Responses to ECDC *Updating Core Competencies*

in Applied Infectious Disease Epidemiology

Online survey (V.15)

Suggested modifications, additions or deletions by domain

INTERIM REPORT

(based on the first 190 responses)

25 October 2021

Area A: Essential methods for applied infectious disease epidemiology
Domain A1: Descriptive Epidemiology

- Experiment on some infectious diseases
- The speed of completing the tasks is very important, and also in depth knowledge of the limitations of each data source
- Be able to work with computerized data, practical knowledge on how data sets are created, know data formats (dichotomous, nominal, ordinal, numeric etc.), create a computerized questionnaire
- Modification: A1.3 Identify the available sources of aggregated data on infectious diseases such as surveillance data, human health data, animal health data and data on sources of infection. - maybe add a little on national hospital data in Ireland we have HIPE data too.
- A.1.7 having data visually is not essential
- Interpret calculations of disease burden as a summary measure of population health
- The State should dedicate higher budgets into the Public Health Department.
- Be able to investigate infectious disease outbreaks. Draw epidemic curves
- A1.3 - should be "..sources of data...". We need original data if possible. Aggregate if it is not possible.
- "Interpret descriptive findings considering surveillance system characteristics from the patient to the national institutes. Specially under-ascertainment, surveillance system sensitivity, considering different methods to estimate surveillance system sensitivity.
- Agile use of statistical software for descriptive epieiology."
- demographic transition due to changes in an area of outbreaks
- Be able to identify and interpret bias in sampling/selection or recruitment for surveys and limitations of diagnostic tests
- I guess it would depend on the job at hand, which of the above would be more 2. But for sure, A1.4 and A1.7 should be a "must" for any epi professional
- "Additional Methods of data summarization"
- Great emphasis on A1.5 and A1.1 to ensure that population in question can be comparable in order to apply interventions suited to populations (Context matters)
- A.1.3 doesn't consider case-based notification and laboratory data which may be provided rather than aggregate
- Measures of association
- As an addition to A1.7: It is also 2 to create a comprehensible graph from the data to make the situation clear to other epidemiologists and the population.
- "I feel that the importance of routine surveillance, analysis and reporting does not come out enough for me. It is touched on in all the different areas, but in terms of descriptive epi, I think there are the categories of routine surveillance, enhanced surveillance for special situations, data collection and analysis for outbreaks, that all have slightly different approaches or desired outputs.
- I feel this is listing all the components needed to do this, but I am missing a bit of the practical applications of descriptive epi. The items listed above may also all come up in a master degree in epidemiology, i am missing the field component a bit. "
- "Visualisation could move into risk communication section as it is the interpretation for public and non expert colleagues that is 2 - disease rates is too specific, the requirement is broader than that.
- Interpretation of genetic sequencing data for surveillance (similarly use of infection typing).

- Construct appropriate populations from aggregated data to create a dataset for syndromic and health risk state surveillance (note this is not the technical programming required but the creation of the criteria and logic)
- Identify and use spatial/geographic data for surveillance / disease monitoring
- Identify and use data on equity/socioeconomic position/ protected characteristics that influences vulnerability and exposure risk at individual and group level.
- Depending on the country, A1.1 might be an 2 competency for a field epidemiologist. In most EU countries these data are dealt with by statistical bureaus.
- well, not really

Domain A2: Epidemiological research methods

- There is a kind of repetition that should be seen if there is not any sound reason for them
- Regarding A2.9 add Design, test and evaluate
- The population should be educated in some epidemiology information in order to understand the data that is presented in the news.
- "Conceptualize a research question of association using Directed acyclic graph approach. DAG
- Time series methods and variations can be further explored for field epidemiologists."
- Addition: recognise the value and limitations of working with data that was not primarily designed for surveillance or research, such as secondary data, electronic health records, etc ("big data"), and ingrate this into practice
- Competence in mapping: We are decently competent in time-person but often lack in the "place" component of field epi.
- "A2.4: Design epidemiological studies to investigate the determinants of disease, to ascertain associations and/or disease causation e.g. cohort studies, case-control studies, ecological studies, qualitative studies or randomized control trials, recognizing the multifactorial nature of most diseases.
- Yes, generally speaking this competency is needed and rational, but the necessary complexity of studies to be conducted may differ extremely. Are we talking about basic or advanced level here? E.g. a basic case-control study or a multilevel longitudinal nested case-control study? Also, very few ID epidemiologists are designing RCTs during their career. "
- These are all pretty good
- Designing of randomized control trials is not as 2 as cross-sectional, case-control or cohort studies for a field epidemiologist. Instead, mortality surveys can be more useful.
- ecological studies must change the place A2.3
- Greater focus on identifying the solution would be beneficial as I would assume that most people entering this epidemiological field already has a strong background in scientific study design and best research practice. Bigger picture focus on confounders would be more helpful and refreshing (A2.8) with its application in the real world (A2:10) is where emphasis is most helpful
- I would exclude randomized control trials from the indicators above. Field epidemiologists are not supposed to conduct those types of studies.
- I think it also depends on how much of a research background one has. Not to forget that one works in a team, there is exchange with other team members, each of which can contribute from their area expertise and could be from different backgrounds
- Perhaps angle towards rapid, operational type study

- i feel these are all 2, and it is 2 to highlight again the difference between epidemiology for more academic purposes and field epidemiology.
- "A 2.6. Should be able to design potential causal pathways for testing and analysis - not just inferring
- A.2.7 -should be all types of validity
- A 2.8 - controlling for bias may not be the correct term ? search for, identify and take account of
- Understanding of the main types of population and risk factor distribution and how to take account of these in designing an investigation or research study
- Add one point regarding approval on data privacy and data protection as well as ethic committee approval.
- "Qualitative studies that are informed by behavioral sciences and implementation sciences are needed to understand behaviors.
- The role of ethnography and other anthropological methods should be introduced to understand the context in which behaviors take place."
- In my opinion small but significant cultural differences are often neglected in epidemiological research. But in real life situation cultural aspects can be significant (values, preferences, food habits, mobility, even religion) in desease control. Lack of cultural competencies is a big problem.

Domain A3: Data management and biostatistics

- Field epidemiology is a team work. The team has to be gathered from epidemiologist, but not from them! Professional statistician, biostatistics is very important as well!
- "A3.4: Conduct data management and statistical analysis as an independent user of at least one database software system (e.g. SPSS, R, STATA, SAS).
- I strongly recomend to use either R or Python as these will become the standard for the industry. Strong skills in spatial analysis in fundamental, integration with satelite images, etc..."
- Depending on the position or place of work, the relevance of the Domain A3 woud be also rated as important
- "Statistical deviation of confounding variables and how to control for them statistically".
- There should be more interdisciplinary departaments with healthcare professionals, mathematicians... in order to the departments to be more complete and have different points of view.
- I consider that all items in A3 are important or very important. Question is how skilled must be epidemiologist to do it himself. More complex calculations can be done or assisted by statisticians.
- "Survival analyisis must be a tool of field epidemiologists and ph researcher.
- Further statistical basis are often neglected and can be very helpful at times considering interpretation and basic knowledge on how statistical measures are calculated and their interpretation. Critical approach to interpretation of p-values alone."
- Field epidemiologists are very busy people. A basic knowledge of these is important but it is best to identify competent biostatistician (and/or modeling) teams to work with.
- I find it problematic that the biostats/data/programming skills expected from an ID epidemiologist is ever increasing. The competences presented under Domain A3 are rational, but in real life so much more is expected.
- "A3.4: The listed statistical softwares are not necessarily optimal for data base management.

- Yes one of these (preferably R) should be core.
- Some competency in database management software (e.g. SQL) should also be listed here."
- Again, most pretty 2 - perhaps less so for survival analysis?
- "identify sources and manage big data know basic principles of bio-informatics"
- "- A3.3 refers to adherence to legislations, which I do not think is a competence
  - basic knowledge in geostatistics could be relevant"
- Good
- As per explanation of A2 Domain. Great to be able to apply to real world examples
- Again, I always think as epidemiologists, we are not statisticians! we have to have enough knowledge to understand the basics and to be able to discuss it with a statistician who can then do the analysis. Of course it is useful if you can do the basic analysis yourself, but I personally would always discuss my approach with and have it checked by a statistician.
- Increasing need for more advance analytic techniques, with move to data science in other areas
- A3.8 - rated as 2 rather than 1 as ideally needs to be done in collaboration with a biostatistician, latter having the specialised competency in this area
- ad A3.4: Ideally Free Software should be employed
- A 3.3. Public health requirement is much more than this - demonstrate that they are a trained 'safe person' and their work/team complies with safe settings, safe projects, safe outputs and safe data. There is also a requirement for continued attention to confidentiality in the care of personal data following death (100 years). The professional requirement to protect confidentiality of individual level data but also create conditions for safe, secure sharing in line with best practice.
- further emphasis on application of these statistical tests, with greater access to questions to practice with/ to relate to real-life context
- "'develop' 'Describe' 'understand' are vital in this 'Doing'. 'constructing' can be delegated / hopefully if working in a team or through partners/network "
- Yes please. I would add also multivariate statistical analisys and i strongly believe it will be helpful some foresight analisys and/or neural networks applied to epidemiology.

Domain A4: Disease modelling

- Understand and apply the principles of meaningful scenario building process
- Very good that this is "describe" and "Interpret", rather than "do"
- Depending on the position or place of work, the relevance of the Domain A4 woud be also rated as important or less
- A mid-career field epidemiologist does need to have some basic knowledge of disease modelling, however, this is not as major and relevant as being able to conduct surveillance activities.
- on personal level not very important but on team level very important
- A4.3. could include ability to compare results of different models
- Predictive models should be a priority in Public Health, and in order to do that there should be more budgets dedicated to them.
- I think we are modelling occurence and spread if infectious deseases in populations.

- Model Cost-utility of interventions (such as vaccination) and others."
- This domain is defined in a too generic fashion; what is meant? Regression (linear/logistic/Cox/GLM etc) or mathematical modelling (e.g. Markov, etc)?
- We can't all be modellers, but we should understand what it's about
- I think modelling belongs to a set of specialized competencies that a mid-career epidemiologist can decide to pursue but should not necessarily belong to core competencies
- Good
- "What if?" real life scenarios would be great to include as case studies. Allow individuals to develop outside-the-box thinking and consider other confounders at play in disease onset/spread
- I am not an expert on this and would leave the modelling work to those who know how to do it.
- Again becoming more 2- skill levels required rising.
- ad A4.3: The results of an infectious disease model should be interpreted together with the modelling experts
- "what i like here is the focus on understanding and describing, rather than developing.
- What i think is missing is to highlight the limitations of infectious disease modelling. "
- "Understanding counterfactuals, importance of missingness and ways of identifying it systematically, Understanding lessons from soft systems and social network analysis
- Identifying the limitations of the research on which the models are based
- Capture -recapture analysis "
- A4.2 would be more consistent with an advanced level epidemiologist, I would not expect this from the mid-level.
- Maybe add one point regarding collaboration with statistician, coding experts, as I assume an applied field epi might not always conduct the modelling themselves but in a team.
- I feel that not every epidemiologist is going to necessarily have modelling skills as these are a more seperate area.
- well no, but ALL of these above are "1" in my opinion. More, some of these points should be a "necessary prerequisite" and not only "1". Same for many points described above in other sections. Of course, a mid-career epidemiologist will specialize in one or two specific paths, but here in some points we're talking about "necessary competences", at least at a basic/intermediate level, so I don't really understand why asking "how 2" they are, sorry.

Area B: Preparedness, surveillance and response to infectious disease outbreaks

Domain B1: Preparedness for infectious disease outbreaks

- Depending on the position or place of work, the relevance of the Domain B1 woud be also rated as important
- The Question: Assess the capacity of public health teams to respond to infectious disease outbreaks. is more in the hand of the public health officers on community and regional level
- Design prevention programs (health promotion programs)

- Since the COVID pandemic the preparedness for infectious disease has increased but not enough.
- "B1 Sould be ""Preparedness and response to infectious disease outbreaks"". See B1.4. and B1.7.
- Again rather than important and very important we should grade it into knowledge and skills. Usually these are senior epidemiologists and other professionals who perform B1."
- B1 domain needs practical tools(eg for evaluation of capacity to respond) and experience in the field.
- A lot of these are done by the health protection or public health teams in the UK with support from epidemiologists
- "Many of these capacities are handled by the ""central"" level in national plans. Field epidemiologists must be familiar with these plans or guidelines but are not necessarily instrumental in developing them unless working in specific areas (such as geographic areas where mass gatherings occur often).
- Exposure to biological hazards etc is often examined by taskforces involving the peripheral (field epi) team and a central team of experts.
- You can't know everything. Better to know who to call and pre-establish working relationships with experts. "
- B1.7: Not all responses can be 'Evidence-based', but can be based on 'sense', an interesting topic.
- Again - it entirely depends on one's job. If I were an academic, my responses may be different!
- I would also add in point B1.3 to have basic understanding, knowledge about exposure to and management of chemical hazards. There are specialized CBRN teams that have more specialized knowledge of these issues. For point B1.6, i think it is too much for a person to know a priori all relevant settings' responses to all possible types of threats.
- Good
- Holistic approach where all have a role to play*
- Some competencies are simply not strictly relevant to field epidemiology at all. Do not mix public health with field epidemiology.
- Some of these e.g. B1.5, B1.1 overlap with management of health protection response functions rather than epidemiology- which provides the real-world data to inform but doesn't necessarily design all responses.
- Comment on B1.7: I support evidence-based responses where the evidence is already there. But especially in the COVID-19 pandemic, we have had to learn that with a new type of pathogen, a response must be made even if the evidence is only partially available. It would be nice to include such situations in the training.
- ad B1.1: and B1.7: these competencies are rather vaguely formulated. "Engage" is difficult to measure, could be replaced by "list the necessary steps/elements for"
- "B 1.5. Describe the roles of the major players in preparedness planning at national, international and local level and how to engage with them
- B1.5 - not just assess the capacity but how to create teams with the competencies required"
- All B1 competencies are 2, but I consider them more appropriate for the advanced level, i.e. a professional that has the mandate to implement such measures.
- The response strategies should be based on theoretically informed interventions that use behavioral sciences, implementation sciences and cultural anthropology. There should be sufficient competencies to develop evidence based intervetions.

- B1.2, B1.5 to B1.7 are tasks of a public health professional in charge of response plan and preparation, epidemiologists contribute to these tasks but are not in charge of designing or implementing strategies or measures
- "Yes please.
- I would lilke to add courses of ""basic elements of awareness and preparedness"" open to all. People who know what we're talking about and understand what's happening, is people that will not fall easily into the trap of fake news.
- The ""magical triad"" of civil defense in the CBRN field is ""to inform"", ""to convince"", ""to involve""
- It is a win-win type activity."
- It is vital to develop team work and interdisciplinary group management competences - these tasks can not be performed by one person or even by epidemilogists alone. It is vital to develop skills for interdisciplinary teamwork with experts from other fields, even outside medicine. This is particularly vital regarding establishing strategies for contact tracing, isolation and quarantine - using just epidemiological criteria is not enough for guidelines need to be feasible for the majority of targeted public.
- Design, implement and evaluate epidemic management strategies --- should include the public health and social measures (nonpharmaceutical interventions)

Domain B2: Surveillance for infectious disease outbreaks

- laws are important and useful in some situations, especially in the realm of infection control and patients who may be non-compliant.
- "B2.4 epidemic intelligence information may not be available
- "
- B2.7 why quote. Better: Be able to identify and communicate...
- An understanding of molecular epidemiology is important WGS and bioinformatics
- B2.7: "Be familiar with laws and directives..." rather than "Quote laws..."
- WGS detected outbreaks
- "Epidemic intelligence gathering, especially at the international level) requires a specific skillset, usually handled centrally.
- A missing point could be: very important to establish cross-border relationships and collaborations for teams located in areas bordering another country (North of France with Belgium etc). These international relations are often handled at the central level but should be much more developed at the local level in border areas. "
- "B2.2: Recognize the need to set up a new surveillance system if one does not exist.
- This competence is fine, but ideally, the sentence should be reworded (it sounds somewhat banal.)"
- Knowledge about the principles of minimum essential surveillance data.
- Surveillance is the building block for everything else
- Quoting laws may be a bit too much, but knowledge of them is 1
- Good
- N/A
- Yes
- add B2.3: "Engage" is difficult to measure, could be replaced by "list the necessary steps/elements for"

- "B21 - this may merit further description, one of them based on the likelihood/ probability of an event occurring and what data is needed for this, and the other for data needed to measure the consequences/ impact if such an event was to occur; this would make it clear that the surveillance data would go much beyond counting cases, but would need to include risk factors present in a population and severity; in addition to surveillance data, there is a need for contextual data for risk assessments.
- B27: i feel here just an awareness is needed, but if i was to focus my teaching on something in a 2 years programme, and i was limited, this is something i would put on a reference sheet on how to find this information, with some basics on it, and the institutions that have this information with links. "
- "Alertness to novel health risk states and development and use of syndromic surveillance
- Active surveillance of individual level data for signals
- Interpret signals from surveillance data
- B 2.7. Know how to interpret and use the laws on reporting at local, regional, national and international level "
- RE B2.7: Maybe not just laws but also (UN) resolutions, declarations, and similar? (e.g. with regard to SDGs, HLM on UHC etc.)
- "Addition of specific competencies from previous set : https://www.ecdc.europa.eu/en/publications-data/core-competencies-eu-public-health-epidemiologists-communicable-disease
- 20. Identify key findings from surveillance data analysis and draw conclusions.
- 21. Evaluate surveillance systems.
- B2.7: Have a good understanding of surveillance laws and be able to identify the laws at EU and International level and how to operate safely and ethically. Quoting them verbatim seems excessive, quoting the spirit and detail more 2.

Domain B3: Response for infectious disease outbreaks

- An overall comment would be that some of the practitioners at midlevel would require knowledge and others operating at senior practitioner level (including specialist public trainees) would be supporting/representing the Consultant in multiagency forums hence would require to apply this knowledge to implement effective control measures or mitigation strategies. so perhaps a tiered approach is required.
- In my opinion one area to increase the depth of training is computational biology and new sequencing methods. This should include some wet lab experience even for EPIET fellows
- I marked very important, but again depend on the position and the context or the moment. In public health we are not experts on all possible domains, but in case of outbreak or epidemies ewe have to update our knowledge to be able to work with different professionals, sometimes with more specific competencies then wer have
- Note: In Germany the implementatuin of quarantine and isolation requirements for infectious diseases outbreaks is in the hand of the public health doctors at community level!
- Regarding B3.10: Yes an epidemiologist needs to be able to describe geographical distribution and clustering, but advanced use of GIS software is not a required competence for all epidemiologists.
- B3,10, otherwise very important but not for GIS
- Network with local, national and international stakeholders to implement and coordinate response and surveillance systems

- "B3.3 drop ""likely"". We investigate any pattern.. result of investigation is ""likelihood"" of the transmission pattern.

- B3.10 use of GIS may be beyon skills of epidemiologists. However they need to be acquainted with spatial distrubution of the cases and be able to talk to GIS specialist.
- B3.11 to be acquainted with ..."
- "field B3 to B7 should be deleagted to IPC /hygien specialists
- Field B13 is to be delegated to RCCE specialists.
- Be ready to imediatly create and implemente online questionaires for outbreak investigation for cohort and case control studies.
- "Again, much of what is described here is dealt with at the central level by epidemiologists working on the specific topics with reference labs. There are guidelines. Field epidemiologists must know where they are and how to apply them and who to call, but are busy with many different health issues and must focus on practical tasks.
- Field epis may have their specialities but they are to the central level what general practitioners are to specialized physicians. The onus must be placed on these centralized specialists to aid field epis in times of outbreaks, not the converse. The specialized competence is central (unless on an issue affecting one area specifically) and the generalized and field competence is peripheral. That will not change. What must change is the flux of cooperation from central to peripheral instead of the usual opposite. "
- "B3.9: Derive the epidemic curve for the infectious disease outbreak and interpret its meaning.
- Not sure if it's about interpreting its ""meaning"". Rather conclusions that can be derived from it."
- Again, it's all 2...
- To identify the role of the epidemiologist in influencing the greater public (active role in awareness-raising as we are all in a public health crisis together) (B3:12)
- Same comment as above. You're mixing up multiple pillars of public health response with field epidemiology, which is more specific in nature.
- B3.4 is a combined question with both analysis (needed) and response (less so). Again some e.g. establishing interdisciplinary approaches are more for service management. Risk communication varies between roes
- B3.12 - rated 2 rather than v 2, as establishment piece is possibly the role for Senior expert rather than mid-career, with latter assisting
- "B3.6: i feel this may be less the task of a field epi, and more a task of health authorities.
- B3.11 in my view is very dependant on the pathogen and the role of the field epi and the context i which they work. for a PH microbiologist, this is 2, for a field epi, it is 2 to understand what WGS is used for broadly and then refer to those people with the right expertise who have trained to fully understand and put WGS into context for each situation.
- B3.13 - do you mean media training by this, or translating evidence into policy? i think this is 2, at the same time, COVID has shown that in practice, advice from epidemiologist is not necessarily heeded. Might be more 2 to be trained on how to engage the political apparatus in a country that makes the decision, or how to lobby for epidemiologists in government?"
- "B3.6 including exclusion from specific settings
- Criteria for closure of settings and the risk assessment measures applied

- Describe the requirement for social protection in the prevention and control of communicable disease and work with others to implement "
- Is B3.13 necessary - as there is a whole new Area on Comms and advocacy!?
- Competencies to enhance the competencies to use use qualitative research methods during the initial outbreak investigation is needed; to increase the understanding of the outbreak situation and the context in which the outbreak takes place, to explore more groups that were identified at risk , to understand attitudes and perceptions regarding isolation and quarantine measures and any other behaviors that the public is expected to comply during the outbreak. This will directly benefit risk communication efforts during an outbreak.
- "I suggest a reformulation of B3.6, B3.7, B3.8 as preventive measures differ according to transmission routes (ie foodborne, vectorborne, sexually transmitted disease ...) :.
- "Recommend evidence-based interventions in response to epidemiological findings and disease ""
- Communication at first place. This COVID19 pandemic taught us we have many issues, but communicatin failure or bad communication in my opinion is worse than many others.
- B3.13 involves deep understanding of risk communication, strategic communication, public relations and public opinion management. Active engagement in communication also demands highly elaborate communication skills (not just knowledge!).

Area C: Communication and advocacy

Domain C1: Public health communication

- I think it hard to be competent at the same time in field epidemiology and risk communication. The training should include come training in risk communication but and multidisciplinary team should have experts in the area of risk communication.
- I would expect there to be a dedicated communications professional(s) working with the outbreak team so developing a strong relationship with that person is critical
- Note: In Germany, to engage with social media to reach targeted groups is mostly in the hand of the press officers of the ministery
- Communication should not be a core competency of epidemiologist, however knowing how to work with communication experts/professionals is important
- on personal level not very important but on team level very important
- C1.8 is difficult to achieve if stakeholders are lay persons
- Specific targeting for those from vulnerable groups esp hard to reach eg Roma
- Epidemiologist should be adding their expertise to a multi disciplinary team, and validating PH messages
- Other concepts should be included in c18. surveillance system sensitivity, under-ascertainment, physiopathology, infection mechanisms etc. source of bias etc
- I believe that public health communication is very important but the infectious disease epidemiologist must be always advised by professionals on communication.
- A lot of these actions are for the Communications team to do
- Again, I find the survey ambiguous: These skills are very important in epidemiology but often describe the central epidemiologists at the national (n) or sub-national (n-1) level. What you descrbe is often dealt with at the national level. Field epidemiologists often work at the n-2 level and receive guidelines. The difference between good and poor field

- epis will not be universal knowledge but a good general knowledge, speed, instinct, resilience, and a contact network including national and trans-border
- It just depends - if I were working in a national PH institute, these would rank higher in importance...!
- For exhaustive, professional, and routine communication with traditional and social media, media experts should accompany an epidemiologist's work. The epidemiologist should be trained in the basic principles and concepts and in ad hoc, emergency communication.
- Depending on the context and organizational structure a field epi is working, he/she may need to have the above mentioned competencies or not so much.
- One Health approach that addresses barriers to public health information
- It is not necessarily the epidemiologist who is doing all that, but they should be able to transfer their knowledge to those who are in charge of communication
- Participation in these mechanisms rather than leading in them is 2 for field epidemiology.
- General comment: A mid-career applied ID epi does not need to be able to do ALL. Key is to be aware of key concepts and stakeholders.
- Engage with other public health experts from around the world
- Some of these are more specialist communications functions
- "C1.2 - can advise on channels but Communications Department tends to make these decisions
- C1.3 - senior role rather than mid-career, latter can assist"
- C1.5: Employ social media and/or collaborate with social media experts to reach targeted groups.
- "c1.3 - i dont understand what you mean by that
- c1.4 - mid career professionals may not get much opportunity to do so. I would not make it a focus, but rather make people aware that media training is a thing, and that it should be requested by the employer if such responasbilities are expected in the future.
- c1.5 - i dont feel that is the role of a field epi. rather, emphasise that epis need to work with the comms department to ensure messaging is 1) factual and 2) understandable by the target population; it's an 2 synergy"
- "Be able to develop standard messages for use in advance of an outbreak through evidence of ongoing relationships with communities and key stakeholders
- Be able to communicate effectively on a 1:1 basis with key individuals /leaders at local, national and international level. "
- I recommend to emphasize that not all field epidemiologist need to become (good) PH communicators themselves but that a) they need to support comms experts in their work with content, facts, evidence, and b) need to a ensure that at least one person from their field epi team or unit should be it, even if it is someone else. In other words: PH comm is 1 - but not every field epi is able and willing to do it. (The next Domain uses "collaborate" - would be welcomed in C1 as well.)
- Enhancing use of qualitative research methods, behavioral sciences and anthropology to develop messages and to selected means and channels to communicate
- Epidemiologists contribute to PH communication in collaboration with communication teams
- merge C1.7 and C1.8 - 'basic' concepts and 'key' concepts? not different - its the ability to explain

- Yes. Everyone of us do communicate, but only few of us are trained to be "communicators", especially in the field of "emergency communication". The best lab researcher could be a very bad, unclear, unempathic communicator. So i will add "emergency communication" courses for scientists (but also politicians, armed forces, first responders etc.). Of course, this must be done BEFORE an outbreak happens (see about preparedness B.1)
- Of course all tasks under C! are very, 1, vital even. But the main task of epidemiologists is to formulate precise communication goals, target populations and timelines - it is vital to cooperate with communication experts, psychologits, experts in medical humanities, sociologists, media people - everything under C1 is a interdisciplinary work. It is vital that epidemiologists have skills in public speaking and media appearing - public trust and understanding of the situation depends on this. But it is 1 that epidemiologists cooperate with communication experts whom they trust and who are skilled in healthcare communication. (Which is not the same as marketing or propaganda!).

Domain C2: Infodemiology and infodemic management

- comments as noted above and in regards to the extent to which practitioners would be involved in the information/misinformation management for protecting the health of the public, varying levels of proficiency would be required.
- Depending on the position or place of work, the relevance of the Domain C1 woud be also rated as important
- see comment in C1
- Note: In Germany, to engage with social media to reach targeted groups is mostly in the hand of the press officers of the ministery
- Not a core competency
- Comment: I wonder if a focus on this topic is possible given all the other tasks, and could be left to those focussing on information management
- C2.3 and C2.4 are essentially identical.
- an Epidemiologist work would be to anticipate PH risk of Infodemics in a given population (vaccine hesitancy = suceptibles etc), rather than perform the analysis themselves
- C2 is very poorly adressed and is absolutely highest priority to be included in the core competencies
- All seems very important tasks to me but again, I believe that other proffessionals can do it (experts on communication, health promoters, psicologists, antropologists..)
- Again this is for Comms team or knowledge services
- For me, "infodemiology and infodemic" are not very well established terms. I do not know who the "specialists in infodemiology" are. I believe this is a relevant field, but not necessarily the task/skills to be expected from an ID epidemiologist.
- I'm not so sure it's our job to identify the origin of misinformation - ??
- An average epidemiologist should be aware of these topics but deep proficiency should be expected only in specialized career paths. To sustain specialized workforce for these topics and actions is 2 for every public health institute.
- This is a very specialized area that needs the collaboration with other specialists, i.e. communication experts, social scientists, anthropologists. It is good for a field epi to be aware and take into account when designing projects/responses, responding to

emergencies, etc. but not to lead and be able to work independently on the infodemiology domain

- C2.2 and C2.3 are relevant, but a bit distant from the roles of applied infectious disease epidemiology
- Sure, some field epidemiologists might be involved in these activities. But these are not field epidemiology per se.
- Difficult to assess this new area- I don't think epidemiologists can do everything and this overlaps with communications who might be best focused on some of these issues.
- C2.3 - C2.5 although the whole area of infodemiology and infodemic management is 1, rated it 3 in the context it is not the primary role of mid-career applied infectious disease epidemiologist, it is however 2 for epidemiologists to work in collaboration communications departments, behavour scientists and data scientists etc. around infodemic management.
- C2.3 to 5: aren't these more the tasks for the specialists in infodemiology?
- "i think this might need to be a new field, and a multidisciplinary partner the field epi may work with. I dont think field epis need to do everything.
- i would rather see this as a new discipline. not all field epis necessarily have the profile or the desire to do this, and do it well. If this is a core competency, it would widen the expectations even further. "
- "This is likely to become a more specialist role but everyone should be competent in the key features of infodemic prevention and control - recognising that prevention requires ongoing work with communities
- Demonstrate an understanding of the lessons from research on trust in healthcare and the ability to apply them in practice. "
- Further emphasis on targeting wide-spread misinformation within the public domain
- RE C2.3 and C2.4 - If "in collaboration with communication experts and data scientists", then "1" - but don't believe they do it all alone.
- Enhancing use of qualitative research methods, behavioral sciences and anthropology to address infodemia
- This area is of vital importance but most mid-level professionals would not have access to an 'expert in infodemiology'- necessary to understand and be aware of the processes and access expert help when possible
- "C2.1 not just social media, also mainstream media, street-level/outdoor media, and online media.
- C2.3 Record examples of mis- dis- and mal- information, perform social listening and comparison with other platforms. Identify the origin and spread of misinformation online, on social media, on mainstream media, and at street level. Infodemic management is not exclusively online it must be completed with an offline investigation in recognition that closed media groups and rumours at street level are just as destructive. "
- the war against infodemics is not related to an outbreak. Of course, this pandemic have shown all its "dark power", yet infodemics is simply "too much information" (right, wrong, whatever) and so this must become a 365 days/year work. That's why I strongly suggest to add "regional/national infodemic groups" that will cooperate with other groups in a european (or whu not mondial) network, and so keep this constant fight going.
- Again - epidemiologists need to cooperate with people who are specialised in infodemic management (not necessarily medical doctors!), social listening, cultural analysis etc.

They need to understand the principles - but infodemic management should involve other experts. Teamwork!

- "- Perform social listening in offline and online environments
- - Design behaviorally-informed infodemic management systems and interventions
- - Fill media environments with comprehensive, accurate information to proactively limit the spread of misinformation"
- Identify information voids (what are people concerned about or questioning, so that misinformation does not fill in the conversation space)
- Integrate information from social media, call centers, mobility data, other routine sources of information to analyze what people are concerned about, what questions they are asking and what health behaviors they are enacting
- integrate social listening insights with communication and health system response
- design behaviorally-informed interventions to raise resilience to infodemic and misinformation

Domain C3: Communication and community engagement

- Depending on the position or place of work, the relevance of the Domain C3 woud be also rated as important
- No 1 and 2 is more something for the sociologist....
- community-based communication which is information in bite-size and easy to understand concepts is hugely important!
- Identify health literacy prevalence and identity solutions to improve literacy about infectious diseases management and prevention
- Epidemiologist role is to help communicate on the evidence, but technical communation should be lead by communication team
- know and use specific tools . otherwise a bit subjective. but very relevant
- To me this level of communication is very important to other professionals and marginally important to epidemiologist expert on infectious diseases. But the results of this investigations are very relevant to design and implement public health measures.
- "Community-based organisations are often advocates and have their own agendas. They lobby. It is very important for field epis to know how to apply principles of unassailable data gathering techniques, comitology and step-by-step analysis and communication to reduce the risk of negative media campaigns; This is especially true in the field of environmental and supposed risks to health for which there is little evidence but a lot of emotion. It also applies to some infectious diseases issues.
- Emocracy is a dangerous thing for societies, but especially for field epis and their institutions. "
- "C3.3: Apply and evaluate the principles of risk communication during emergencies or non-emergencies.
- It's not clear what is meant under ""evaluating the principles of risk communication"" here."
- All super 2
- These points are very context-dependent as well, for example if you work in a low income country or not
- Community cultural background is one sensitive area
- Again some functions might lie with an epidemiologist but other specialties are 2. risk of over-stretching role.

- "going through all the questions, i feel that it comes back to the core competencies of epidemiologist in terms of technical skills, and then softer skills. I think there is more reflection needed on what the essential softer skills are, and how to teach them.
- Then there are additional skills on communication for example, or community engagement, where the concepts are 2, but not everyone will get either need them or a field epi programme will have the scope to offer this opportunity to everyone. It would require more ambitious tailoring or projects, and potentially giving fellows more responsibilities. I think this needs to assess feasibility and may have impact of who can be a training site, or to organise more exchanges between training sites and possibly partner institutions/ organisations. "
- "There should be something about human rights in this section
- C3.6. is more than advocacy and is about working effectively together to design effective interventions - the NZ public health guidance is quite good on this
- Integrated Impact Assessment might also sit well here"
- Enhancing use of qualitative research methods, behavioral sciences , anthropology and implementation sciences to develop evidence based interventions.
- so 2 , and poorly done by many ID epidemiologists
- "Address information voids and deficits transparently and in plain language.
- Maintain communication at all levels by adopting single points of contact and SitRep daily updates.
- Sitrep should include infodemic toplines, implementation goals and evaluations to complement the communications strategy and key narrative. "
- Everything is ok, yet all these should be done by "the right people" sending "the right message" through the "right media", as already said at the end of the 1st Global Convention on Infodemics by WHO/OMS
- Use participatory approaches with communities to design, implementation and evaluation of interventions

Domain C4: Scientific communication

- comments regarding level of proficiency vs familiarity as noted in the sections above
- Depending on the position or place of work, the relevance of the Domain C4 woud be also rated as important
- see C1 It is the comms lead responsibility to draft press releases for the epidemiologist to approve
- C4 is the most important section in my opinion
- I think policy analysis is important too
- Again, comms can be done in collaboration with scientific writers etc
- very important. To be more active with the media and use structured approaches to media engagement and communication to influence policy... but depends on the level...
- "Publication is usually not a criterion for professional advancement for field epis. But scientific writing is a great tool for honing skills, synthesizing data, taking a step back and finally getting to understand what happened after the ""fog of war"" dissipates.
- Writing reports is essential to convey information and keep record for future use. If written in the IMRAD format is can easily be used to publish abstracts or articles. "

- Honestly this is basic stuff for an epi-in-training, much less one who is mid-career!!
- Communication is key and many already know how to write scientific papers as well as identifying trusted source in this field. A lot of time is placed on this when real-life application is neglected
- All these 2 - some are more senior roles
- C4.5: Identify instead of Engage
- "At this point of this questionnaire, I honestly doubt that the results will be of any practical value or a useful basis for further decision making/exploration of ideas. Filling out loads of Likert questions seems neither effective nor informative. I am really sorry to be so bold, but I just find it very unfortunate that this 1 topic is addressed by this type of questionnaire; and I hope to be wrong.
- In any case, I predict that most items of this questionnaire will be checked as '2' or '1', as for most items, there is no fundamental question whether they are 2 or not. If this will be the case, I don't see significant power of this questionnaire to really distinguish the relevance of different items. A more informative question might have been what role these tasks should play in practice, who should do them and to what extent.
- An honest suggestion: It may be that participants of this survey cluster in several groups. If I were to analyse the data, I would filter for participants who answer with 2/1 for most items, and those who really offer 'diverse' answers (more often '3'/'4'). If this distinction leads to a valid partition of the participants, this would have implications on the validity of the results. At least, in this case, averages/medians and so on should not be computed."
- c4.5 - super 2, but maybe a module on its own that should be taught beyond field epis, in a joint type of setting? how to make it accessible to graduates at a time when it may become more relevant to their roles?
- C4.6. - Probably draft or prepare as many organisations will have communications specialists and the role here is to ensure that the key messages are included, accurate and not diluted or lost
- "C4.6 - A press release is NOT a type of scientific communication! Rather belongs to Domain C1, IMO.
- Consider to shift it to the other domain or change the heading of C4 to something like "dissemination of scientific results"" which would include policy briefs (C4.1) and press releases or interviews with media (C4.6)". "engagement and coauthoring more 2 here than actual act of writing the paper
- writing for decision makers and the press are key "
- "Write and submit a scientific abstract should be separate to
- Make a presentation to a scientific meeting
- These skills are not the same, helpful to have both. Essential to present well, whether you are published or not less vital, although helpful to at least have contributed. "

Area D: Practice of infectious disease epidemiology

Domain D1: Overview of infectious diseases

- Legislation fails to respond quickly to new challenges of infectious diseases
- Depending on the position or place of work, the relevance of the Domain D1 woud be also rated as important
- D 1.1. overlap with descriptive epidemiology

- "D1.2 Be familiar (or be acquainted) with.. instead of ""explain""
- D1.6 belongs to B, it is a ""preparedness, detection and response"" skill."
- Again, field epis deal with a lot of different diseases and issues, many of which are non-nfectious. Best to know where to quickly find the information than to know the information (which changes every so often) by heart.
- "D1.1: Analyse the global burden and regional distribution of infectious diseases.
- What is meant by ""regional"" here? European, African etc.?
- D1.6: Analyse new and emerging infectious diseases and threats, including threats of epidemics and pandemics.
- What is meant by ""analyse"" here? Which aspect?"
- We seem to be getting a bit repetitive now... :-)
- I did not understand the exact practical meaning of D1.6
- "d1.3 - how would you teach this? is this meant to be through applying it during a placement? then i would move to 1
- again a comment: all of these are 2, but it is difficult to cover everything in a two year programme.
- Will be interesting to look at results and prioritise again from that. I feel it needs to be reduced from all that is proposed here"
- "Explain the importance of One health
- Work with colleagues from other disciplines e.g. vet, environmental health to prevent and control the outbreak potential of key sources of infection"
- RE D1.3: Explain to whom???

Domain D2: Infection prevention, control and treatment

- Depending on the position or place of work, the relevance of the Domain D2 woud be also rated as important
- I think the term 'lifestyle' is inappropriate as implies a hefty degree of personal and/or community choice when, in fact, most of these 'lifestyle' factors are imposed on individuals and communities by virtue of deprivation and racism
- Not every epidemiologist needs expertise in IPC however, in a team one would need to have someone with this expertise
- on personal level not very important but on team level very important
- Any reference to digital tools for this topic? I guess this could be added
- Social determinants of health , Align Sustainable development goals with programs assessment planning and implementation
- "D2.7: Add ""inform / regulate"" the use of antibiotics and antimicrobials. It needs to be more proactive than just monitoring
- Also add educate multidisciplinary team, peers, patients and the public in relation to infection prevention and control"
- D2.6 and D2.8 again I prefer "be familiar" or as in D2.5 "recognise" is possible.
- "Specif approach to working with healthcare institution (hosptials and primary care providers)”
- "Many of these sometimes complicated issues are contained in national guidelines.
- Know where to find the guidelines quickly, know who to contact and know enough of the guideline-making process to suspect when it is a better idea to stray somewhat from the guidelines. "

- "D2.3: Describe the disease control measures relating to food, air, water, and vectors in infection prevention and control (IPC).
- air/droplets
- D2.8: Explain the evolution of healthcare associated infections, including their risk factors and management.
- What is meant by ""management"" here?
- Other comment: STIs and vaccine preventable diseases are not mentioned here”
- (this is just not my area...)
- Some of these are more specialist roles
- D2.7: "List programmes to ...and collaborate with them (instead of "Engage")
- i feel IPC, AMR and HAI are areas/ fields of their own. Field epi projects may be done in those areas, but to me, they would not be a core competency for all field epis. however field epis can apply field epi skills to work in AMR/ HAI/ IPC related field.
- "Ventilation and environmental contamination, building standards, management of waste should be covered
- - perhaps describe the role of the key factors, the control measures and the experts that should be in the team "
- "RE D2.6: Explain to whom??
- GENERAL REMARK ON THE DESIGN OF THESE QUESTIONS: The more and more I scroll through the batteries, I feel like the Likert scale should not have been ""1"" to ""4"" but from ""all applied field epi should be able to have this skill or competency"" to ""no applied field epi should be able to ..."" In other words: AMR, risk comm etc. is all 1 - but not everyone has to cover all these aspects. And since I am not sure whether there will be any opportunity to write down this 2 thought and remark I'll leave it here. Thanks"
- "Enhance competencies to identify behavioral barriers and enablers of behavior and develop evidence based interventions to improve the practices.
- Enhance competiences to use ethnography and other observational tools to understand IPC behaviors "
- *D2.2: Recognise the role of lifestyle and behaviour and misinformation in infection dissemination and prevention.

Domain D3: Disease-specific knowledge and skills

- Depending on the position or place of work, the relevance of the Domain D3 woud be also rated as important
- "laboratory methods and genomics should be discussed in collaboration with laboratory experts and technicians”
- "Tests evolve all the time.
- “Work closely with the national reference lab. "
- All 2!
- For this domain i would say that it's 2 for a field epi to know the general principles and be able to quickly identify the specifics, but i would not expect him/her to know by heart all sub-domain aspects for all infectious diseases (maybe i misunderstood the point?). Especially point D3.3 is very specialized and the input of a public health microbiologist is imperative.

- again these specialist skills becoming more 2
- d3.5 and 6 - this i feel is not something that is taught as a whole; i think awareness of the type of tests and their properties (d3.3.) are 2, but interpreting may be learned depending on the pathogen one works on and what one's role is. I would drop this for field epis, but it is essential for PH micros.
- "Know where to find information about specific diseases
- Describe and apply the principles of right test, right place, right time, right person, right result to an individual and a diagnostic programme "
- Again: Explain to whom??
- "if you do D3.1,2,3,5,6 are you doing D3.4 ?
- not a term I am familiar with PH 'microbiology'"
- D3.7 Know how to communication when the above questions cannot be satisfactorily answered and why that is (early in outbreak, epidemics or pandemics of novel pathogens.

Domain D4: Vaccinology

- Depending on the position or place of work, the relevance of the Domain D4 could be marginnally improtant
- Similar comment as D2
- on personal level not very important but on team level very important
- D4.5. it may not be possible to do this without adequate open data. Perhaps: Interpret vaccine efficacy and vaccine effectiveness
- To know the logistical aspects of mass vaccination campaigns in the population. To organize vaccinations in situations of a vaccine shortage. To manage the logistics to vaccinate groups of patients of different sizes according to the batches of the different types of vaccine to no waste vaccine doses.
- Conduct vacine effectiveness monitoring for different outcomes
- Mostly dealt with by expert groups at the national or even international (SAGE) level.
- "D4.5: Estimate vaccine effectiveness and vaccine efficacy.
- This is a bit too vague... needs rephrasing."
- Again - all 2! But not everyone works in this area... and we can't do everything!
- Relevant topic at present - factual case studies would be helpful along with "What if?" scenarios to look on past mistakes
- These aspects will be 2 for some field epidemiologists, but not for all. Similarly, many field epidemiologists will be absolutely adequate for their roles without knowing much about the basic reproduction number of a disease.
- "Again divide between epidemiological and programmatic aspects of vaccines”
- "D 4.6 Know where to look it up
- D 4.7 Structural determinants of vaccination coverage and implementation of programmes designed to address the barriers "
- The side-effects of the vaccine
- "this set is missing something:
- 'implement' new vaccine programmes or be part of the implementation of new vaccine programmes at local, regional or national level? "
- D4.6.2 Understand the life course approach to vaccination starting with maternal, infant, pre-school, teenage, adult and older adult, selective and routine schedules.
- I like all these points a lot.

- Effectively communicate about vaccine safety

Domain D5: One health and climate change

- on personal level not very important but on team level very important
- "Is One-health environmental health?
  Caring (providing care) for the environment is the purview of ecologists (in the scientific sense). Providing care for animals is vet medicine. Providing care for humans is medicine. One-health would be monitoring the health of animals to protect human health, and has only really worked in the case of rabies. Sometimes it involves culling (avian influenza...), which is deleterious to animals' health.
  Environmental health to protect animals is not the purview of (human health) field epidemiologists. A very confusing, bag-it-all concept which could be better defined to better answer questions.
- Again - this is not my area, so perhaps I indicate here lower importance as I am not a vet. One Health is logical but we cannot all be experts in everything.
- Field epis should also be able to understand the environmental aspects associated with infectious diseases epidemiology that go beyond one health and climate change, e.g. air pollution effects etc.
- These aspects will be 2 for some field epidemiologists, but not for all.
- "One health and climate change will be relevant to some, but not all. It depends on which area of infectious diseases they are working. As someone working mostly on sexuality transmitted infections this is NOT very relevant. But for others it will be key.
- Don’t drown a list of core competencies with things that are relevant for some…."
- Again an 2 area but need to recognised roles of partners
- Although I ticked v 2 for all questions in sections D2, D4, D5 as these competencies are relevant within the specialism IPC, vaccinology and one-health, I wouldn't expect mid-career epidemiologist to have developed in detail the full range of competencies listed and in reality would specialise more in one sub-domain than the others.
- "this section i think could be elaborated more. it seems very big picture.
- Would be interesting to heard e.g. from FETP graduates with a vet background on what they feel was most 2 from their sector when transitioning to human epi. "
- "See previous on evidence of prevention and control of outbreak
- Port health and border control might be included here
- Trade and infectious disease prevention and control"
- D5.4: Consider to be more specific and practical here - I bet, the importance rating would be higher then. Or vice versa: If the rating is comparably low here, then this might be due to people rather answering with a low rate instead of "5."
- I STRONGLY like these points.

Area E: Contextual influences on infectious disease management

Domain E1: Political system

- Ww think this domain could be removed. The presented competencies are too specific and partially already addressed in other domains.
- Is that domain really linked with applied epidemiology?
- While these competencies are important they are not the most important in implementation of infectious disease epidemiology, infection prevention and public health. We need to get the basic application right first and then move to a place of political influence then.
- learn about health systems and financing, eg impact on out of pocket expenditure on access to health care and health care seeking behaviour.
- Advocacy techniques are of utmost important in todays democratic contexts arround the world. Media engagement is key.
- this is more the role of public health or health protection teams
- "What is ""appropriate"" ?
- Lobbying and advocacy, surely, but in the sense that information is fed back and fed forward tothose who need to know for timely action. The basics of public health.
- Otherwise engage as a private citizen, not as a field epi. "
- "E1.3: Engage in appropriate lobbying and advocacy in the interest of public health.
- This is a valid point, but one should also be psychologically prepared to be continuously neglected/disregarded by political decision-makers. "
- E1,1 does not seem to be specific for an applied infectious disease epidemiologist
- This is where most people are unaware of how positions of power are 2 to engage with in order to push the public health message. 2 to know how best to reach others through engagement with stakeholders in authority for the public good.
- senior roles
- Comment on E1.3: Engagement in appropriate lobbying in the interest of public health is 2 and a task for high-level career professional. Since you asked for the importance for a mid-career professional, I consider this task as 3.
- E1.3: illustrate the importance and relevance of public health.
- This is so varied depending on the country. With EPIET being so international, not sure how this could be taught. It would be on the job learning, with responsibility falling to training sites to prepare some proper training materials on this. Otherwise this core competency can't be measured.
- More appropriate for the advanced level.
- E1.3 Consider to add "learn how to do it" first.

Domain E2: Organisation of healthcare

- on personal level not very important but on team level very important
- E 2.7. I see some overlap with the surveillance competences regarding legal aspects
- This issues are very important but it depends on the type of work performing by the epidemiologist. If the professionals is engaged to the public health on a high level of decision, then all this issues are of outmost relevance. If the professional is doing mostly technical duties, then are marginally important...
- health protection teams do these with input from epidemiologists

- "E2.7 not for field epi unless on ""border areas"".
- I would add: Be fully aware of ethics regulations which define what data you can or cannot use, and how to obtain speedy approval if needed. "
- "E2.3: Outline the structure of the health service agency at national and regional level.
- See comment on ""regional"". Here it seems to be used as a synonym of ""subnational".
- I'm not sure about E2.6 if I am an epi and not a clinician diagnosing an ID - but maybe I misunderstand?
- Not CORE competencies for a field epidemiolgist!!! Those are competencies for public health.
- Some of these aspects are 1 to understand surveillance systems and information flow (mainly).
- E2.7 " Be fully conversant with…" don't think all midcareer epis nned to be fully conversant with the EU legislation. It will be relevant for some, but should not be a core competency for ALL.
- "E2.6 is a clinicians's obligation"
- E25 and 6 seem to be better placed in the domains above (surveillance and data analysis)
- "e2.3 dont understand what is mean by health service agency
- e 2.6 not sure i understand. the person is mean to notify? or act upon notification according to the country's rules? the latter makes sense as an FETP is a practical assignemnt, the former less so, as i dont think many epis would be the notifiers - that would more likely be doctors/ nurses/ labs
- In general, i am not sure if these are core competencies for field epis.
- "E.2.4 not about learning but working effectively with them and understanding their strengths and limitations - they will be required for capture -recapture and data linkage studies
- Social and third sector care should be included in this or the infection prevention and control section
- Knowledge of clinical disease registries is 2"
- Less relevant for mid-career epidemiologists, definitely 2 for the advanced (senior) level.

Domain E3: Healthcare delivery

- on personal level not very important but on team level very important
- All E3.1-E3.4 can be phrased "Know.."
- "Again, impact of health care financing on health care access, behaviour, and surveillance implications, eg data flows from private practices (labs and clinics), patient data bases and surveillance data reporting.
- Profit oriented health care professionals are not always interested in sharing client health information for public health purposes, and are more oriented towards a cure based system rather than a prevention oriented public health policy."
- Depends on the field and interests of the epidemiologists
- "E3.3: Be aware of the scope of practice specific to the healthcare setting or service with the country or region.
- This is not clear enough."

- I'm not sure about E3.6 - in some countries this may be prohibitively expensive
- Greater focus needed here to empower and encourage public to seek needed services and speak up for them
- Not CORE competencies for a field epidemiolgist!!!
- I guess it depends on your area of expertise, if you are working with health care associated infections, these points will be much more 2 to your daily job than if you are working with STIs for example
- NO
- E3.6 is 2, but doesn't really fit as a core competenciy
- depends on role- IP&C more for hospital roles
- For those rated 2, health service so broad not practical to have full knowledge of all elements listed above. It wasn't clear if questions related to specific element of health service epidemiologists employed in or wider health service?
- "E3.3: unclear what is concretely meant by this
- E3.6: that's not a competency"
- "much of this to me is not so relevant for a field epi, but more for someone working with patients.
- "Not sure what was intended by 3.3.
- 3.4. Not about learning but knowledge of strengths and gaps and how to use them. "
- None
- Again: explain to whom??
- E3.1 and E3.3 overlap

Domain E4: Socio-economic and socio-cultural contexts

- Not all epidemiologists need to have sociology or health economics expertise, but a team needs to have some members with such expertise.
- on personal level not very important but on team level very important
- E4.6. Identify and apply approaches to participatory engagement of vulnerable populations in health promotion and infectious disease prevention
- E4.1 "Know..."
- Conduct relevaant ecological studies were no other data is availavle. interpreting its limitations and generating hypothesis
- Health economics cost effectiviness expansion paths for intervention strategies needs to be included.
- All 2
- E4.5 - add to how those with socioeconomic advantages can induce change to reduce health inequalities. Speak up for redistribution of services to meet those who do not have the position /voice to be heard
- Not CORE competencies for a field epidemiolgist!!!
- no
- Again other colleagues more appropriate for some methods
- E4.4 and E4.5 ---this is a role conducted in the health service and not by applied infectious disease epidemiologists per se and therefore not rating the competency requirement as high.
- part of this is already mentioned in the domains above

- health economics is a whole other degree
- No
- "See previous
- Understanding of multmorbidity and intersectionality
- Role of social protection and community support in prevention and control
- Role of work and trades unions
- Not for mid-career field epidemiologists, seems more relevant to advanced public health professionals.
- None
- Again: explain to whom??
- E4.4.2 Identify regional health teams stakeholders, NGOs, Charities, faith groups and social care initiatives who have experienced and are trusted voices in the communities

Area F: Leadership and management

Domain F1: Policy development

- Depending on the position or place of work, the relevance of the Domain F1 woud be also rated as important
- F1.1 "Know..." It relates to preparedness and response.
- Policy is linked to financing, and conflict of interest of pharmaceutical industries, and lobbying processes, should be examined closely
- I am not sure I agree with this Domain at all. The title is "leadership" overall and this domain F1 is "policy development" - but the competencies listed are all about public health leadership. Where I work we have a fantastic manager/leader who does not influence policy at all, because that is not the job! Development of policy for a mid-career epi would only be 2 if one worked in a PH institute, or if one was an academic influencing governmental leaders in one's own country, etc. A field epi, working on outbreak response - I'm not sure how they would "influence policy".
- no
- "It's 2 to work with stakeholders and to make sure our work is taken into consideration when planning/changing policies. However, I don't think a mid-career applied ID epidemiologist needs to be an expert on "F 1.1: Understand the planning, development, implementation, and evaluation of public health policies, programmes, and their impact on health."
- A general challenge with this questionnaire structure is that it's so long and comprehensive and nearly all topics are somehow relevant for ID epi's - but I wish you had made it clearer that there is a need to prioritize and focus on CORE competencies.
- I worry that some respondents will end up clicking "2" to too many things … it should have been made more clear that the focus is on CORE competencies. One profession cannot do it all. There is a danger/risk of drowning out the most 2 (the basics) by having such a comprehensive approach.
- I wished more people from the field epi and public health microbiology community (ie the alumni network EAN) had been invited to be more involved in setting up this survey.
- Work with the community members in developing policies
- Comment on F1.2: Since you asked for the importance for a mid-career professional, I consider this task as 3. This would be a 1 task for a high-level career professional.

- F1.2: unclear which competency this refers to
- how could this be assessed? i think the opportunities to gather experience on this during an FETP will be limited. would need a real effort to provide this to FETP fellows
- No
- "Role of health lawyers, trades unions, community and informal leaders could come in here
- Work with clinical leaders in primary and secondary care as well as sector leaders - headteachers to education directors,
- Mapping the collaboration and conflict landscape "
- Not for mid-career field epidemiologists, seems more relevant to advanced public health professionals.
- "F1 domain is not specific of the profession”

Domain F2: Organizational leadership

- Depending on the position or place of work, the relevance of the Domain F2 woud be also rated as important
- Does not appear related to applied epidemiology
- Competencies for senior professionals.
- Focus on values of PH Research and practice and its values to democracy and well being and in influencing policy making
- These are all mandatory and super 2 for any leader of any organisation
- F2.1 and F2.4 - be open to other people's experiences despite not having the credentials. All voices have a role to play in achieving public health for all if it is with good intention of the heart.
- Are they CORE competencies for a field epidemiologist?
- F2.2: communication is already listed in th communication domain
- "It would be better to be quite specific in the context of communicable diseases and environmental hazards - most of these are not measurable as stated - needs to include what can be demonstrated, particularly when the ability to command resources is only within the context of a specific programme or incident
- Good practice is more appropriate than established practice "
- None
- "I strongly recommend to add an item such as ""Actively participate in leadership training opportunities"" (maybe even as the first item in this battery). Reason: Leadership is another competency and skill that needs to be learned just as statistics and microbiology before it can be applied. (Sure, there are ""born leaders"", but this is talent - just as mathematical understanding is the talent that help you to strive in statistics. Just because you are a good epi and climb up the career ladder doesn't make one a good leader. Be aware of the Peter principle!)
- Also, please consider to distinguish between leadership and management and re-phrase the domain accordingly, e.g. to ""organizational management and leadership"". One example: F2.1 rather is about management, not leadership."
- To enhance application trust building interventions
- F2 domain is not specific of the profession
- no.

Domain F3: Strategic planning and change management

- Depending on the position or place of work, the relevance of the Domain F3 woud be also rated as important
- In F3.3 we didn't manage to fully understand the meaning of "introduce change"
- F 3.2. seems very general and impossible to measure
- Competencies rather for senior professionals.
- "F3.2: Recognise need for change when it arises, and develop and apply methods and approaches to support change.
- F3.3: Recognise disruptive events and introduce change in a timely manner.
- These points are too vague, they need clarification/rewording. Also, not everyone is in the position to manage changes within a team/organisation, so it's not necessarily up to a person whether she/he can ""introduce change in a timely manner"". "
- Not CORE competencies for a field epidemiolgist.
- F3.5: already mentioned above
- these are management competencies; useful for any role, but possibly not specifically to FETPs; they will need it, but how would this be trained/ assessed
- Values need to be communicated clearly and underpin so demonstrate adherence to public health values
- Not for mid-career field epidemiologists, seems more relevant to advanced public health professionals. A mid-career field epidemiologist will probably not be in a position to engage in strategic planning and change management.
- Nice, here you specified to whom something should be explained. Well done!
- F3 domain is not specific of the profession
- "F3.5 overlaps communications section - but no bad thing to recognise communications with managers and peers
- Overlap fine in this case i think
- F3.3. Recognise disruptive events, information voids, misinformation management needs and develop and apply methods iteratively and introduce change/implementation in a timely manner
- F3.5. Explain epidemiological, infodemiological and public health issues and implications to management teams and collaborators"
- no.

Domain F4: Financial management

- Financial managent is an important skill, but I would leave it for specific training during the preparation of leadership roles
- Understanding how to effectively lobby/apply for funding is very important
- Where I work, all the three above fields arevery much in the hand of the political sector....
- on personal level marginally important but on team level very important/important
- From my pointof view, financial matters shell be covered only marginally and should be left to economists (professionals).
- Competencies rather for senior professionals.
- "public health programes such as disease and epidemic surveillance should be funded from public funds.

- Funding and ressource management is not a public health evidence expertise, and should be managed by financial experts, in collaboration and planning with public health programme managers."
- proposals for funding for eu funds and others should be easy to conduct
- F4.3 usually attributed by national level or regional organizations.
- I think these skills are usually expected from more senior staff. Also, sometimes it feels unfair that epi staff needs to perform the classical tasks of support staff (e.g. HR, finances) in order to move projects forward.
- Real life examples could be helpful to understanding how much it would cost to achieve public health and reshift people's priorities on how best to spend money
- Not CORE competencies for a field epidemiolgist.
- Rather than being 2 to field epidemiologists in general, these aspects are 2 to all professionals at the right level. I disagree with these being included to assess any (including junior) field epidemiologist, OR public health microbiologist, OR data scientist, OR biostatistician, OR health policy expert. They are 1 for senior field epidemiologists, as they are for other senior peers.
- no
- super 2, but i would be interested if this is within the scope of an FETP - or together with the previous should be a different training, possibly available to FETP graduates (and others)
- No
- "Work with finance colleagues to
- Establish an incident resource group "
- A mid-career field epidemiologist will probably not be in a position to manage budget.
- The budget that is already available
- Consider to add to all three items "support financial or admin colleagues in ..." instead of implying that field epi shall be the master of the budget...
- F4 domain is not specific of the profession

Domain F5: Implement ethical standards and practices

- Responding effectively to others' unethical behaviour is critical
- Understand all possibilities of public heath research considering ethical commites and GDPR.
- "F5.1: Could you better define ""social responsibility""? Field epi offices are not mining industries which build local hospitals.
- These are all somewhat obvious...
- In generall, there are too many competencies and many of them are not CORE for a field epidemiologist. It is not the same as a pubic health specialist.
- Professional accountability in F5.1 and social responsibility for the public health good in the same point?
- no
- all 2, how would this be measured/ taught?

- No
- "See previous comments re confidentiality
- Public health record keeping should be incuded here
- Public health and professional ethics and consistent with law "
- None
- Consider to make this domain not the last domain as this implies it the least 2 - which it is not! IMO, this topic shall be emphasized more, e.g. by shifting it to an earlier position.
- F5.2 and F5.3 could be merged

If you are not likely to use this competency set, please give reasons why not

- Not applicable to my current area of work - may use to aid with job descriptions
- I am a trainee in public health. There is already a defined curriculum with learning competencies set out for me for four years of training. Perhaps after that if I wanted train further in epidemiology this competency set could be of use but ultimately it would be determined by the training body.
- This set of competences represents only part of my core actvities. The epidemiological principles outlined are interwoven into my work in animal disease and One Health.
- "I believe potential uses of the core competency set can be structured:
- development of job descriptions with account to seniority
- for these jobs we need to train = development of training programmes and CPD
- they need to be accredited
- during training assessment and self assessment
- Structured set of jobs => workforce planning and recruitment, it is the same as development of a competent applied infectious diseases epidemiology workforce
- "because i am not an epidemiologist myself but work very closely with epidemiologists in controlling and responding to communicable diseases
- However I have ticked those boxes which i think would be relevant for field epi"
- I currently don't work/research in this field
- I am not involved in the development of general training programmes nor the evaluation and accreditation of professionals.
- I am not working in training or recruitment and I do not need to assess other epis in my role.
- Since there is no other place to put overall comments, i will include them here: all the previous competencies, in each domain, in my opinion are 2, for the specific domain and for the specific epidemiologist working on this domain. But in the era of specialization, i would not expect a mid-career epidemiologist to know everything well about everything. But to know well the areas in which this person works related also to the specific context and to know the basic principles of every other domain. Surveillance, response, research, communication is team work that each specialist brings in his/her own expertise...
- My answer would have been "I am not sure"
- They are very broad and do not restricted to the CORE competencies for a field epidemiologist. The CORE competencies are lost in this big list of competencies.
- Not sure how I will use the core competency set, as I am not involved in most of above points

- "The accreditation of training programmes is vastly bigger than what is presented in this survey.
- Some of this survey's parts are largely either a) irrelevant to field epidemiology, or b) so generic that they do not pertain to field epidemiology alone. Many others do not recognise the fact that field epidemiologists work alongside public health microbiologists, clinicians, IPC experts, academics, politicians, data scientists, anthropologists, etc. As a senior field epidemiologist, I was quite surprised to go through the survey actually."
- "It's not related to my core work.
- I'm giving input because I am passionate about my profession.
- But I'm disappointed about how this project has been conducted and disappeared that ECDC did not ensure that the EPIET/EUPHEM Alumni Network was more directly involved. We were interviewed in early 2021, but then didn't hear anything back before this questionnaire. I wish we had been invited to participate more actively."
- The competencies listed are very broad, more related to public health in general and less to applied/field epidemiology. Athough a field epidemiologist can or should extend his/her competencies according to the specificities of the work.
- I am a student.
- "In the Introduction, it is written that
- 'The importance of achieving consensus about the core competencies in this field is ever more evident [...] This project involves the collection and collation of relevant data to update competency sets previously developed by ECDC. It is intended to support future work in training, evaluation and accreditation of professionals in applied infectious disease epidemiology.'
- I strongly support this goal! However, I do not believe that this questionnaire will be a valuable basis on which the competency set should be updated. There are some reasons:
- The questionnaire is way too tedious. For many potential participants, time is scarce. If they are less inclined to take part, risk of selection bias of participants is very real.
- The 'task' to the participants is not very precise. Are the participants to judge the described competencies? Or rather to assess their importance? Or is it about relevance in the field?
- Some of the items refer to individual tasks, some to group tasks. Some rather describe goals/intentions, other describe skills. How am I to know how participants will subjectively interpret the items (and their answers, respectively)?
- Of course, many tasks listed are 2 per se; almost noone will doubt that. More 2 questions would be whether all epidemiologists should be capable of the task/skill or just some, or in what settings which competencies are needed most.
- Many questions are too complicated or address multiple aspects, e.g.
- 'Develop an interdisciplinary approach to communication, engaging with professionals in relevant disciplines and media, using knowledge transfer and exchange methodologies.'
- 'Engage appropriate mechanisms to impact on public health policy based on scientific evidence e.g. professional body position papers, synthesis of evidence for policy change.'
- Participants might interpret the items quite differently, as the possible answers are limited to 4 (5) options. Simple items/questions would have been preferable.
- Even if a majority of participants answer that some item is '1', this does not necessarily imply a particular focus on the corresponding competency. It just means that most think of the competency being '1'. Does this directly relate to the work of the epidemiologist in action? Not necessarily; it depends on the setting and what institution/entity is to address the corresponding competency (not always the epidemiologist).

- Every competency domain begins with a statement regarding its importance. Why is suchframing required within the questionnaire?

- Given these objections, I am uncertain about how to use the results of this survey.
- I find this very unfortunate as the objective of the project is beyond doubt 1.

- To finish with a positive note, I truly hope that further exploration of the competencieswill be uptaken and I strongly support your objectives!"
- "Colleagues will use for recruitment etc
- I am likely to use it for teaching, research and provision of professional advice."
- "Future uses will depend on the relevance of the final set of core competencies forapplied epidemiologists in France,
- The questionnaire include a very wide range of competencies, some are beyond the scope of infectious disaeses epidemiologists who contributes to the tasks but are not incharge.
- If I will not be able to use this competency set it is due to "higher power" - the decision makers have a much, much narrower set of competences in mind. I only hope this is to be the ECDC and broader EU and WHO policy. I see the lack of communication, cultural and humanities competences the main root of failures in epidemic management. Covid-19 should be a good (hard) teacher that medical knowledge alone is not enough