

## Learning lessons from the 2009 pandemic: putting infections in their proper place

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The article by Keil et al. [1] considers the handling of the 2009 pandemic in Europe and specifically criticises WHO. The jury is out on WHO's role until the final report of the independent Fineberg Committee emerges (a preview of the report was published in March 2011 and the final report will be considered by the World Health Assembly in May [2]). The Keil et al. article makes some good points similar to those of the Fineberg preview; namely that the description of pandemics needs to be re-cast, that surveillance of influenza should be strengthened and that advice to WHO and other bodies should be made more public with transparent conflicts of interest [1, 2]. At the same time the article unfortunately repeats without question some of the myths concerning the 2009 pandemic that ECDC has previously corrected (e.g. that the international definition of a pandemic was changed in 2009) [3]. It also invents a new myth, that improving social conditions is the most effective way to prevent pandemics of infectious disease [1].

European policy-makers and politicians are put in a hard place by the prospect of modern influenza pandemics. They don't know when one is going to happen, where it will start or what it will be like. The only certainty is that future influenza pandemics will occur and they will be unpredictable [2]. There are effective preparations and countermeasures; preparing hospitals, making essential services more robust and vaccines, antivirals and other medical treatments that worked in the 2009 pandemic [4, 5]. So not to make preparations would be neglectful. Hence prudent European policy-makers, led by the EU institutions like the European Commission and ECDC as well as WHO,

invested in preparations between 2005 and 2008 [6–8]. Many followed the precautionary principle and prepared for something towards the severe end of historical experience. That made particular sense for investments in pharmaceutical countermeasures. If the countries did not have stockpiles (for antivirals and other consumables) or prior contracts with manufacturers (for vaccines) the countries would have very little of these essential drugs and vaccines available in the event of a challenging pandemic [2].

In all this unpredictability it seems one certainty was that when a pandemic happened the policy makers would be criticised. If it was a bad pandemic they would be criticised for not doing enough. If it was not so bad (and ECDC and others have argued that the 2009 was about the best pandemic Europe could have hoped for) [9] they would be criticised for over-preparation, wastefulness and *shroud-waving* [1]. Politicians are used to this but the public health community needs to now examine the criticisms and learn the right lessons [2, 3, 9].

There have been many evaluations of the handling of the 2009 pandemic and ECDC maintains a compilation of national and international evaluations [10]. An early and rapid evaluation was by the Parliamentary Assembly of the Council of Europe and that has been questioned for its scientific basis [3, 9, 11]. Most other ones (like that of the recent European Parliament) have been critical but technical and more even-handed [10, 12]. Some learning points are self-evident and accepted by ECDC which has benefitting from the numerous evaluations (the Centre would certainly not claim to be the first to have thought of them) and some of those within the Centre's mandate are already being acted upon (Table 1).

By implication Keil et al. move on to criticise the modern public health approach to tuberculosis control (case finding and ensuring completion of proper antimicrobial treatment)

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**Table 1** A selection of the more important lessons to be learnt in Europe from the 2009 Pandemic [9]

Topics	Learning point	Notes
Planning scenarios	Countries and plans to be flexible—preparing for a range of scenarios [2]	
	Undertake more operational planning and preparation at the delivery end [2, 3, 8, 9]	This means determining how for example how vaccines will be delivered, intensive care capacity increased quickly using tools like WHO's checklist and ECDC's <i>Acid Tests</i> as a starting point [7]
Early analyses	Early assessments should be more structured and rehearsed annually for seasonal influenza [2]	This was done for the 2010-11 seasonal influenza epidemics in Europe by ECDC and its advisors through a structured risk assessment
	There need to be more sophisticated descriptions of pandemics, the severity reflecting the inherent complexity of the pandemics and their countermeasures [2]	ECDC is taking a lead in developing this for Europe working with Member States and WHO using seasonal influenza as a model
	The results of important analyses need to be shared in a more timely manner between countries [2]	Problems arose from the need for independent peer-review and authorities producing analyses but not necessarily thinking who else needed to know the results
Surveillance	Surveillance needs to be better targeted to answer certain essential questions and particular weaknesses (surveillance in hospitals, mortality surveillance and seroepidemiology) need to be addressed using seasonal influenza as a model [25]	A general finding was the near impossibility of establishing new surveillance and other systems during a crisis like a pandemic (e.g. surveillance in hospitals). In contrast pre-existing systems, primary care and virological surveillance worked well
Decision making in the pandemic	There should be more formal if rapid independent reviews of earlier decisions at national and international levels [2, 26]	This did happen in a number of circumstances learning from earlier recommendations [24]
	Opinion giving should be transparent with those advising being identified and with public declarations of interest [2]	An adviser having a conflict of interest does not mean that their advice is incorrect or should be discounted. There are certain areas (e.g. pharmaceutical development) where conflicts of interest are inevitable among those giving advice
Communications	Prepare the population and professionals for a range of possibilities [2, 9]	A particular problem was that the public and decision makers thought they had been promised a severe pandemic [27]
	The opinions, concerns and views of the public and professionals should be monitored at national levels during a pandemic and responded to rapidly	This was done in a few countries notably the United States. Professionals are especially important for pandemics as it is they who need to deliver the countermeasures like early medical treatments, antivirals and vaccines to the public
	A disconnect between technical epidemiological and virological risk assessments and the politically-driven risk management process was evident and partially fuelled by the media coverage in early days of the 2009 pandemic [28]	
	Many public health authorities are poorly equipped to deal with the multi-source two-way communication platforms that the internet and social media allows today	This was one of the reasons leading to a variable public health response in some countries, especially when it came to vaccinations [28, 29]
Essential research and development	It should be more possible to rapidly commission essential research in a pandemic	Some countries were able to do this but current European Union rules and procedures make it almost impossible to use EU monies for this

[13]. They note how improvements in social conditions were associated with reduced mortality from tuberculosis in the nineteenth and early twentieth century before antimicrobial treatments became available and conclude that *the most effective way to preventing any infectious disease pandemic is to invest in the improvement of social conditions* [1]. Certainly improving social conditions will mitigate the

impact of influenza pandemics [14]. But at the same time it does not follow that a country being socially and economically developed will protect it against modern infections and pandemics. Certainly improved social conditions will not prevent pandemics and it is also wrong to imply that case-finding and proper treatment for tuberculosis in Europe and elsewhere is misguided. Where both improving social

conditions and case-finding and treatment have been undertaken their effect has been additive [13, 15–17]. It has also been suggested that further improvement of socioeconomic conditions might not have further impact on TB prevalence beyond a certain threshold of burden, particularly in low incidence settings [18]. Hence the danger of Keil et al's statement on tuberculosis is that countries with a high social standard could become complacent [1].

This moves onto the whole issue of where to place infectious diseases in health care priorities in Europe, especially those that affect younger persons (those under age 65 years) and are preventable by vaccines. Many of these vaccines are effective and inexpensive on a per capita basis. Keil et al. [1] rightly point to the growing burden from potentially preventable chronic conditions; type II diabetes, lung cancer, cardiovascular and circulatory conditions. Certainly there should be investment in the prevention of those conditions but that is not an argument for neglecting preventable and treatable infections. Overall the European 'report-card' on vaccine preventable diseases reads 'must do better'. There are substantial cohorts of undervaccinated children and young adults in many European countries. In some countries this has to do with low resources but in a substantial number of countries this has more to do with attitudes and behaviours (opponents of vaccination, doubts over safety and complacency over the threats from infection). As a result infections like rubella, measles, mumps and whooping cough have been returning [19–23]. Investing in the improvement of social conditions maybe could benefit the outcome of some severe cases and some fatalities will be prevented with better access to health care—but it will have a very limited impact on the spread of such diseases. The burden from the vaccine preventable diseases (including the 'new' seasonal influenza) is unnecessarily high because coverage of vaccination varies so greatly across the EU. Because of that all health ministers agreed to improve coverage rates for influenza [24]. Hopefully such commitments will also be given for the childhood vaccine preventable diseases.

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**Conflict of interest** These are publicly available for the authors at ECDC Transparency. <http://www.ecdc.europa.eu/en/aboutus/transparency/Pages/Transparency.aspx>

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## References

1. Keil U, Schnfer P, Spelsberg A. The invention of the swine-flu pandemic. *Eur J Epidemiol*. 2011. (full citation to come).
2. Fineberg Preview of the Report of the Review Committee on the Functioning of the International Health Regulations (2005) and on pandemic influenza A (H1N1) 2009 March 2011. [http://www.who.int/ihr/preview\\_report\\_review\\_committee\\_mar2011\\_en.pdf](http://www.who.int/ihr/preview_report_review_committee_mar2011_en.pdf).
3. Nicoll A, McKee M. Moderate pandemic, not many dead. Learning the right lessons in Europe from the 2009 pandemic. *EJPH*. 2010;20(5):486–8. doi:10.1093/eurpub/ckq114 <http://eurpub.oxfordjournals.org/content/20/5/486.full> and [http://eurpub.oxfordjournals.org/content/suppl/2010/09/27/ckq114.DC1/ckq114\\_suppl.pdf](http://eurpub.oxfordjournals.org/content/suppl/2010/09/27/ckq114.DC1/ckq114_suppl.pdf).
4. Valenciano M, Kissling E, Cohen J-M, Oroszi B, Barret AS, Rizzo C et al. Estimates of pandemic influenza vaccine effectiveness in Europe, 2009–2010: results of influenza monitoring vaccine effectiveness in Europe (I-MOVE) Multicentre Case-Control Study. *PLoS Med*. 8(1):e1000388. doi:10.1371/journal.pmed.1000388 <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000388>.
5. Hongjie Yu, Qiaohong Liao, Yuan Yuan, Lei Zhou, Nijuan Xiang, Yang Huai et al. Effectiveness of oseltamivir on disease progression and viral RNA shedding in patients with mild pandemic 2009 influenza A H1N1: opportunistic retrospective study of medical charts in China. *BMJ*. 341. doi:10.1136/bmj.c4779 (Published 28 September 2010) <http://www.bmj.com/content/341/bmj.c4779.full.pdf+html>.
6. Nicoll A. Pandemic risk prevention in European countries: role of the ECDC in preparing for pandemics. Development and experience with a national self-assessment procedure, 2005–2008. *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz*. 2010;53(12):1267–75.
7. WHO checklist for influenza pandemic preparedness planning. WHO, Geneva. 2005. <http://www.who.int/csr/resources/publications/influenza/FluCheck6web.pdf>.
8. ECDC some suggested 'acid tests' for helping assess, strengthen local preparedness for moderate or severe pandemics. February 2007. [http://www.ecdc.europa.eu/en/healthtopics/Documents/0702\\_Local\\_Assessment\\_Acid\\_Tests.pdf](http://www.ecdc.europa.eu/en/healthtopics/Documents/0702_Local_Assessment_Acid_Tests.pdf).
9. Leung G, Nicoll A. Initial reflections on pandemic A(H1N1) 2009 and the international response. *Plos Med*. 2010. <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000346>.
10. ECDC Pandemic 2009 evaluations and lessons learnt: listing. [http://www.ecdc.europa.eu/en/healthtopics/H1N1/pandemic\\_2009\\_evaluations/Pages/pandemic\\_2009\\_evaluations.aspx](http://www.ecdc.europa.eu/en/healthtopics/H1N1/pandemic_2009_evaluations/Pages/pandemic_2009_evaluations.aspx).
11. Flynn P. Social, health and family affairs committee. Parliamentary Assembly of the Council of Europe. The handling of the H1N1 pandemic: more transparency needed. 2010. [http://assembly.coe.int/CommitteeDocs/2010/20100329\\_Memorandum\\_Pandemie\\_E.pdf](http://assembly.coe.int/CommitteeDocs/2010/20100329_Memorandum_Pandemie_E.pdf).
12. European Parliament Committee on the Environment, Public Health and Food Safety Rapporteur: Michèle Rivasi on evaluation of the management of H1N1 influenza in 2009–2010 in the EU [2010/2153(INI)]. <http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&reference=A7-2011-0035&language=EN&mode=XML>.
13. ECDC & WHO Regional Office for Europe. Tuberculosis surveillance in Europe. 2009 (report). [http://www.ecdc.europa.eu/en/publications/Publications/1103\\_TB\\_SUR\\_2009.pdf](http://www.ecdc.europa.eu/en/publications/Publications/1103_TB_SUR_2009.pdf).
14. Murray CJL, Lopez AD, Chin B, Feehan D, Hill KH. Estimation of potential global pandemic influenza mortality on the basis of vital registry data from the 1918–20 pandemic: a quantitative analysis. *Lancet*. 2006;368:2211–8.

15. China Tuberculosis Control Collaboration. The effect of tuberculosis control in China. *Lancet*. 2004;364(9432):417–22.
16. Gopi PG, Subramani R, Narayanan PR. Trends in the prevalence of TB infection and ARTI after implementation of a DOTS programme in south India. *Int J Tuberc Lung Dis*. 2006;10(3):346–8.
17. Marica C, Didilescu C, Galie N, Chiotan D, Zellweger JP, Sotgiu G, D'Ambrosio L, Centis R, Ditiu L, Migliori GB. Reversing the tuberculosis upwards trend: a success story in Romania. *Eur Respir J*. 2009;33(1):168–70.
18. Suk JE, Manissero D, Büscher G, Semenza JC. Wealth inequality and tuberculosis elimination in Europe. *Emerg Infect Dis*. 2009;15(11):1812–4.
19. Steffens I, Martin R, Lopalco PL. Spotlight on measles 2010: measles elimination in Europe—a new commitment to meet the goal by 2015. *Euro Surveill*. 2010;15(50):pii=19749. Available at <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19749>.
20. Lopalco PL, Martin R. Measles still spreads in Europe: who is responsible for the failure to vaccinate? *Euro Surveill*. 2010;15(17):pii=19557. Available at <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19557>.
21. Muscat M, Bang H, Wohlfahrt J, Glismann S, Mølbak K and for the EUVAC.NET group. Measles in Europe: an epidemiological assessment. *Lancet*. 2009;373(9661):383–9. Epub 2009 Jan 7.
22. Carlsson RM, Trollfors B. Control of pertussis—Lessons learnt from a 10-year surveillance programme in Sweden. *Vaccine*. 2009;27(42):5709–18.
23. Godlee F. Institutional and editorial misconduct in the MMR scare. *BMJ*. 342:doi:10.1136/bmj.d378 <http://www.bmj.com/content/342/bmj.d378.full?sid=93cf23ff-2f0c-4504-8f67-1239fe6a1f3c>.
24. Council of the European Union. Council Recommendation of 22 December 2009 on seasonal influenza vaccination (Text with EEA relevance) (2009/1019/EU). *Off J Eur Union*. 2009; L 348/71. Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:348:0071:0072:EN:PDF>.
25. Nicoll A, Ammon A, Amato Gauci A, Ciancio B, Zucs P, Devaux I, Plata F, Mazick A, Mølbak K, Asikainen T, Kramarz P. Experience and lessons from surveillance and studies of the 2009 pandemic in Europe. *Public Health*. 2010;124:14–23.
26. Neustadt RE, Fineberg HV. The swine flu affair: decision making on a slippery disease. Washington: US Department of Health, Education and Welfare; 1978.
27. Abraham T. The price of poor pandemic communication. *BMJ*. 2010. [http://www.bmj.com/cgi/section\\_pdf/340/jun09\\_2/c2952.pdf](http://www.bmj.com/cgi/section_pdf/340/jun09_2/c2952.pdf).
28. Mereckiene J on behalf of the VENICE Consortium. Overview of pandemic A(H1N1) 2009 influenza vaccination in Europe. Preliminary results of survey conducted by VENICE. 2010. Presentation ESCAIDE Conference Lisbon November 13th 2010. [http://ecdc.europa.eu/en/ESCAIDE/ESCAIDE%20Presentations%20library/ESCAIDE2010\\_Late\\_Breakers\\_Mereckiene.pdf](http://ecdc.europa.eu/en/ESCAIDE/ESCAIDE%20Presentations%20library/ESCAIDE2010_Late_Breakers_Mereckiene.pdf).
29. European Commission, Health protection agency, Crismart. Assessment report on EU-wide pandemic vaccine strategies. European Commission August 2010. [http://ec.europa.eu/health/communicable\\_diseases/docs/assessment\\_vaccine\\_en.pdf](http://ec.europa.eu/health/communicable_diseases/docs/assessment_vaccine_en.pdf)