BHT COVID-19 Pandemic / Disaster Recovery Toolkit

Literature search service from BHT Library and Knowledge Service 17 April 2020

Summary of findings *Click on the numbered headings to go to the detail*

[1] Recovery planning resources

UK – a number of NHS Trusts factor in the recovery phase in their pandemic plans, although the content is largely similar (based on DATER model) and generally do not go into much more detail than:

- There may need to be a new definition as to what constitutes the new normal
- Recovery process may need to be staged gradually with certain areas prioritised
- The residual impact of the pandemic itself and planning for resurgence and vaccination
- Persistent secondary effects for some time, with increased demand for continuing care from: • patients whose existing illnesses have been exacerbated by influenza • those who may continue to suffer potential medium- or long-term health complications (such as encephalitis lethargica, which may have been linked to the 1918 pandemic) • a backlog of work resulting from the postponement of treatment for less urgent conditions
- Staff burnout, stress and organisational fatigue and a possible long term reduction in the workforce
- Depleted supplies and issues with replenishing stocks (third party suppliers may have continuing issues with workforce, supply and distribution or low income). Assess requirements for future PPE stockpiling
- Backlog in maintenance and replacement of physical assets
- Recognition of the contribution of staff
- Lessons learned, review of key function responses e.g Comms, HR
- Gradual re-introduction of quality assurance standards
- Reinstatement of training

US – there are a variety of toolkits and other resources to help effective recovery following disasters. As the US is subject to more extreme natural disasters , some of the content is heavily weighted on loss / security of facilities, power supply etc. However this paper by Harvard School of Public Health has some general principles on recovery planning and including questions to ask (see page 31ff) which may be helpful though not all will be relevant

https://www.urmc.rochester.edu/MediaLibraries/URMCMedia/flrtc/documents/Essential-Functions-and-Considerations-of-Hospital-Recovery.pdf

This collaborative COVID-19 resource, curated by the Strategy Unit is building a collection of resources related to Recovery and Long Term impacts – it may be worth keeping an eye for new items added https://wakelet.com/wake/THRU_46lqeXJAT8H7sq07

[2] Long term impact / capacity planning

It was very difficult to find any resources that specifically looked at data modelling / forecasting health care demand in the recovery stage of a pandemic or other type of crisis. The Institute of Fiscal Studies https://www.ifs.org.uk/publications has produced a couple of recent reports looking at the likely short and long term impacts of COVID-19. Key findings include

- Disproportionate health impacts on the elderly and those experiencing socio-economic deprivation
- Rise in waiting times for elective care with potentially some of those better off seeking private health care
- Storing up of future health problems to delay seeking emergency care and other health services for non-COVID-19 related issues
- Potential long term disruption in available nursing care (Gruber and Kleiner, 2012 found that in hospital mortality rose 20% during nursing strike)
- Reduction in the attractiveness of the NHS as a place to work and harder to recruit from overseas
- Lower team productivity with potential loss of experienced staff
- Disruptions from knock on effects in social care
- Estimate that a 1% fall in employment leads to a 2% increase in the prevalence of chronic illness. To put this in context, if employment were to fall by the same amount as it fell in the 12 months after the 2008 crisis, around 900,000 more people of working age would be predicted to suffer from a chronic health condition. Only about half this effect will be immediate: the full effect will not be felt for two years
- Being born in a recession reduces life span by 5% Van den Berg et al. (2006)
- Number of people of working age with mental health condition may rise by half a million

A brief search of the likely use of health services following a disaster supports some of these assertions around additional demand on health services and the elderly/those in lower socio-economic groups bearing the brunt.

3. Workforce resilience and wellbeing

A consistent theme across disaster recovery plans and literature is the support required for staff to help cope with stress, burnout, moral injury and other psychological aspects of working in an intense environment. There are a number of really useful resources, websites and support options available. Recommended interventions include Psychological First Aid, TRIM Trauma Risk Management and Schwartz Rounds. The use of single session support and/or psychological debriefing is not recommended. The Royal College of Psychiatrists are setting up an action group which includes support for the recovery phase so this would be worth keeping an eye on. This graphic provides a useful overview https://232fe0d6-f8f4-43eb-bc5d-6aa50ee47dc5.filesusr.com/ugd/6b474f_a90ac0ff6514479e84789019dfa65ef9.pdf

## 4. Leading the organisation through recovery

There is quite a bit of literature on leading in a crisis. In the time available, it wasn't possible to do a comprehensive search on this but this article may be of particular interest

Alknwy, (2018) Leadership in times of crisis, BMJ Leader 2018;3:1–5. Summarise leadership learning from the MeRs COV outbreak – section called Phase 2 discusses leadership once crisis has past peak – this discusses the importance of valuing staff, seizing the opportunity for transformation, seeking lessons learnt, maintaining momentum and overcoming resistance to change https://bmjleader.bmj.com/content/leader/3/1/1.full.pdf

5. Learning lessons

NB: There are lots of papers out there on learning from pandemics (often nationally/globally) – for now I have focussed on the best approaches for organisations to learn from the current situation but can share the additional papers if required.

After Action Reviews/ Reports are the most common method for undertaking post-disaster lessons – these are used by WHO, NATO, the military and similar agencies. I've provided links to multiple practical resources about their use. In a disaster situation which is outside of an organisations control, it is important to focus on what went well/ practical solutions rather than purely focus on what went wrong [Donahue, 2006]. Double loop learning is recommended so that the learning becomes more embedded in practice[Coles, 2014].
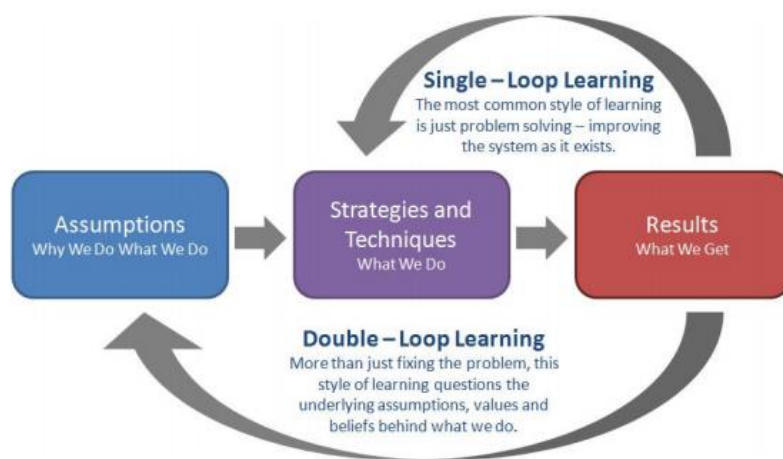
There is also evidence for undertaking some of the learning with local partners and not just in isolation or even as a community of practice. *[NB I have recently completed a 2 day course on Knowledge Management including lessons learnt from the Henley Business School (Chris Collison)so give me a shout if you would like me to contribute to this piece of work.*

NB Chris recommends avoid the term lessons learnt and using Learning from experience instead! *https://www.chriscollison.com/organisational-learning*

6. Organisational Resilience

There is a lot published on this topic and the information provided probably only scratches the surface but its something I could look at in more detail if required.

1.Recovery Planning

[1] Examples of UK pandemic recovery plans which include sections on the recovery stage

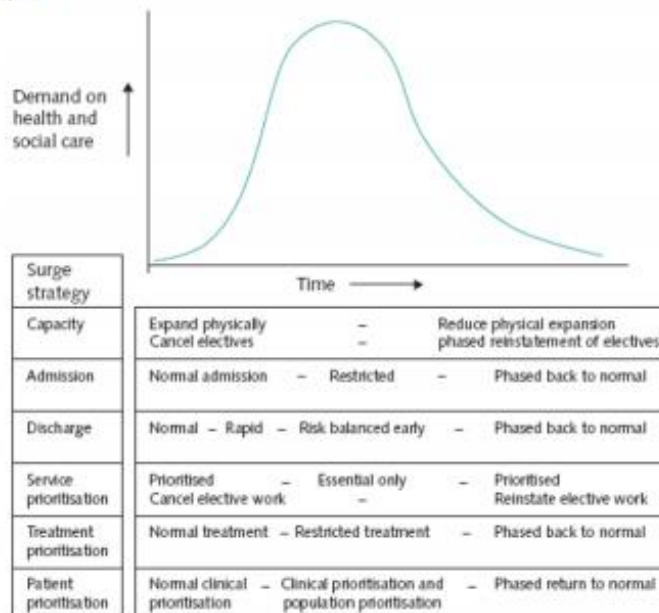- NHS Wales- pandemic influenza – guidance on preparing NHS Trusts
  http://www.wales.nhs.uk/documents/Pandemic-Influenza-guidance.pdf

- Tees, Esk and Wear Valleys NHS Foundation Trust
  https://www.tewv.nhs.uk/content/uploads/2018/09/imported/Pandemic%20influenza%20plan.pdf
- Surrey Heartlands CCG pandemic plan https://www.surreydownsccg.nhs.uk/get-informed/policies-and-procedures/policies-documents/policies-and-procedures/corporate-governance/1059-pandemic-flu-plan-v1-0-2-1/file
- North Devon Healthcare NHS Trust https://www.northdevonhealth.nhs.uk/wp-content/uploads/2015/09/Influenza-Pandemic-Plan-V2-0-Web-Version.pdf
- Royal Devon and Exeter NHS Foundation Trust
  https://www.rdehospital.nhs.uk/docs/trust/board/2009/sept09/9.2%20Part%20I%20-%20Appendix%201%20RDEFT%20PANDEMIC%20FLU%20PLAN.pdf

Recovery

The period when the pandemic declines and services are systematically restored.

The resumption of services needs to be planned in liaison with other organisations to avoid creating capacity problems in other sectors:

- Gradual relaxation of restrictions on admissions and treatment policies
- Reintroduction of pre-pandemic standards of clinical care for emergencies
- Phased reintroduction of elective treatments and investigations
- Gradual reintroduction of quality assurance and performance frameworks and targets

Surge strategy			
Capacity	Expand physically — Cancel electives	—	Reduce physical expansion phased reinstatement of electives
Admission	Normal admission — Restricted	—	Phased back to normal
Discharge	Normal – Rapid – Risk balanced early	—	Phased back to normal
Service prioritisation	Prioritised — Essential only Cancel elective work —	—	Prioritised Reinstate elective work
Treatment prioritisation	Normal treatment – Restricted treatment	—	Phased back to normal
Patient prioritisation	Normal clinical – Clinical prioritisation and prioritisation population prioritisation	—	Phased return to normal

Influenza Pandemic Contingency Plan
Approved Emergency Preparedness Steering Group: 24th July 2009
Amended 18th September 2009

[2] **WHO Pandemic Influenza Preparedness and Response: A WHO Guidance Document: recommended actions before, during and after a pandemic**
https://www.ncbi.nlm.nih.gov/books/NBK143063/

[3]**Harvard School of Public Health / Emergency Preparedness Bureau. Essential Functions and Considerations for Hospital Recovery**, 2013
https://www.urmc.rochester.edu/MediaLibraries/URMCMedia/flrtc/documents/Essential-Functions-and-Considerations-of-Hospital-Recovery.pdf

[4] **TRACIE [Healthcare Emergency Preparedness Information Gateway] collection of resources recovery planning** https://asprtracie.hhs.gov/technical-resources/18/recovery-planning/110

- Healthcare Coalition Recovery Plan template https://files.asprtracie.hhs.gov/documents/aspr-tracie-hcc-recovery-plan-template.pdf

[5] Federal Emergency Management Agency **Pandemic Accord Phase II: pandemic influenza** summary findings report, 2015. Although this has a focus on economic recovery, some of the principles identified may be useful. See page 8 and following https://www.sifma.org/wp-content/uploads/2014/03/pandemic-accord-ii-summary-of-findings_final.pdf

[6] Greater NY Hospital Association**. Mass casualty incident response toolkit: guidance for hospitals to prepare and train for mass casualty incidents** – see chapter 8 on recovery https://www.gnyha.org/wp-content/uploads/2019/04/MCI_Toolkit_digital.pdf

[7] Healthcare System Recovery Timeline A White Paper for Texas **- "How long does it take the healthcare system to recover from a major hurricane?"** Oct 2017 https://asprtracie.s3.amazonaws.com/documents/aspr-tracie-ta-healthcare-facility-recovery-timeline-white-paper.pdf

[8] **The Strategy Unit** – collation of resources in relation to recovery and long term impacts on COVID-19 https://wakelet.com/@Covid19Collaboration

2.Projected long term impacts of COVID-19 / Capacity planning

[1]Data modelling

I was unable to find any tools specifically that include data modelling post-pandemic peak to include business as usual – here are some links to a couple of key sites that are data modelling the COVID outbreak

- Institute of Health Metrics and Evaluation (University of Washington) COVID-19 data modelling resource https://covid19.healthdata.org/united-kingdom
- Imperial College London – COVID-19 planning tools http://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/covid-19/covid-19-planning-tools/
- Repository of resources to support COVID-19 response analytics https://github.com/HFAnalyticsLab/COVID19_Resources/blob/master/Repository_Of_Resources.md
- WHO Surge Planning Tools http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/novel-coronavirus-2019-ncov-technical-guidance/coronavirus-disease-covid-19-outbreak-technical-guidance-europe/strengthening-the-health-system-response-to-covid-19/surge-planning-tools
- For the literature on this topic, please visit Lit-COVID forecasting

[2]COVID/Health specific forecasts

- Institute for Fiscal Studies – the wider impacts of the coronavirus pandemic on the NHS 9 April 2020 https://www.ifs.org.uk/publications/14798
- Institute for Fiscal Studies - Recessions and health: The long-term health consequences of responses to coronavirus, April 2020 https://www.ifs.org.uk/uploads/BN281-Recessions-and-health-The-long-term-health-consequences-of-responses-to-COVID-19-FINAL.pdf

[3]HSJ Podcast

Although there is not much I can see regarding the recovery phase so far, there may be some useful insights about what might come next from the HSJ podcast https://www.hsj.co.uk/hsj-health-check-podcast/hsj-podcast-empty-beds-death-numbers-and-non-covid-care/7027425.article

[4] Papers around health service need and demand following pandemic

The Inverse Response Law: Theory and Relevance to the Aftermath of Disasters Int J Environ Res Public Health. 2018 May; 15(5): 916. Explains the theory that following a disaster, those who are in greatest need of healthcare services, are often the ones who lose out
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5981955/ In relation to this the RCP report on mitigating health inequalities as a result of COVID-19 may be of interest **https://www.rcplondon.ac.uk/news/covid-19-and-mitigating-impact-health-inequalities**

Secondary Surge Capacity: A Framework for Understanding Long-Term Access to Primary Care for Medically Vulnerable Populations in Disaster Recovery Am J Public Health. 2012 December; 102(12): e24–e32.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3519329/

Prediction of Unmet Primary Care Needs for the Medically Vulnerable Post-Disaster: An Interrupted Time-Series Analysis of Health System Responses Int J Environ Res Public Health2012 Sep 25;9(10):3384-97. Jennifer D Runkle [1], Hongmei Zhang, Wilfried Karmaus, Amy B Martin, Erik R Svendsen
https://pubmed.ncbi.nlm.nih.gov/23202752/

All-Cause Hospital Admissions among Older Adults after a Natural Disaster Sue Anne Bell, PhD, FNP-BC, Mahshid Abir, MD, HwaJung Choi, PhD, Colin Cooke, MD, and Theodore Iwashyna, MD, PhD Ann Emerg Med..Published online 2017 Aug 5. doi: 10.1016/j.annemergmed.2017.06.042

Emergency Department visits by and hospitalizations of senior diabetics in the 3 years following hurricanes Katrina and Rita. Quast, T. Econ Disaster Clim Change 2019 Jul 3(2): 151-160

General tools to support planning for an uncertain future

- Berghof Foundation Transformative Scenarios Process: how stories of the future help to transform conflict in the present http://www.citizenshandbook.org/future-making.pdf
- Centre for Applied Resilience in Healthcare http://resiliencecentre.org.uk/
- Save the Children: the Future is Ours: strategic foresight toolkit – making better decisions, 2019 https://resourcecentre.savethechildren.net/node/16327/pdf/strategic_foresight_toolkit_online.pdf

3. Workforce resilience and wellbeing

Practical resources

[1]British Psychological Society, April 2020. The psychological needs of healthcare staff as a result of the Coronavirus pandemic

This is a guide for leaders and managers of healthcare services who will need to consider the wellbeing needs of all healthcare staff (clinical and non-clinical) as a result of the Coronavirus outbreak. It offers practical recommendations for how to respond at individual, management and organisational level involving the appropriate utilisation of expertise within their practitioner psychologist and mental health professionals and

anticipates the psychological reactions over time (including the recovery phase), and what people may need to recovery psychologically from this.

https://www.bps.org.uk/sites/www.bps.org.uk/files/News/News%20-%20Files/Psychological%20needs%20of%20healthcare%20staff.pdf

[2]Royal College of Psychiatrists, April 2020. Top Ten messages for supporting healthcare staff during the Covid-19 pandemic: a discussion document. (10 page guidance)

The NHS has a long history of responding effectively to emergencies and major incidents and staff are renowned for their resilience and resourcefulness under pressure.. Their intentions are to aid managers and staff to consider how they might reduce the numbers of staff who may require additional assistance. In terms of support during the recovery phase, an action group is being set up to support this so worth keeping an eye on.

https://www.rcpsych.ac.uk/docs/default-source/about-us/covid-19/top-ten-messages-williams-et-al.pdf?sfvrsn=990e3861_0

[3]COVID-MindEd –NHS Health Education England, RCP in partnership with NHS England-Improvement, Skills for Care and the rest of the Minded Consortium.

Includes tips for managers and leaders. As NICE Guidelines warn against the use of psychological debriefing, alternative interventions such as Schwarz Rounds might appropriate http://covid.minded.org.uk/

[4]Support the Workers collective

An international group of experts in disaster response, crisis psychology, high pressure decision-making and human performance and health under conditions of extreme stress. We were tasked by those involved in responding to the covid-19 pandemic in the UK to develop a rapid evidence-based training and support curriculum for staff providing psychosocial support to frontline workers. https://www.supporttheworkers.org/

The site includes sections on Moral Injury, Resilience, Anxiety and Fear, Extreme Stressors

The section on PTSD might be particularly useful . https://www.supporttheworkers.org/briefing-notes/post-traumatic-stress-disorder-ptsd It signposts to the following

TRIM Trauma Risk Management https://strongmindresilience.co.uk/courses/trim-trauma-risk-management-an-overview/

Psychological First Aid

- Psychological First Aid WHO, 2011
  https://apps.who.int/iris/bitstream/handle/10665/44615/9789241548205_eng.pdf?sequence=1
- American Psychological Association – Psychological First Aid resources
  https://www.apa.org/practice/programs/dmhi/psychological-first-aid/resources
- John Hopkins Guide to Psychological First Aid
  - Bookhttps://www.hopkinsmedicine.org/news/publications/hopkins_medicine_magazine/hopkins_reader/spring-summer-2017/the-johns-hopkins-guide-to-psychological-first-aid
  - Online course https://www.coursera.org/learn/psychological-first-aid

[5] COVID Trauma Response Working Group

A group of psychological trauma specialists in the UK have formed a working group to help coordinate trauma-informed responses to the COVID outbreak. Policy documents include:

- [Advice for hospital staff during the COVID pandemic](#)
- [Guidance for planners of the psychological response to stress experienced by hospital staff associated with COVID: early interventions](#)
- [Coordinating a trauma-informed response to COVID 19 - What, why and how?](#)

See also Kings Fund Summary of Responding to stress experienced by hospital staff working with COVID-19 https://232fe0d6-f8f4-43eb-bc5d-6aa50ee47dc5.filesusr.com/ugd/6b474f_a90ac0ff6514479e84789019dfa65ef9.pdf

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Chan, Angelina O M; Huak, Chan Yiong Psychological impact of the 2003 severe acute respiratory syndrome outbreak on health care workers in a medium size regional general hospital in Singapore. Occupational medicine (Oxford, England); May 2004; vol. 54 (no. 3); p. 190-196 Occupational medicine (Oxford, England)

Chang, Chao-Sung; Du, Pey-Lan; Huang, Ing-Chung Nurses' perceptions of severe acute respiratory syndrome: Relationship between commitment and intention to leave nursing Journal of Advanced Nursing; Apr 2006; vol. 54 (no. 2); p. 171-179 Journal of Advanced Nursing

Gucciardi, D. F., Crane, M., Ntoumanis, N., Parker, S. K., Thøgersen-Ntoumani, C., Ducker, K. J., ... & Temby, P. (2018). The emergence of team resilience: A multilevel conceptual model of facilitating factors. Journal of Occupational and Organizational Psychology, 91(4), 729-768.

Ho, S. M. Y., Kwong-Lo, R. S. Y., Mak, C. W. Y., & Wong, J. S. (2005). Fear of Severe Acute Respiratory Syndrome (SARS) Among Health Care Workers. *Journal of Consulting and Clinical Psychology, 73*(2), 344-349. https://psycnet.apa.org/fulltext/2005-02854-019.html

Jung, Heeja; Jung, Sun Young; Lee, Mi Hyang; Kim, Mi Sun Assessing the Presence of Post-Traumatic Stress and Turnover Intention Among Nurses Post-Middle East Respiratory Syndrome Outbreak: The Importance of Supervisor Support. Workplace health & safety; Mar 2020 ; p. 2165079919897693

Kalisch, R., Baker, D. G., Basten, U., Boks, M. P., Bonanno, G. A., Brummelman, E., ... & Geuze, E. (2017). The resilience framework as a strategy to combat stress-related disorders. Nature Human Behaviour, 1(11), 784-790.

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Kindling Kindness for Compassionate Disaster Management [Schwartz Rounds]Version 1. PLoS Curr. 2015 October 5; 7: ecurrents.dis.078959ba72f0d133cd2d8fd7c7d9b23d.Published online 2015 October 5. doi: 10.1371/currents.dis.078959ba72f0d133cd2d8fd7c7d9b23d

Finding Positives After Disaster: Insights From Nurses Following the 2010-2011 Canterbury, NZ Earthquake Sequence Australas Emerg Nurs J 2015 Nov;18(4):174-81. https://pubmed.ncbi.nlm.nih.gov/26545715/

Maunder, Robert G et al (2006) Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. Emerging infectious diseases; Dec 2006; vol. 12 (no. 12); p. 1924-1932 http://search.ebscohost.com/login.aspx?direct=true&scope=site&site=ehost-live&db=mdc&AN=17326946

Maunder RG et al (2008) Applying the lessons of SARS to pandemic influenza: an evidence-based approach to mitigating the stress experienced by healthcare workers. Canadian Journal of Public Health; Nov 2008; vol. 99 (no. 6); p. 486-488

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McAlonan, Grainne M et al. Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. The Canadian Journal of Psychiatry / La Revue canadienne de psychiatrie; Apr 2007; vol. 52 (no. 4); p. 241-247 http://europepmc.org/search?query=(DOI:10.1177/070674370705200406)

Shi, Chuan; Yu, Xin; Hong, Nan; Chan, Raymond C. K.; Chen, Yufang; He, Yi Emotional, memory and daily function among health care worker survivors with SARS. Chinese Mental Health Journal; Sep 2011; vol. 25 (no. 9); p. 660-665 Note: It is unclear whether this article is in English or in Chinese.

Schreiber, Merritt; Cates, David S; Formanski, Stephen; King, Michael Maximizing the resilience of healthcare workers in multi-hazard events: Lessons from the 2014–2015 Ebola response in Africa.Military Medicine; 2019; vol. 184 (no. Suppl)Military medicine -

4. Leadership

[1] Kings Fund – Leading through COVID-19 : supporting health and care leaders in unprecedented times https://www.kingsfund.org.uk/projects/leading-through-covid-19

- As of 17/04/2020, there is little on here regarding recovery although it is touched on in the blog post https://www.kingsfund.org.uk/blog/covid-19-challenges-facing-leaders

[2] Key paper Alknwy, (2018) Leadership in times of crisis, BMJ Leader 2018;3:1–5. Summarise leadership learning from the MeRs COV outbreak – section called Phase 2 discusses leadership once crisis has past peak https://bmjleader.bmj.com/content/leader/3/1/1.full.pdf

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Clarkson, B.G., Wagstaff, C.R.D., Arthur, C.A. & Thelwell, R.C. (2020). Leadership and the contagion of affective phenomena: A systematic review and mini meta-analysis. European Journal of Social Psychology, 50(1), 61-80.

Dayton, Bruce W. ed. 2004. Managing Crises in the Twenty-First Century. *International Studies Review* 6: 165–194.

Hannah, ST et al. (2009) A framework for examining leadership in extreme contexts. The Leadership Quarterly 20 2009 897-919 https://digitalcommons.unl.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1038&context=managementfacpub

Klann, G. (2003) Crisis leadership: using military lessons, organisational experiences and the power of influence to lessen the impact of chaos on the people you lead [ebook]. Chapter 5 is about Leadership after the crisis https://www.ccl.org/wp-content/uploads/2020/03/crisis-leadership-center-for-creative-leadership-guidebook.pdf

Kolditz, T. A. (2010). In extremis leadership: Leading as if your life depended on it (Vol. 107). John Wiley & Sons.

Matthews, MD (2008). Positive psychology: adaptation, leadership and performance in exceptional circumstances. In: Hancock. PA, Szalma (eds) Performance under stress. Ashgate, pp163-180

Omer, H., Alon, N. The continuity principle: A unified approach to disaster and trauma. *Am J Commun Psychol* **22,** 273–287 (1994). https://doi.org/10.1007/BF02506866

Power, N. (2018). Extreme teams: Toward a greater understanding of multiagency teamwork during major emergencies and disasters. American Psychologist, 73(4), 478.

5. Learning lessons

[1]**Support the Workers** has some information on performance debriefing as opposed to PTSD debriefing https://www.supporttheworkers.org/briefing-notes/performance-debriefing Related to this is the section on psychological safety https://www.supporttheworkers.org/briefing-notes/psychological-safety

[2] **Donahue, Amy, and Robert Tuohy. "Lessons We Don't Learn: A Study of the Lessons of Disasters, Why We Repeat Them, and How We Can Learn Them."** *Homeland Security Affairs* 2, Article 4 (July 2006). https://www.hsaj.org/articles/167

Emergency responders intervene before and during disasters to save lives and property. The uncertainty and infrequency of disasters make it hard for responders to validate that their response strategies will be effective, however. As a result, emergency response organizations use processes for identifying and disseminating lessons in hopes that they and others will be able to learn from past experience and improve future responses. But the term "lessons learned" may be a misnomer. Anecdotal evidence suggests mistakes are repeated incident after incident. It appears that while identifying lessons is relatively straightforward, true learning is much harder – lessons tend to be isolated and perishable, rather than generalized and

institutionalized. Assuming that an agency is open to learning and change, the learning process can be thought of as beginning with the identification of lessons. This is typically accomplished through the publication of After Action Reports (AARs). Our response experts told us that while some reports are very comprehensive and useful, lessons reporting processes are, on the whole, ad hoc. There is no universally accepted approach to the development or content of reports. AARs typically focus on what went *wrong*, but chiefs want to know what they can do that is *right*. Reports tend to detail things that didn't work, without necessarily proposing solutions. Incident managers seek a lessons-learned system that provides good answers, solutions, and best practices. They want to hear what *to* do, instead of what *not* to do. Contains a list of published After Action Reviews from various incidents

[3] Coles, E. **Learning the lessons from major incidents- a short review of the literature** . Emergency Planning College, Occasional Paper, 2014.

This paper highlights the importance of doing double-loop learning which I've seen mentioned elsewhere. Donahue and Tuohy (2006) recognise that the issue is how to learn the lessons rather than what to learn. They note that quite often there is a lack of a formal, rigorous and systematic methodology for learning and that understanding how people learn and retain information is of major importance. They identify a lesson learning cycle of "Identify the lesson → recognise the cause → devise a new operating process → practice the new process → embed/institutionalise and sustain the new process" (p13).
https://www.epcresilience.com/EPC.Web/media/documents/Papers/Occ10-Paper.pdf

More information on loop learning

- Pelling, Mark, Sharpe, Justin, Pearson, Lucy et al. (4 more authors) (2015) Social Learning and Resilience Building in the emBRACE framework. Report. CRED, Louvain , Brussels
  http://eprints.whiterose.ac.uk/103021/1/D4.3_Social_Learning_emBRACE_Final.pdf
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[4] Resources from the military

- **Center for Army Lessons Learned** https://usacac.army.mil/organizations/mccoe/call
  Included as an example of how the military uses lessons learnt though much of the actual content is password protected. They also have a specific section dedicated to COVID-19. After Action Reviews, Observations and Best Practices are the type of learning that they document and share. They have a dedicated 5 day course on lessons learnt. A similar disaster-based lessons learnt repository is available from the Wildfire Lessons Learnt Center https://www.wildfirelessons.net/home
- **NATO: lessons learned handbook, 3rd ed, 2016**
  http://www.jallc.nato.int/products/docs/Lessons_Learned_Handbook_3rd_Edition.pdf
- **Pathways to improve military learning: key lessons-learned research agendas**, Tom Dyson, University of London https://defenceindepth.co/2019/06/12/pathways-to-improve-military-learning-key-lessons-learned-research-agendas/

[5] After Action Reviews

- WHO https://extranet.who.int/sph/after-action-review

- European Centre for Disease Prevention and Control. Best Practice Recommendations for conducting After Action Reviews to enhance public health preparedness https://www.ecdc.europa.eu/sites/portal/files/documents/public-health-preparedness-best-practice-recommendations.pdf

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- Florida Department of Health CDC Pandemic Influenza Exercise After Action Report/Improvement Plan, 2011 http://www.floridahealth.gov/programs-and-services/emergency-preparedness-and-response/training-exercise/_documents/cdc-influenza-exercise-AAR.pdf

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Search terms: disaster recovery, disaster planning, pandemic*, epidemic, outbreak*, disaster, catastrophe, crisis, trauma, extreme, adverse healthcare event, COVID-19, coronavirus, influenza, Post-disaster, post-outbreak, post-peak, post-pandemic, modeling, modelling, forecast*, predict*, projection*, plan* health service needs and demand, adaptive capacity, capacity planning, adaptation, future demand, secondary surge, surge capacity, wellbeing, psychological, stress, resilience, post-traumatic stress, workforce, staff, burnout, crisis intervention, job-related trauma, healthcare staff, organisational resilience, crisis leadership, lessons learnt, learning lessons, organisational learning, After Action Reviews