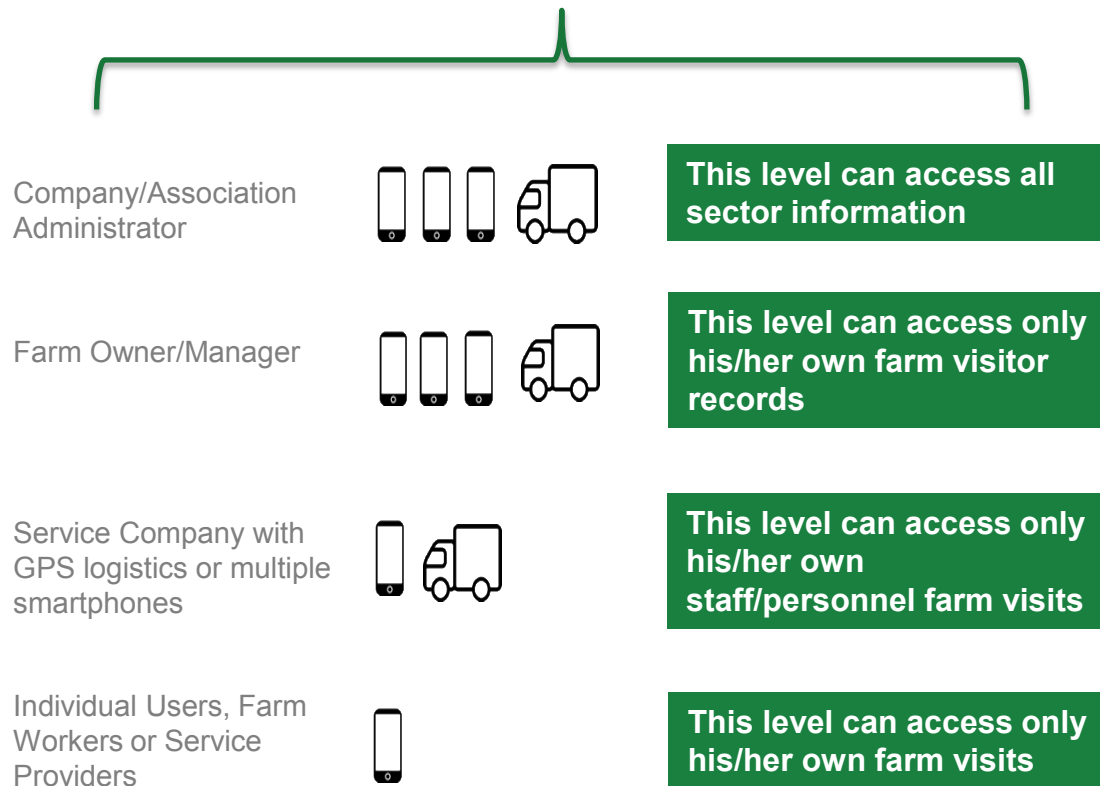
User Profile – encrypted/password

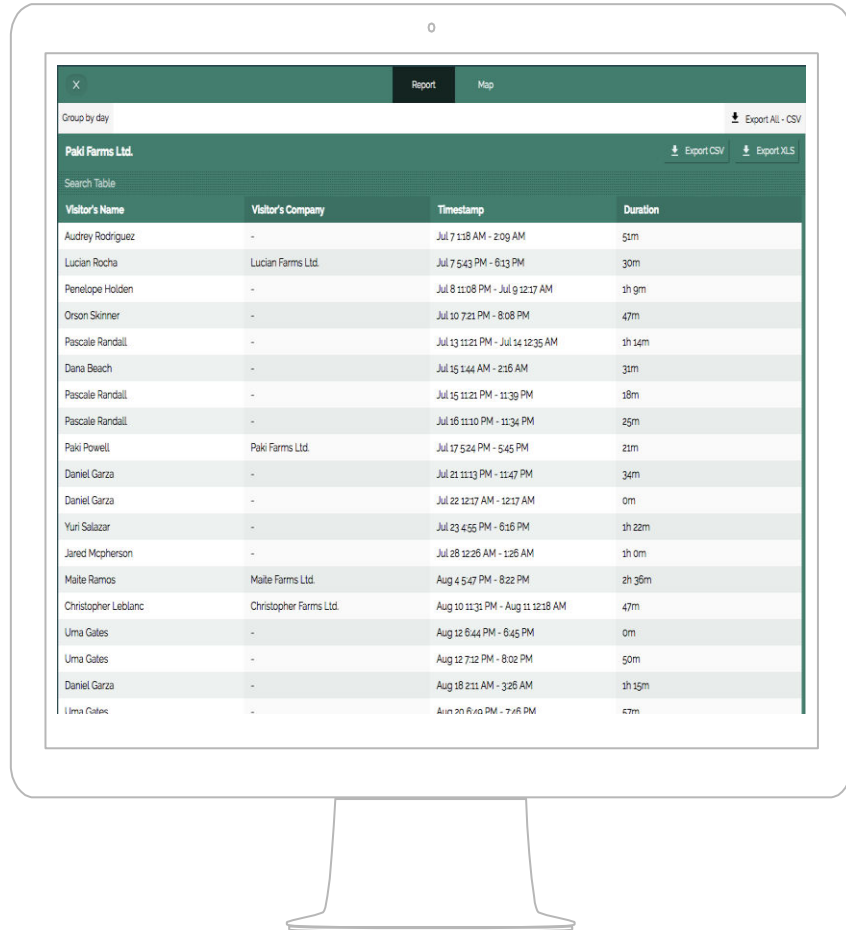
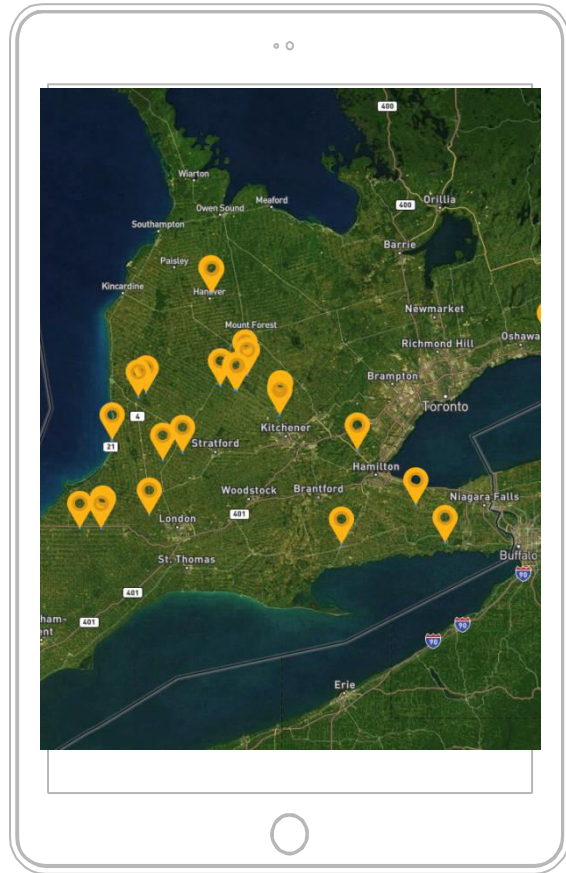
- Name
- Cell No.
- Email address
- What you do (dropdown box)
- What you come into contact with (risk assessment) 





Be Seen Be Safe



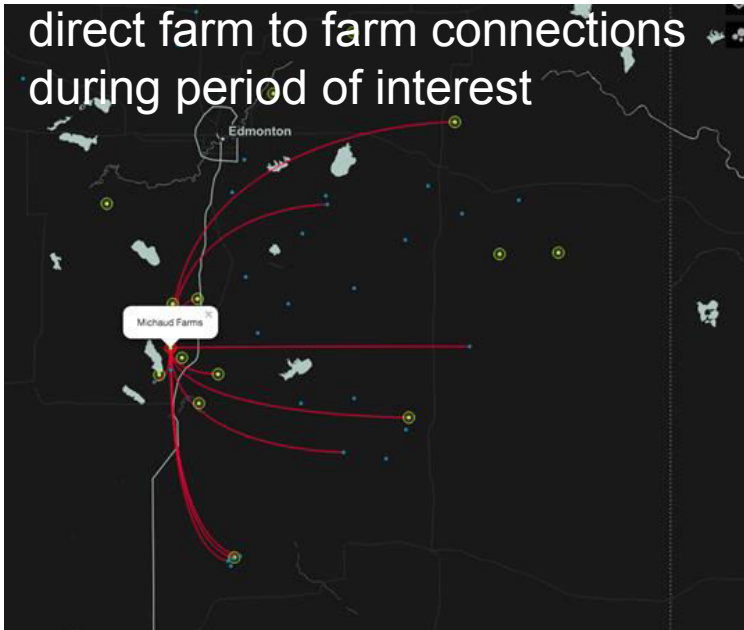


Cellular phone

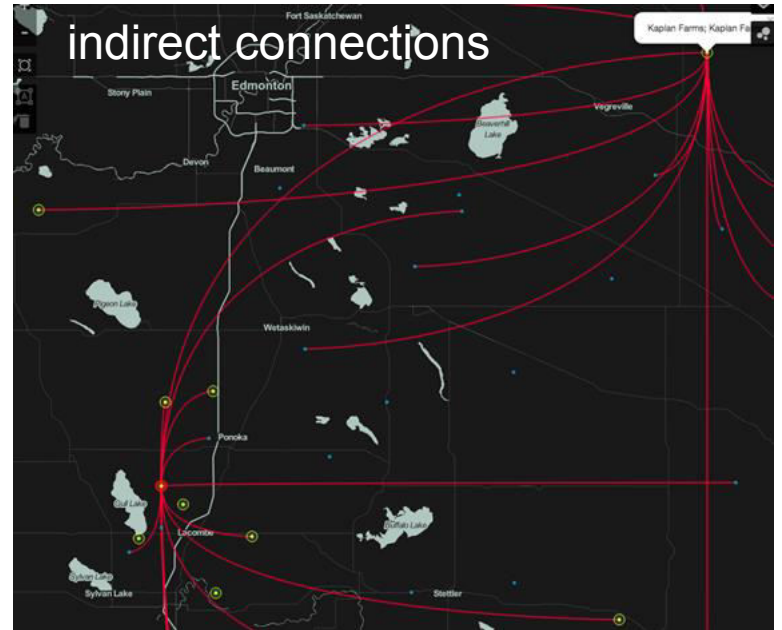
Tablet

Desktop

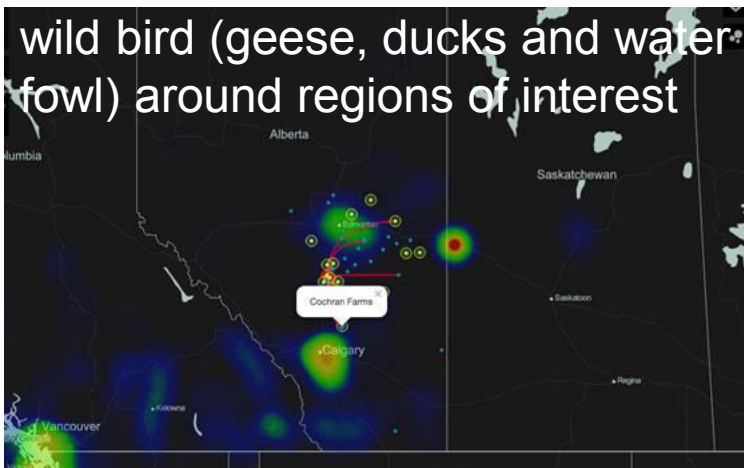
direct farm to farm connections during period of interest



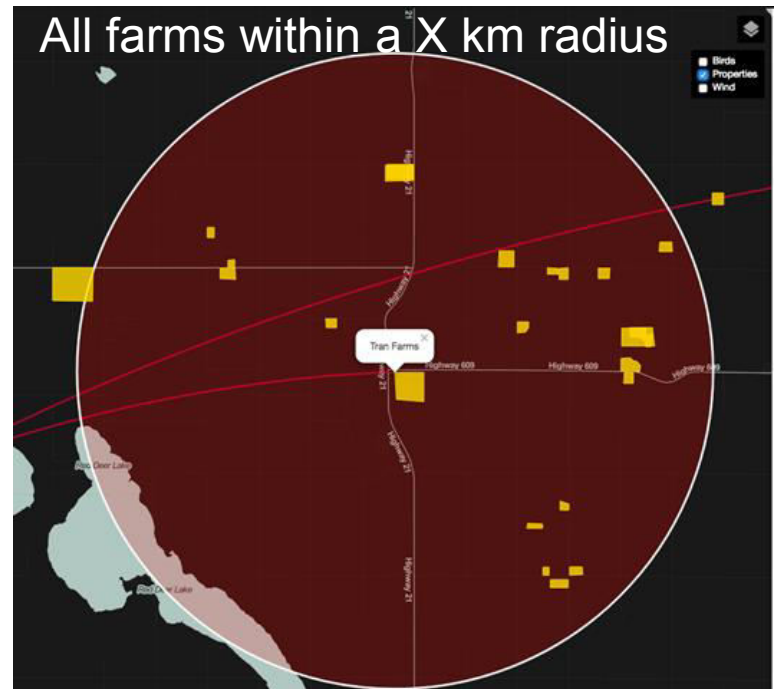
indirect connections



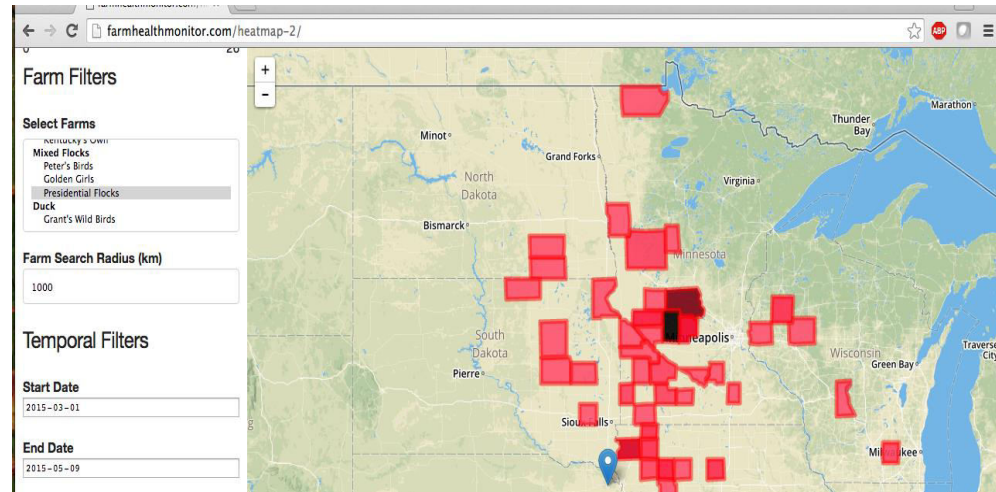
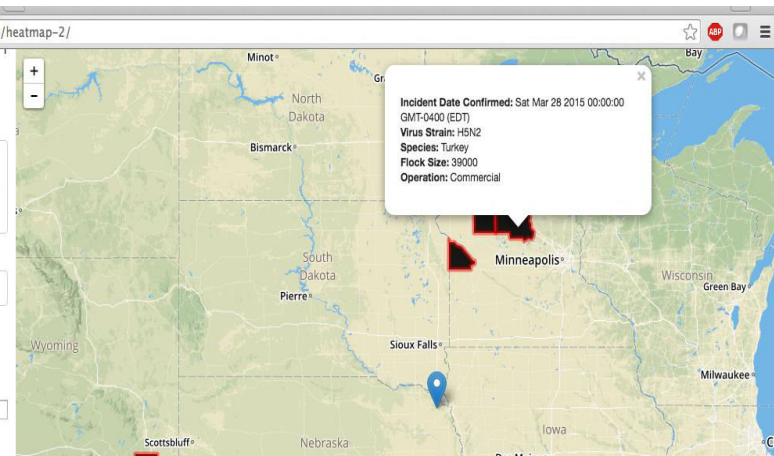
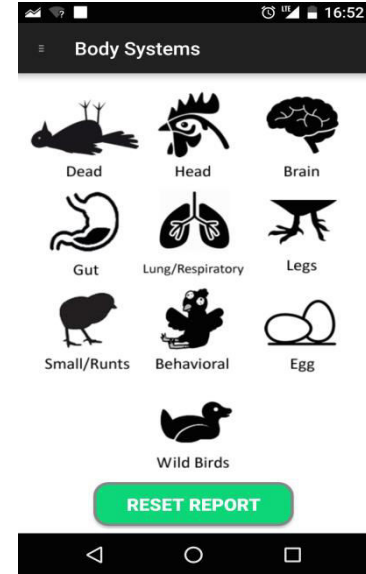
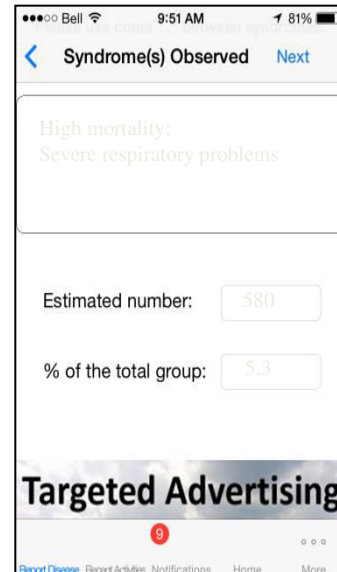
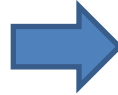
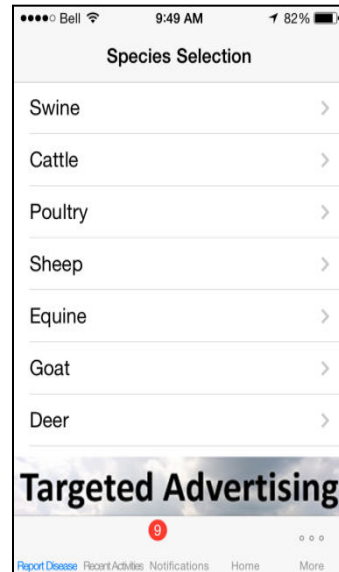
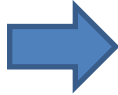
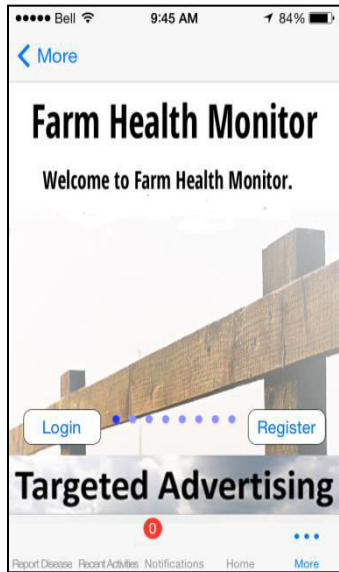
wild bird (geese, ducks and water fowl) around regions of interest



All farms within a X km radius



Syndromic / Confirmed Disease Surveillance and Risk Assessment



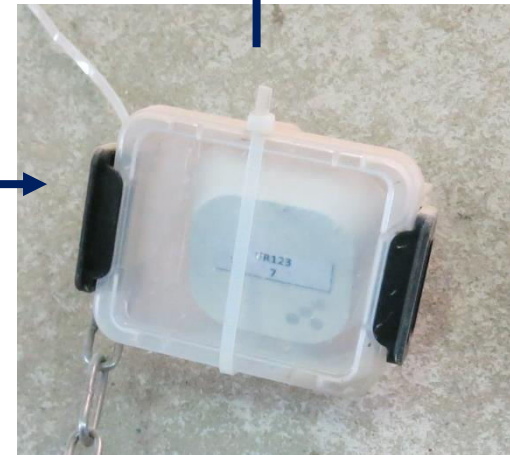
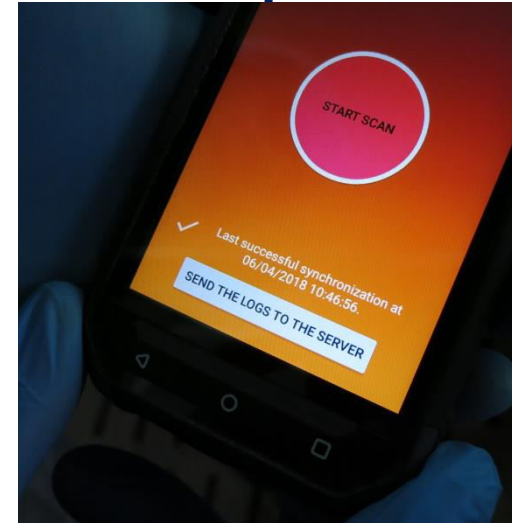
“Alerts generated using algorithms to predict risk to individual properties (spatial and temporal data, mode of transmission of suspected pathogen, temperature, humidity, wind speed, wind direction, fomite movement and farm visitor (fomite) records”

Tracking movement

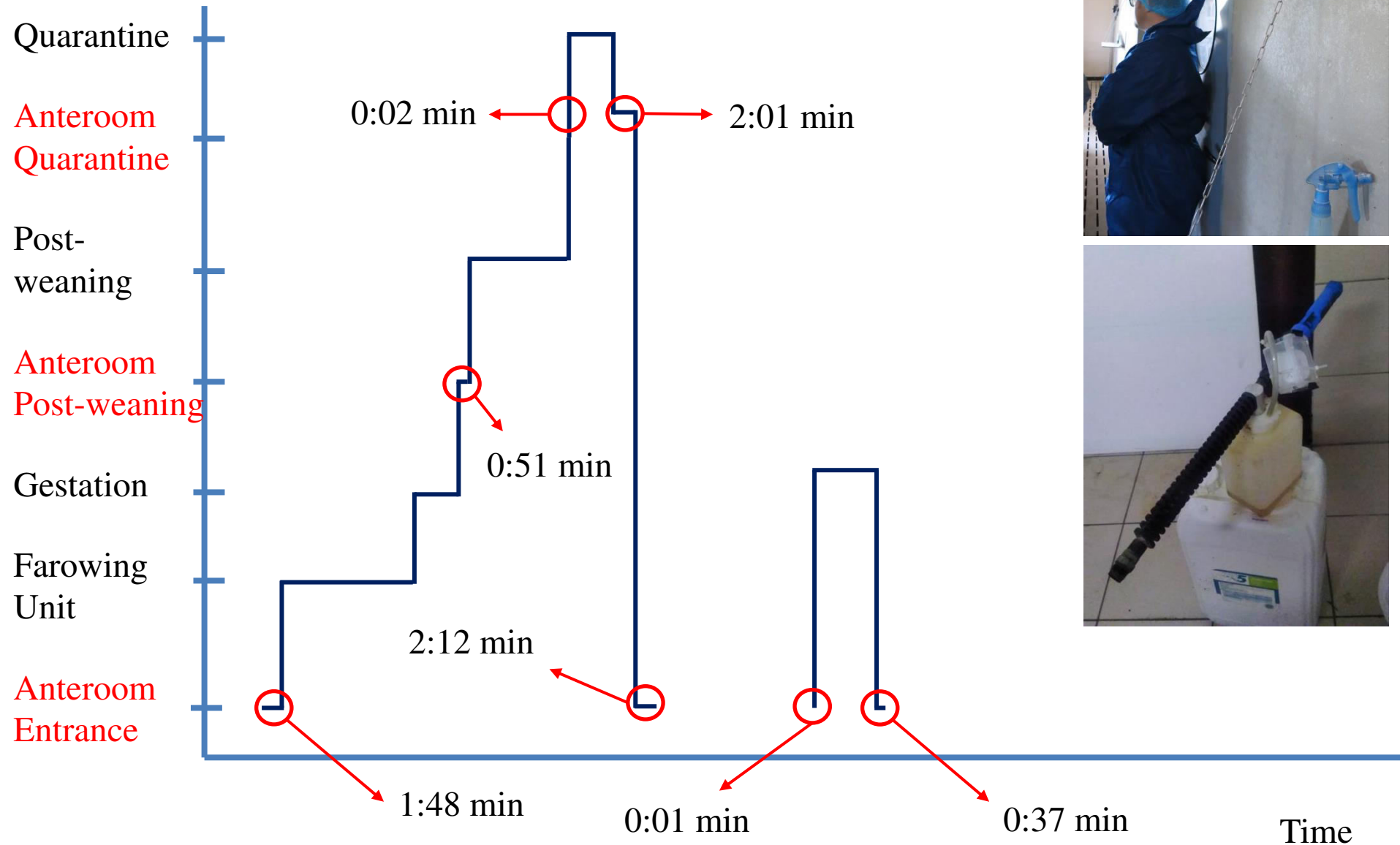


68.52	0.589	31.48	0.361
67.27	0.649	32.73	0.609
63.33	0.531	21.67	0.330
41.32	0.585	11.57	0.456
79.65	0.640	11.50	0.472
63.56	0.658	19.49	0.609

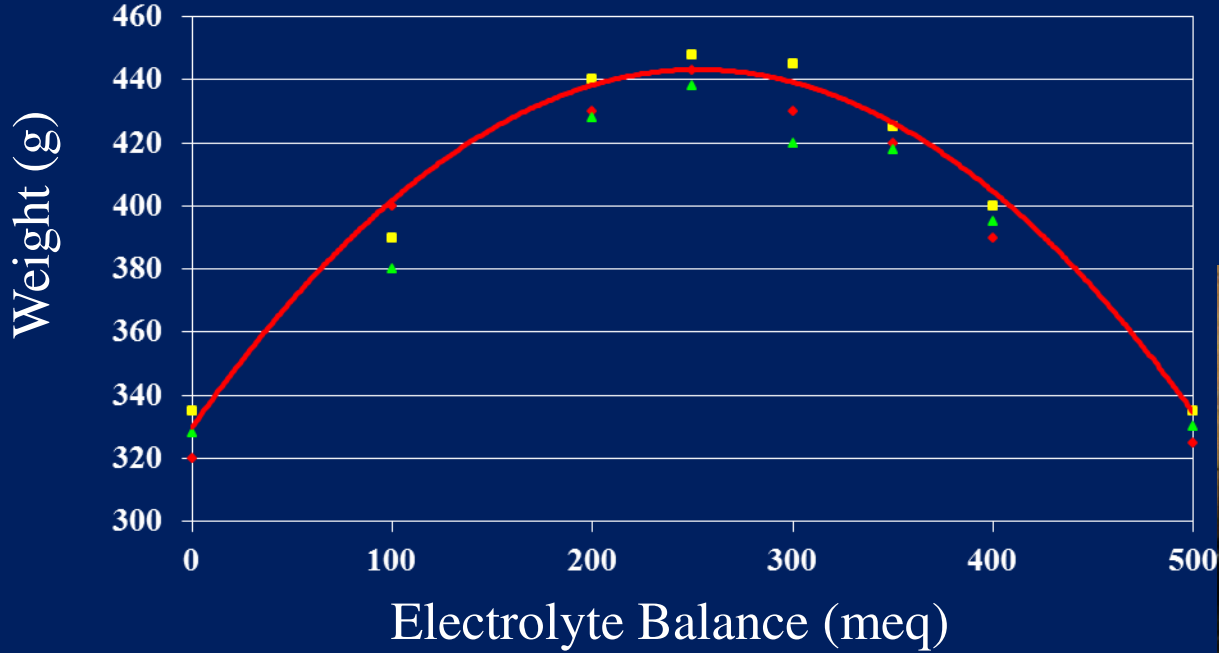
Real time data transfer



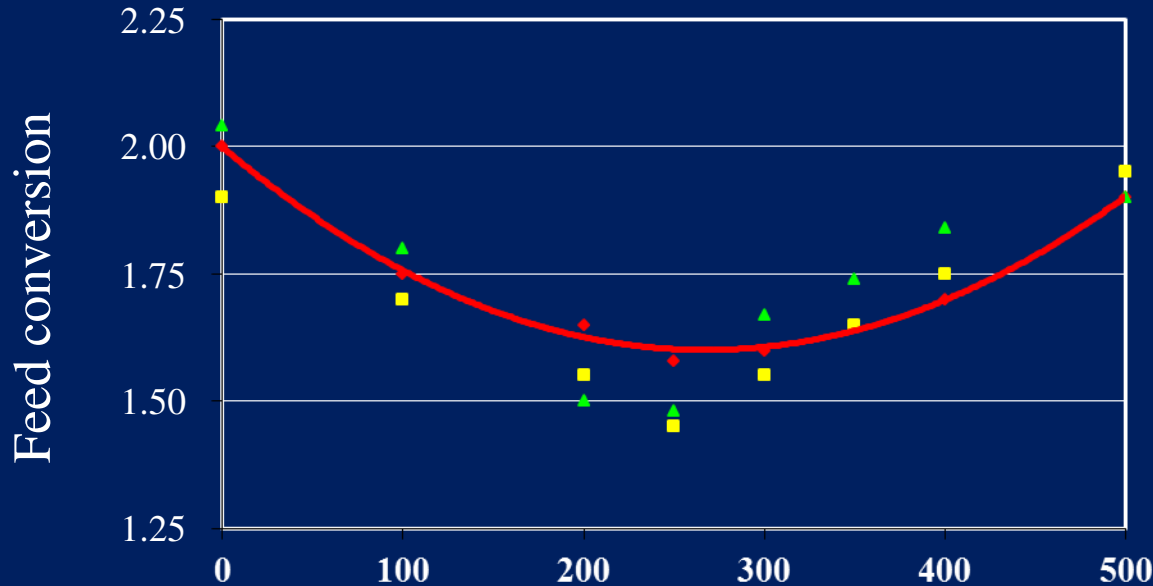
Tracking movement



$$\text{Weight (4 wks)} = 357 + 5.8 (\text{EB}) - 0.199(\text{EB})^2$$

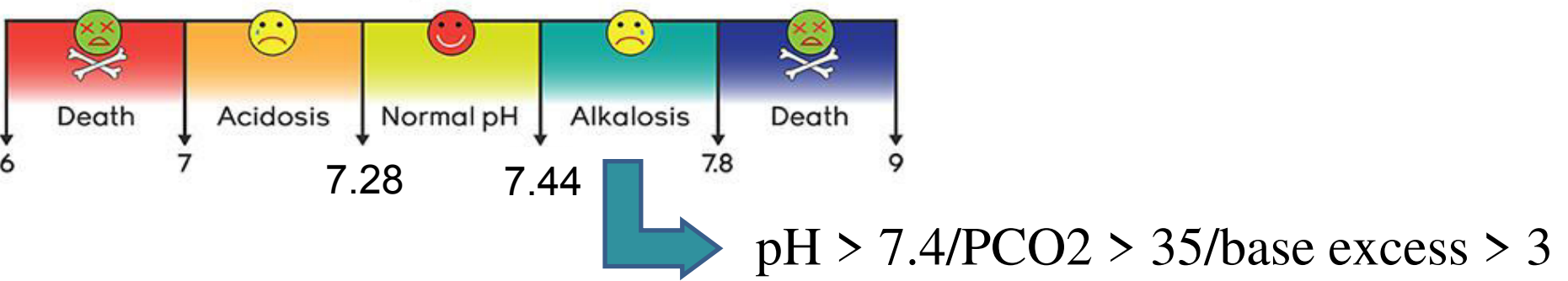


Electrolyte balance has an impact on infectious disease expression



**Now we can do
biochemistry testing
in the field**

Mongin & Sauveur
1973, 1977, 1981

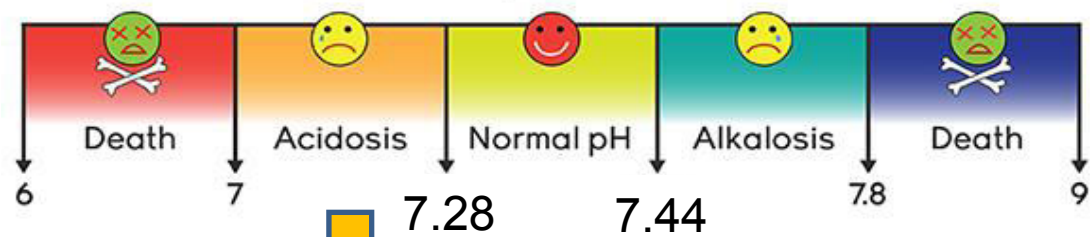


Logistic regression

Dependent variable: Alkalosis (Yes/No)

Variable	Odds Ratio	Confidence Interval	P-value
Age (< 21 d; ≥21 d)	1.1057	0.4820 – 2.5367	0.812
Feed Electrolyte Balance + Ca ²⁺ & P	1.0122	0.9949 – 1.0299	0.149
Water Electrolyte Balance	1.1284	1.0098 – 1.2609	0.032

Probability of having alkalosis increases by 12.8% for each electrolyte balance unit in the water.



pH < 7.4/PCO₂ < 60/base excess < -3



Logistic regression

Dependent variable: Acidosis (Yes/No)

Variable	Odds Ratio	Confidence Interval	P-value
Age (< 21 d; ≥21 d)	0.4481	0.1167 – 1.7208	0.253
Feed Electrolyte Balance + Ca ²⁺ & P	0.9825	0.9608 – 1.0048	0.144
Water Electrolyte Balance	1.2492	1.0347 – 1.5083	0.022

Probability of having acidosis increases by 24.9% for each electrolyte balance unit in the water.

Telemedicine

Reacts V.2.2.1607.2201

Session-SansTitre-1
2016-10-14 00:12:31

Daniel Venne

Scène 1

Sur clic Couches Arrière-plan Format Pointeur Dessin Partager

Éléments

- Images
- Vidéos
- Objets 3D
- Galerie d'instantanés
- Scènes
- Documents
- Check-lists
- Rapports
- Accueil

Actions

- Ajouter une scène
- Face à face
- Raccrocher
- Session
- Transfert de fichiers
- Paramètres
- Aide

Jean-Pierre

Partager Messages

FR 15:47 2016-10-14

Thank you!



Questions?

Daniel Venne : dvenne@sympatico.ca