Group 1: Need for special surveillance approaches

What (if any) special disease surveillance approaches should be taken in communities where animal and human remains are surfacing from the permafrost?	• Subclinical surveillance or other type of surveillance? Need to get some of the other techniques that illustrate changing conditions • Need to have good background surveillance (baseline) • Technology availability (biological archives) • Need to get into One Health surveillance (opportunity to expand to humans and animals) • Is the goal to increase local capacity? Link surveillance and health outreach capacity (sentinel work) • Every community has an individual risk profile, needs to be location-specific, with consent of the community
Should syndromic surveillance systems be put in place?	• With limited resources, try to do real-time surveillance in specific locations • Need to factor in timeliness, happens in real-time • LEO Network could be a platform for this • What would this look like for people? Pneumonia as an example • Can be done with health care providers that can indicate a potential health problem in the community • In AK, EMS run data, can be searched • Use Google data as a resource? Google Flu Trends example, new digital epidemiology team to start incorporating phone data • Amazon is doing the same thing, important to get them looking at the right issues • Sweden has a patient handbook for online searching, data can be used from that as well • Military liaison to connect with local communities? Concerns about maintaining relationships and communications with indigenous people (requires sensitivity) • Co-production of research with local communities; needs to be planned from the start with community participation • Needs to be useful to communities and that needs to be made clear • What are the triggers for this work? • Do not conflate research projects with public health surveillance • Need surveillance for the animals sake as well (communities want to know if the animals are doing well) • Wildlife biology needs to be brought into this discussion • There are existing networks and mechanisms for collaboration, but we could do better • Would like to have a session at the One Health conference to pull together all of the different networks and facilitate understanding of the different organizations and networks that are working in this space

Group 1: Need for special surveillance approaches

Should there be some kind of sentinel disease surveillance system?	• **One Health concept is important here too (not just people, animals too)** • **Arctic Fox example: circumpolar, cross large distances, scavengers** • **Fish can be used as well**
Should certain diagnostic approaches be used?	• Having case definitions would be helpful • Some kind of survey should take place to establish a baseline • Tools for communities to easily use? Could help build health capacity within the communities (requires funding) • What could local communities do if they experience and unusual or unknown condition? A system may be needed to rapidly collect and analyze samples in local communities, for their health as well as the broader global health response network • Some communities are isolated, it can be challenging to get timely access to that information • Diagnostic tests for diseases of concern needs to be considered

Group 2: Current surveillance approaches in the Arctic

What is the current status of wildlife and human health surveillance in the Arctic?	• Varies across countries – • Humans – most countries in the arctic have state/country wide surveillance programs looking for infectious diseases. In the US, states pick their own reportable diseases. • Finland has good system for both humans and wildlife – less transport issues and related to food quality surveillance. • Wildlife surveillance network? Most countries/locations don't have them (e.g., Greenland). Very isolated and closed networks. Need to decide what tests to order, who to send to, etc. – but at the end of the day – no money. • Often strict lines between animal and human programs – won't test across lines. • Depends on location – in AK, there are good wildlife surveillance programs and communication between animal and human health programs. Canada works through researchers and government agencies (no reportable animal diseases in Northwest Territories).
What approaches are now used around the arctic?	• Research projects are funded for their specific purpose, and wildlife surveillance programs might be able to piggyback off of their resources – but not a designated, funded, long term, routine, systematic, etc. program. • Different programs for different pathogens – some only go through government labs and can take a long time. Geographic distances are problem. • One example, in Canada – concerns about brucellosis – have to test animals and freeze them until get the lab tests back. But the meat is shared widely so may be hard to track.
Would these systems be able to rapidly detect emergence of new human pathogen? Or Animal or plant pathogen?	• Are the research programs at Universities able to test for emerging pathogens? Maybe. Also need connections to and partnerships with other laboratories. • Need better animal/human interface programs to more readily detect new human pathogens. • If it's new to science, no – but unusual presentation could be detected quickly for human health in AK. In Greenland – authorities would know something wrong quick and call Denmark.

Group 3: Need for international standards around surveillance

Should be standard ways for reporting infectious diseases in the Arctic? Would that be feasible?	• Yes, and the procedures we already have should be harmonized on an international level. Harmonization on which diseases are reportable from the labs. • Diagnostic laboratories could be the best way • Issue of emerging infections that rely on surveillance systems, and they need to also involve the Russian Arctic – forecast what might be important in the future. Need to be able to watch geographically and with wildlife in order to be preparing • Should there be standard ways for selecting what a reportable disease is? • Issue of borders and reporting • Having a One Health approach for looking at trends
How would such reporting relate to reporting obligations in the International Health Regulations obligations?	• Need to harmonize; different diseases are reported differently in different countries • Why not report them all?
Should countries be reporting this information publicly and/or in some special way? Some kind of shared database?	• We have emerging infections. The biggest driver for human health is global environmental change. If we want to cover emerging infections, we must have a One Health perspective. • Want human data harmonized with wildlife surveillance and landscape surveillance. • How should countries be sharing reports and with whom? One Health community should be included. • Communication at the right time and in the right way – if it's been published, or in a fact sheet or bulletin, very accessible • CDC, ECDC, Russian public health authority Rospotrebadhznor, collaborate and have access to all of this information • Examples: Health Now and ProMed • Someone needs to regularly supervise this

Group 4: Microbiologic/diagnostics approaches for surveillance in the Arctic to have the earliest possible warning of diseases that emerge from the permafrost

Whole genome sequencing? Metagenomics? What is gold standard?	• Fundamental challenge of determining viability of microorganisms in general • Distinction between what's there and what's viable and what's infectious • Genetic marker of pathogenicity? • Standardized approaches and informatics output around the purpose of surveillance will be key • Need standardization in collection and decontamination of samples in the Arctic • Whole genome sequencing shows promise to discover what cause could conceivably be; could use targeted approach for this as well, depending on sample quality • Need to build relationships and trust with communities (this has to happen first)