Evidence from the edges

Research update from UCL Collaborative Centre for Inclusion Health

Al Story and Andrew Hayward

UCL

Collaborative Centre for Inclusion Health

Plan

- **Improving Hospital Discharge** for People who are Homeless
- **The ACE Index**: mapping childhood adversity in the UK
- **MASI** - **M**ortality **A**ttributable to **S**ocioeconomic **I**nequality
- **COVID-19** - Inclusion Health Response

CCHI Launch - 3rd of June 2019

The “Dreamboard”, a visual representation of themes, hopes and fears around Inclusion Health issues that evolved dynamically throughout day (Picture credit: Ibrar Dar)

Inclusion Health

Collaborative Centre for Inclusion Health

A social justice movement to prevent and redress health harms of extreme inequity

Research, teaching, service design and policy must be developed “with” not just “for” those affected

Natalie

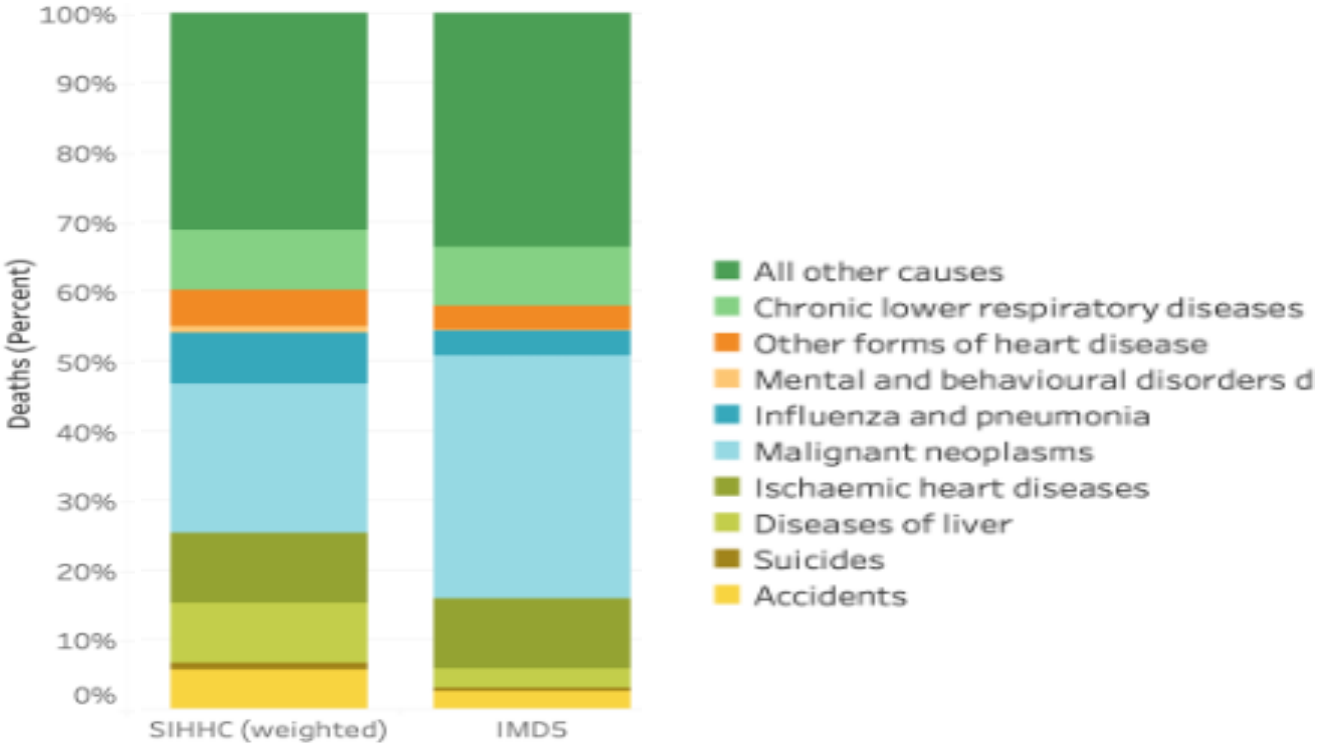
DREAM
LOVE
RESPECT
EQUALITY
THIS IS US
UNIVERSAL
Acceptance

Research and Advocacy Priorities

Collaborative Centre for Inclusion Health

1. Tackle the upstream causes of exclusion
2. Address public and professional ignorance, stigma and indifference
3. Make services more accessible and integrated
4. Put excluded groups at the heart of the agenda
5. Create better routes out of exclusion

One in three people who were homeless died from a condition that our current medical knowledge and technology could have prevented

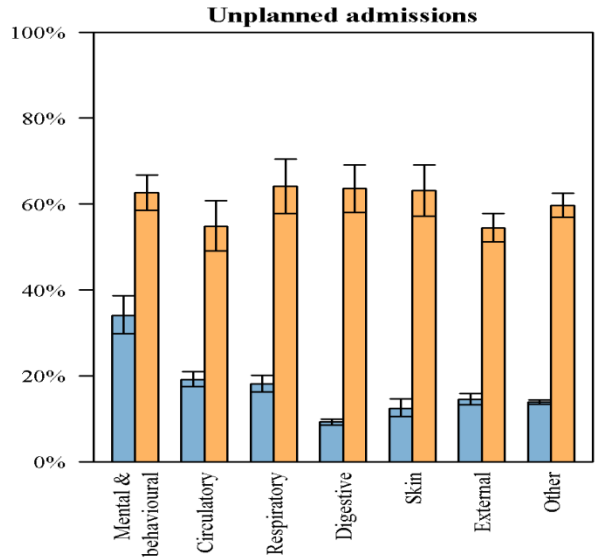


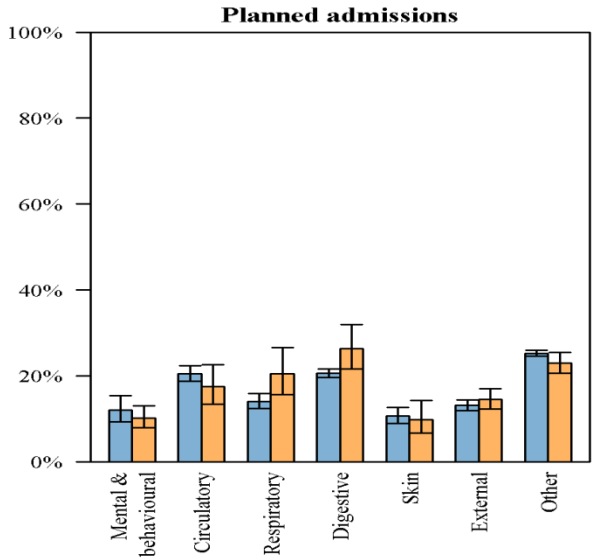
Causes of death among homeless people: a population-based cross-sectional study of linked hospitalisation and mortality data in England. https://doi.org/10.12688/wellcomeopenres.15151.1

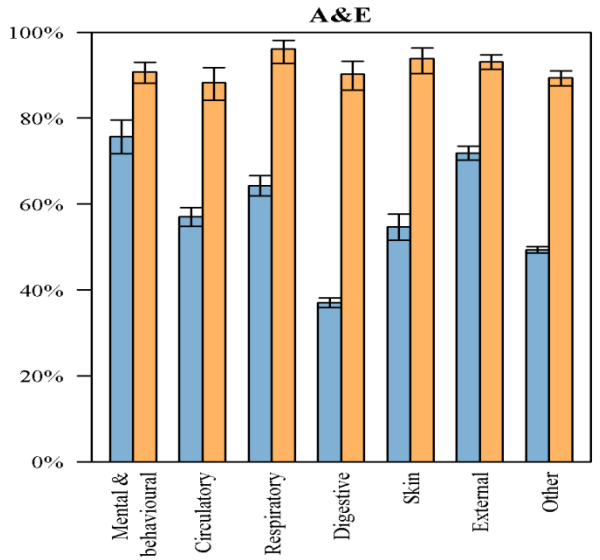
Hospital readmissions among homeless people: a cohort study of linked hospitalisation and mortality data in England for 3222 homeless inpatients

Dan Lewer, Dee Menezes, Michelle Cornes, Ruth Blackburn, Richard Byng, Michael Clark, Spiros Denaxas, Hannah Evans, James Fuller, Nigel Hewett, Alan Kilmister, Serena Luchenski, Jill Manthorpe, Martin McKee, Joanne Neale, Alistair Story, Michela Tinelli, Martin Whiteford, Fatima B Wurie, Alexei Yavlinsky, Andrew Hayward, Robert W Aldridge

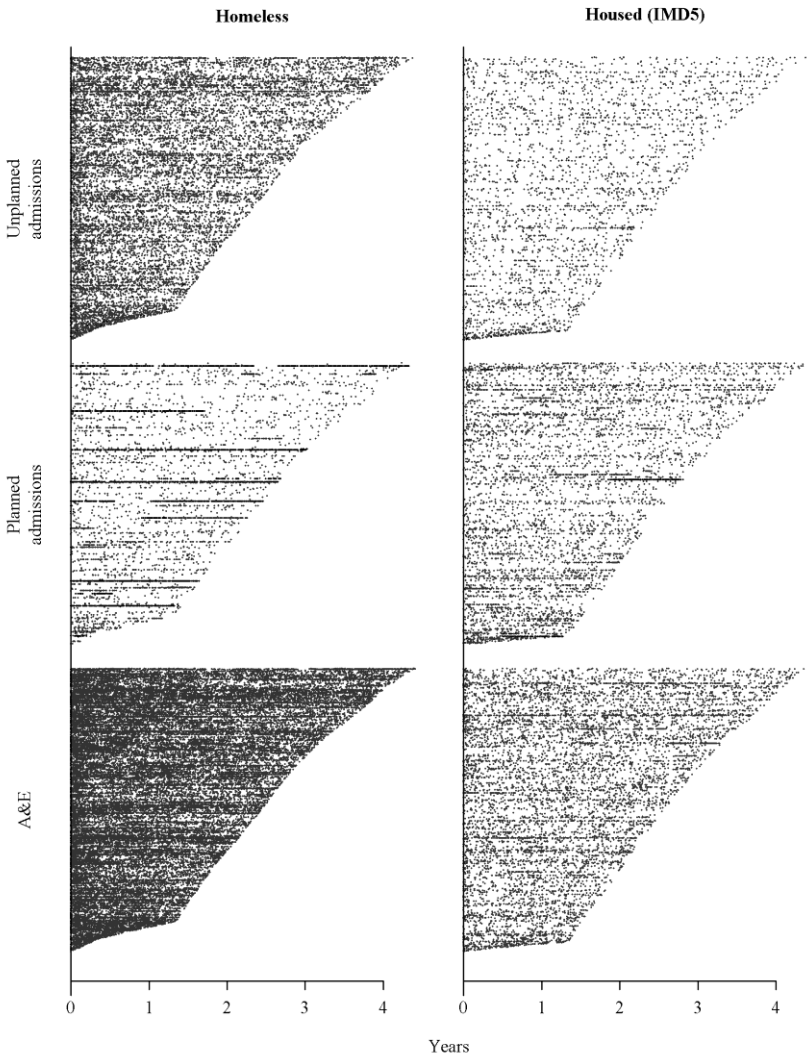
Compared to a deprived housed population, unplanned and A&E admissions were much higher, but **planned admissions were not.**







Unlike the housed population, readmissions were high in people who were homeless, **regardless of the reason** for their original admission.



12 month event rates

Unplanned readmission 59% vs 20%

Adjusted Rate Ratio 3.77 (3.46-4.10) p<0.001

Planned readmission 18% vs 28%

Adjusted Rate Ratio 0.71 (0.63-0.81) p<0.001

A&E visits 92% vs 57%

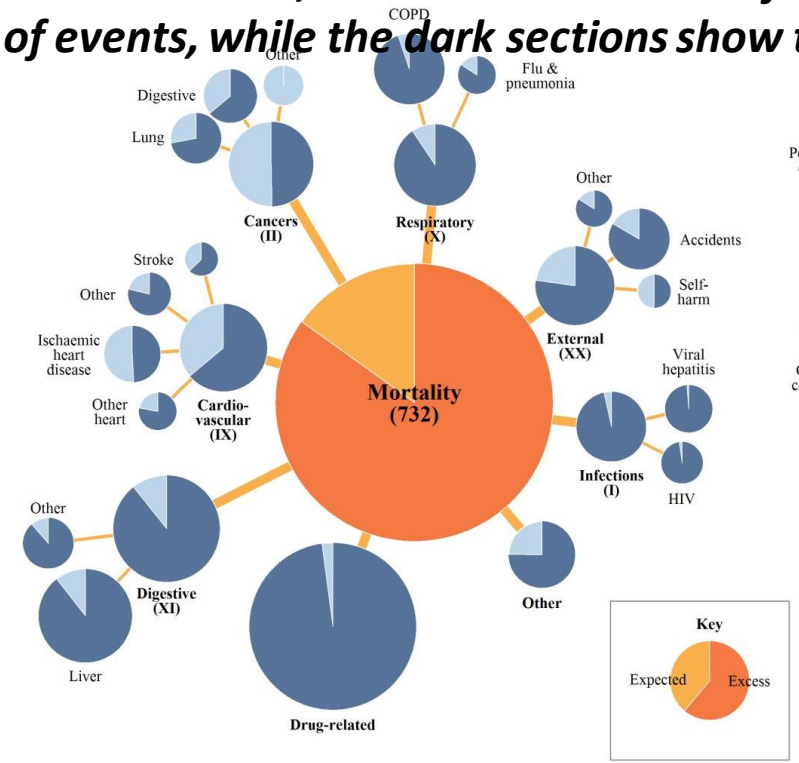
Adjusted Rate Ratio 3.76 (3.53-4.01) p<0.001

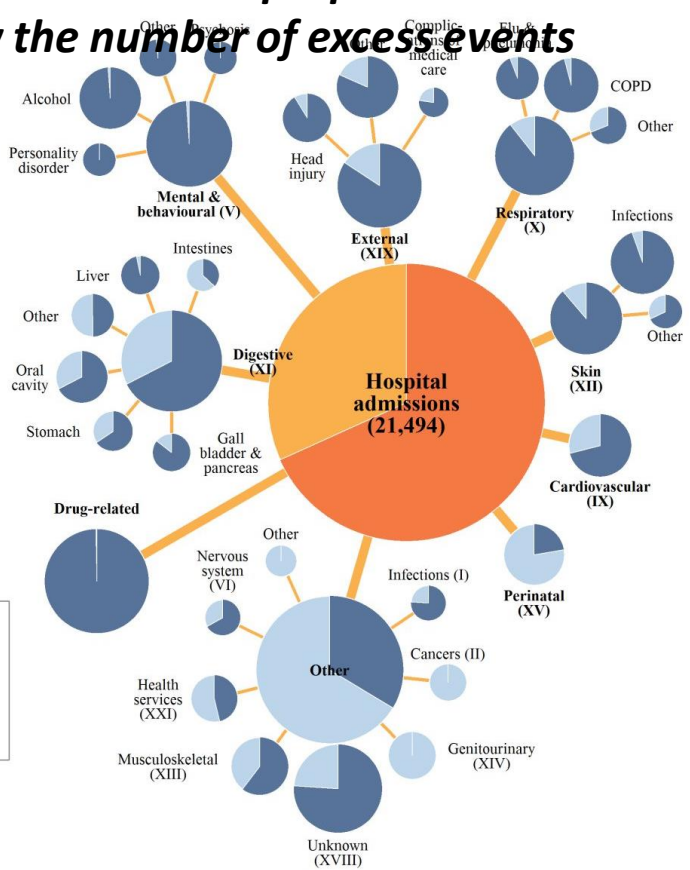
Reduced by step down care – RR -0.82 p<0.001

Hospital and admissions mortality among people who use heroin and crack cocaine

Dan Lewer PhD

Number of deaths and hospital admissions in a cohort of 6,683 people who use heroin in South London, 2006-2019. The area of the circles is proportional to the number of events, while the dark sections show the number of excess events

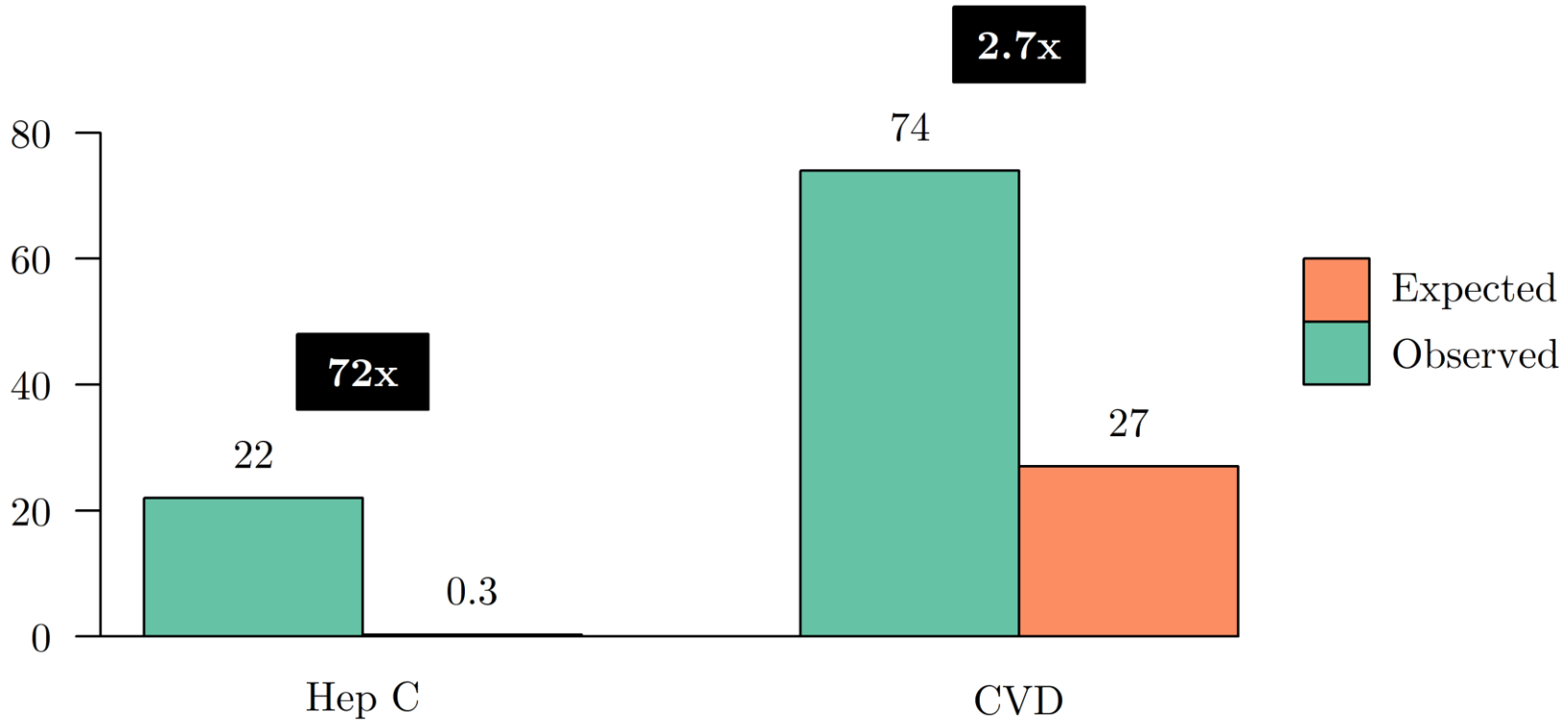




SMR of 6.5 (95% CI 6.0-7.0).

SAR of 3.15 (95% CI 3.11-3.19)

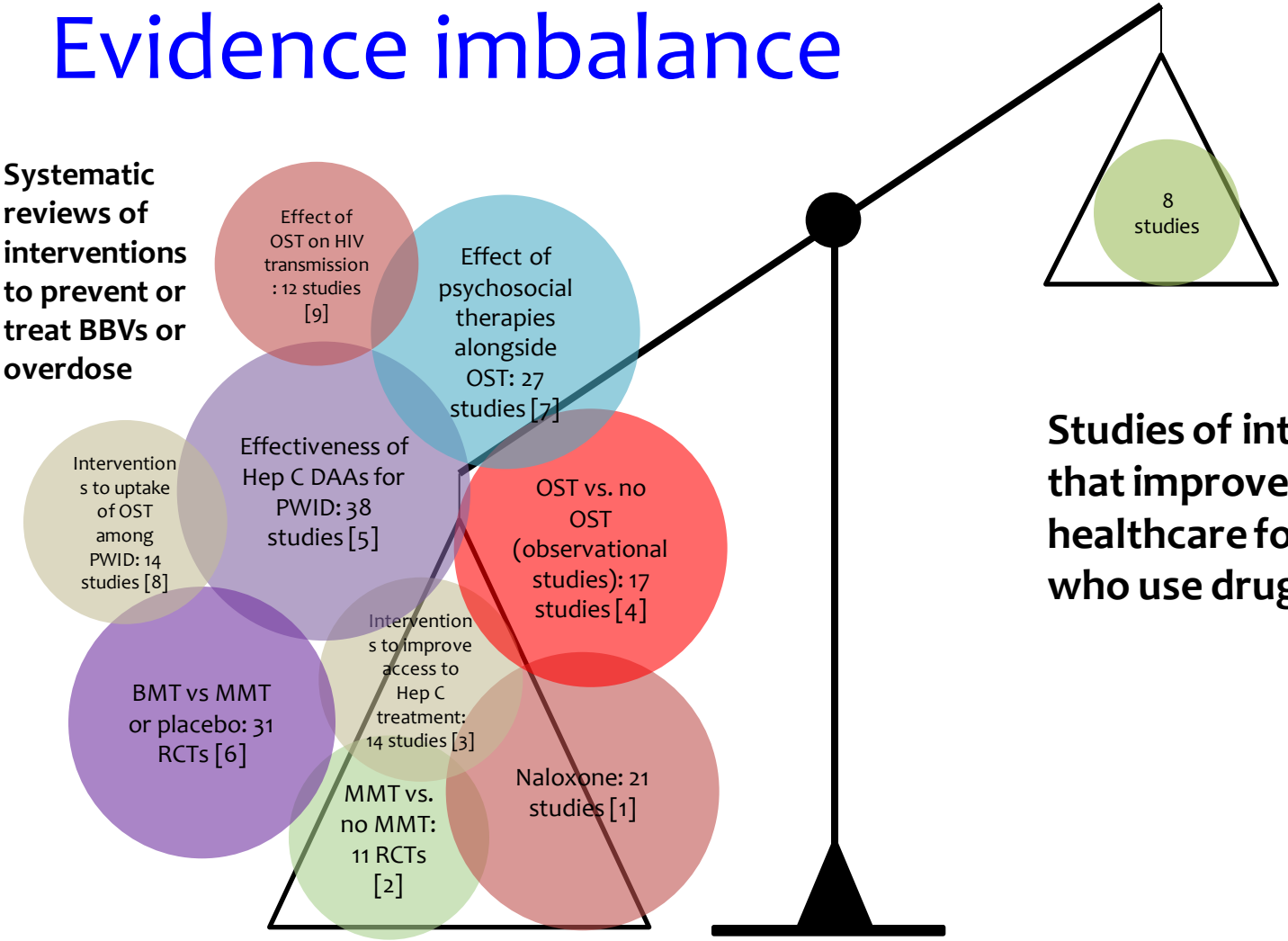
Number of deaths in a cohort of 6,683 people who use heroin in South London, follow-up for a median of 9 years



Lewer, D., Tweed, E. J., Aldridge, R. W., & Morley, K. I. (2019). Causes of hospital admission and mortality among 6683 people who use heroin: A cohort study comparing relative and absolute risks. *Drug and Alcohol Dependence*, *204*. https://doi.org/10.1016/j.drugalcdep.2019.06.027

Evidence imbalance

Systematic reviews of interventions to prevent or treat BBVs or overdose



Studies of interventions that improve physical healthcare for people who use drugs

1. **Early Intervention** NCDs
2. **Stop** unsafe discharging of patients who are homeless
3. **Invest** in specialist integrated homeless health schemes and intermediate care facilities in the community
4. **Switch** from emergency hostels and unaffordable private lettings to adopt a full housing-first approach
5. **Tackle** the political determinants of homelessness, including child poverty

Journal of Public Health | pp. 1–9 | doi:10.1093/pubmed/fdz158

The ACE Index: mapping childhood adversity in England

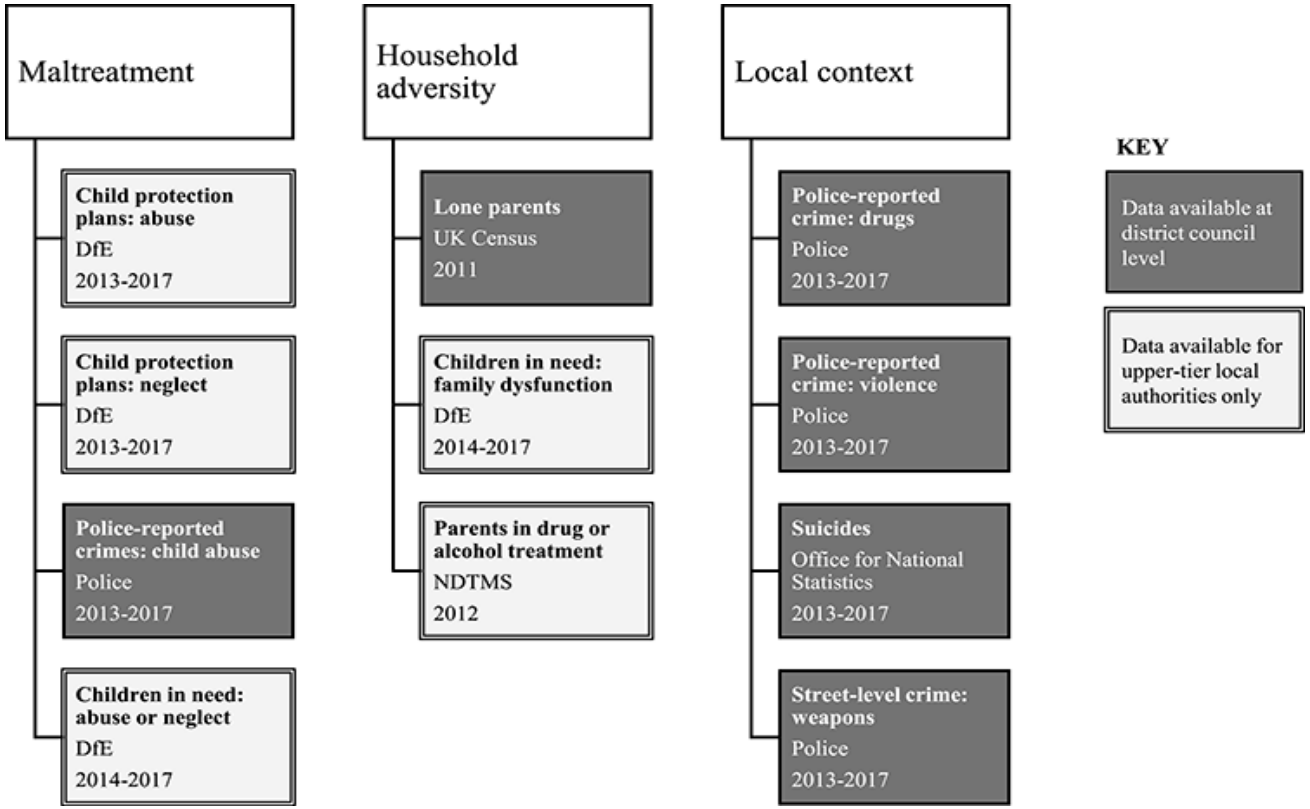
Dan Lewer[1], Emma King[1], Glen Bramley[2], Suzanne Fitzpatrick[2], Morag C Treanor[2], Nick Maguire[3], Miriam Bullock[1], Andrew Hayward[1,†], Al Story[1,4,†]

[1]UCL Collaborative Centre for Inclusion Health, Institute of Epidemiology and Health Care UCL, 1-19 Torrington Place, London, WC1E 7HB, UK
[2]Institute for Social Policy, Housing, Equalities Research; Heriot-Watt University, Edinburgh, EH14 4AS, UK
[3]Psychology, University of Southampton, University Road, Southampton SO17 1BJ, UK
[4]Find&Treat, University College London Hospitals NHS Foundation Trust, London NW1 2PG, UK

Why calculate an ACE index?

- Well-known association between ACEs and health /social outcomes later in life
- Research mostly uses cross-sectional surveys of adults
- Focus on the family / household as the cause / solution
- Possible to construct a population level indicator using available administrative data

ACE indicators



ACE outcomes

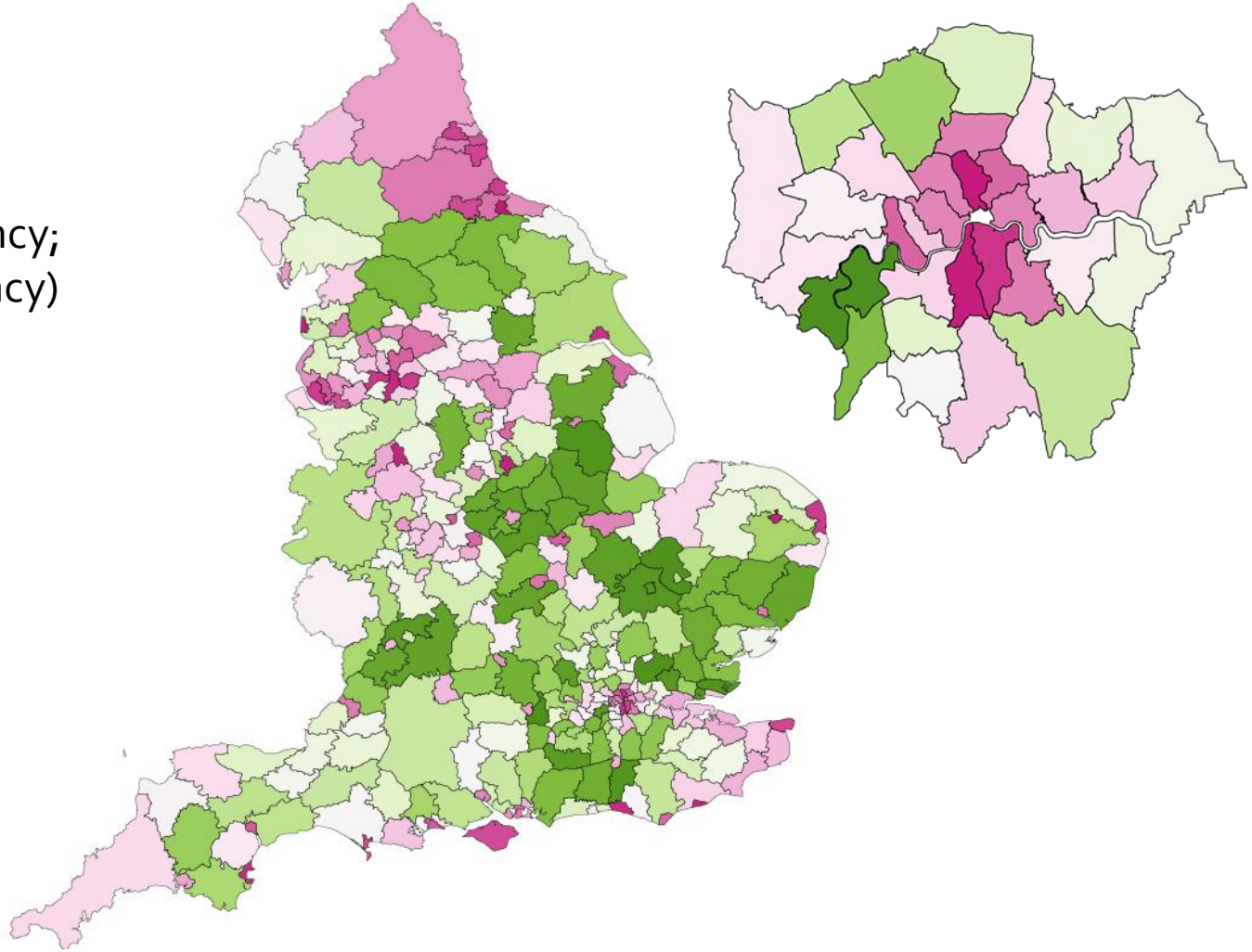
- Under 18 conceptions
- School exclusions
- Admissions for self harm (age 10–24)
- First remands
- SEN register (SEM)
- Primary school absences
- Secondary school absences
- Homelessness (age 16–24)
- Admissions for substance use (under 18)
- Admissions for alcohol (under 18)
- NEET
- School readiness

Calculating the ACE index

- Used IMD methodology to aggregate indicators into domain scores and then aggregated domain scores into the overall index for unitary and county councils

ACE index by local authority district

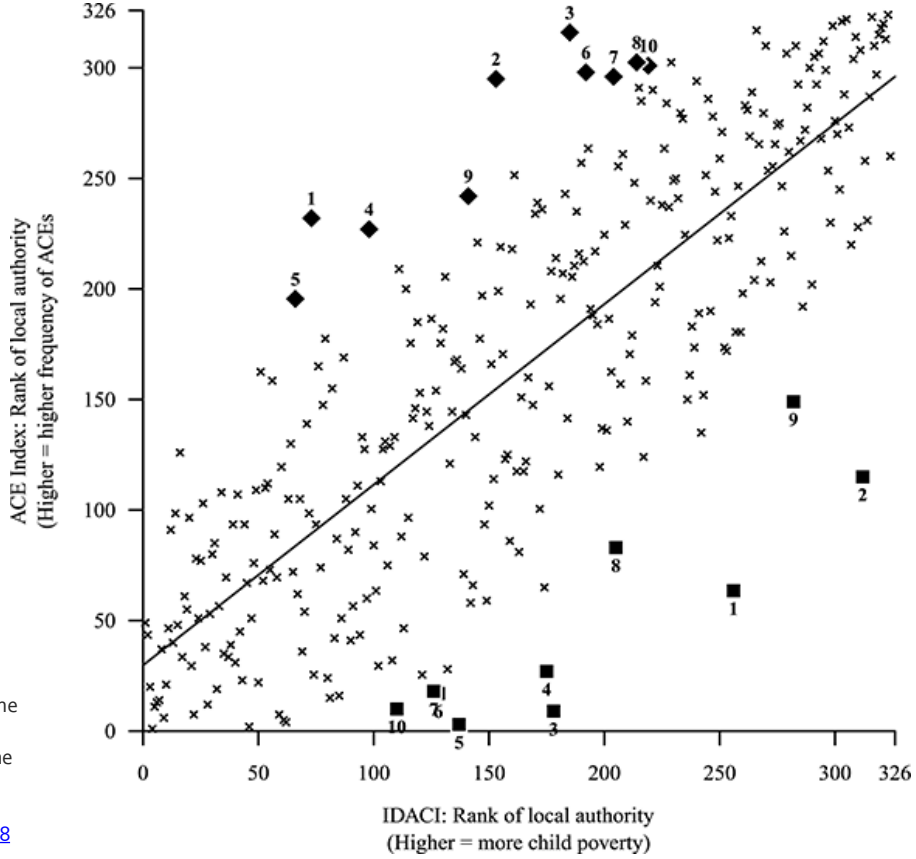
(Pink = high frequency; green = low frequency)



Explore geographical variation

- Fit a linear regression model using ACE Index as the outcome to test multiple independent local variables
  - Population density, Income, Health, Employment, Crime, Education, Child poverty, Local inequality, Barriers to services…

Frequency of ACEs is strongly associated with child poverty



Dan Lewer, Emma King, Glen Bramley, Suzanne Fitzpatrick, Morag C Treanor, Nick Maguire, Miriam Bullock, Andrew Hayward, Al Story, The ACE Index: mapping childhood adversity in England, *Journal of Public Health*, , fdz158, https://doi.org/10.1093/pubmed/fdz158

What does it mean?

- The rate of ACEs in England is strongly associated with child poverty and provides evidence for a process in which deprivation increases risk of ACE

Money matters

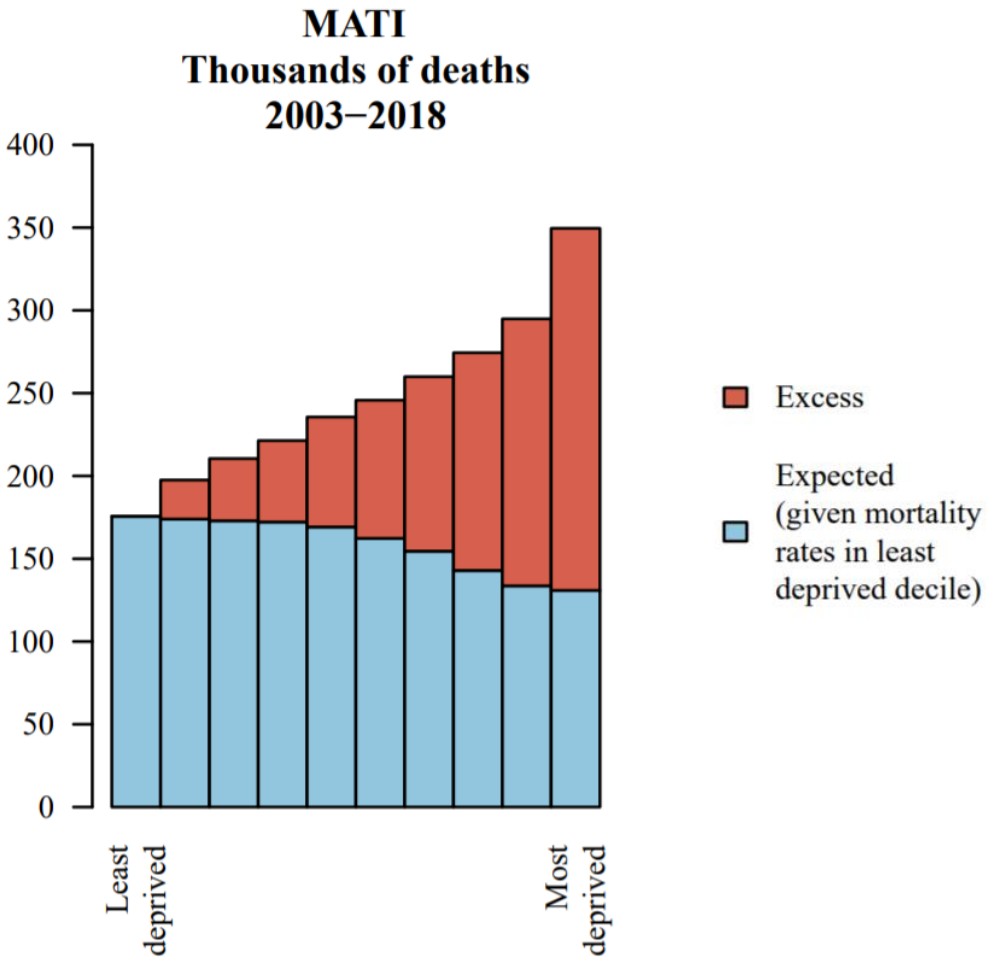
- A $1 increase in the minimum wage was associated with a 10% decline in child neglect reports
- Policies that increase incomes of the working poor can substantially improve children's welfare, especially younger children

Raissian KM, Bullinger LR. Money matters: Does the minimum wage affect child maltreatment rates? *Child Youth Serv Rev* 2017;72:60–70.
doi: 10.1016/j.childyouth.2016.09.033

THE LANCET
Public Health

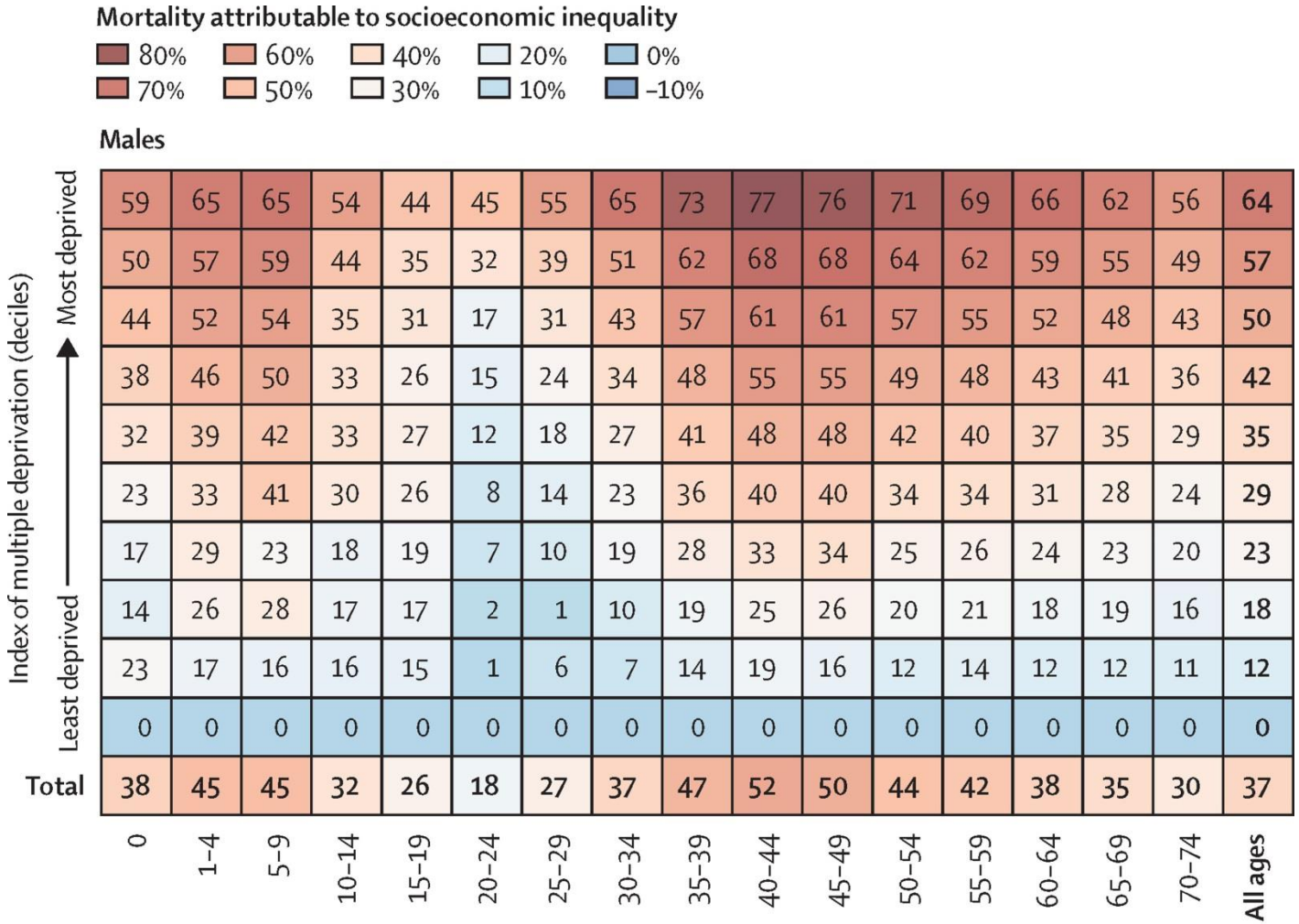
Premature mortality attributable to socioeconomic inequality in England between 2003 and 2018: an observational study

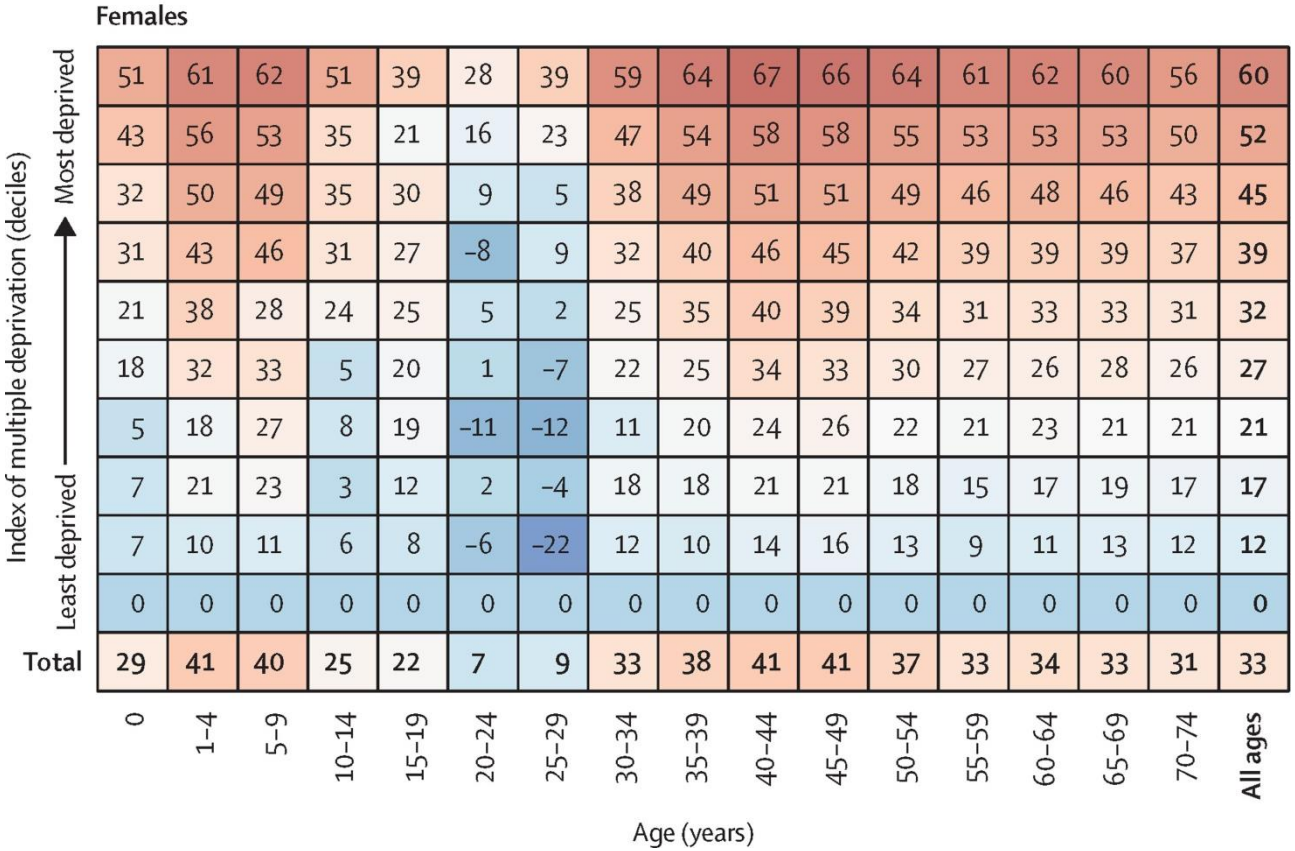
Dan Lewer, Wikum Jayatunga, Robert W Aldridge, Chantal Edge, Michael Marmot, Alistair Story, Andrew Hayward



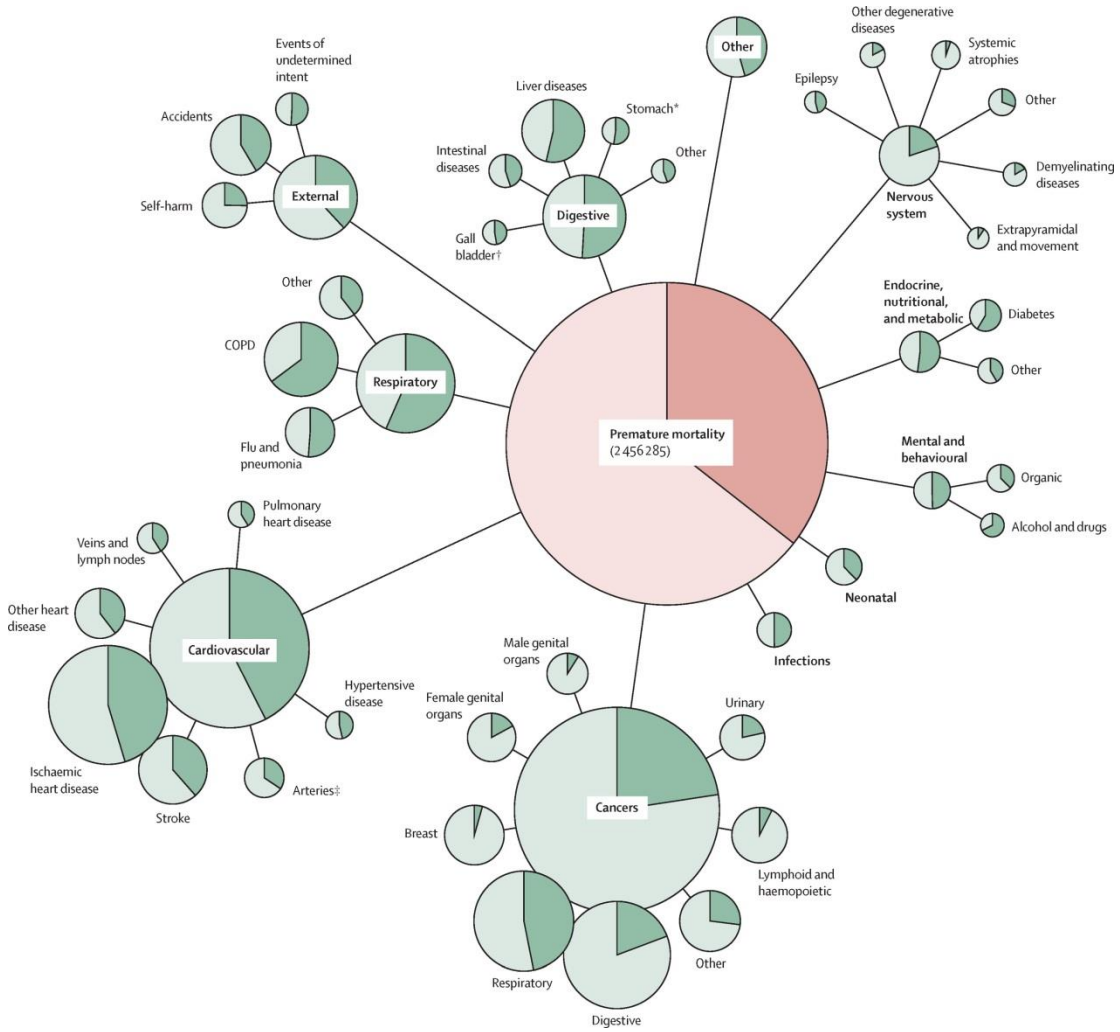
35.6% of premature deaths attributable to inequality

One every ten minutes


Mortality attributable to socioeconomic inequality
80%
70%
60%
50%
40%
30%
20%
10%
0%
−10%
Males
Index of multiple deprivation (deciles)
Most deprived
Least deprived
59 65 65 54 44 45 55 65 73 77 76 71 69 66 62 56 64
50 57 59 44 35 32 39 51 62 68 68 64 62 59 55 49 57
44 52 54 35 31 17 31 43 57 61 61 57 55 52 48 43 50
38 46 50 33 26 15 24 34 48 55 55 49 48 43 41 36 42
32 39 42 33 27 12 18 27 41 48 48 42 40 37 35 29 35
23 33 41 30 26 8 14 23 36 40 40 34 34 31 28 24 29
17 29 23 18 19 7 10 19 28 33 34 25 26 24 23 20 23
14 26 28 17 17 2 1 10 19 25 26 20 21 18 19 16 18
23 17 16 16 15 1 6 7 14 19 16 12 14 12 12 11 12
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Total
38 45 45 32 26 18 27 37 47 52 50 44 42 38 35 30 37
0
1–4
5–9
10–14
15–19
20–24
25–29
30–34
35–39
40–44
45–49
50–54
55–59
60–64
65–69
70–74
All ages



Premature mortality reduced - inequality persisted and increased among women in the most deprived areas


Premature mortality
(2 456 285)
Other
Other degenerative diseases
Systemic atrophies
Epilepsy
Other
Demyelinating diseases
Nervous system
Extrapyramidal and movement
Liver diseases
Stomach*
Intestinal diseases
Other
Digestive
Gall bladder†
Events of undetermined intent
Accidents
Self-harm
External
Other
COPD
Respiratory
Flu and pneumonia
Endocrine, nutritional, and metabolic
Diabetes
Other
Mental and behavioural
Organic
Alcohol and drugs
Neonatal
Infections
Pulmonary heart disease
Veins and lymph nodes
Other heart disease
Cardiovascular
Hypertensive disease
Ischaemic heart disease
Stroke
Arteries‡
Male genital organs
Female genital organs
Urinary
Cancers
Breast
Lymphoid and haemopoietic
Other
Respiratory
Digestive

Daily Mail

MailOnline

SW66Bristol, Bristol, United Kingdom,

Unfortunately, some people will always be more intelligent than others, though maybe we should help the sick and disabled more

Daily Mail

MailOnline

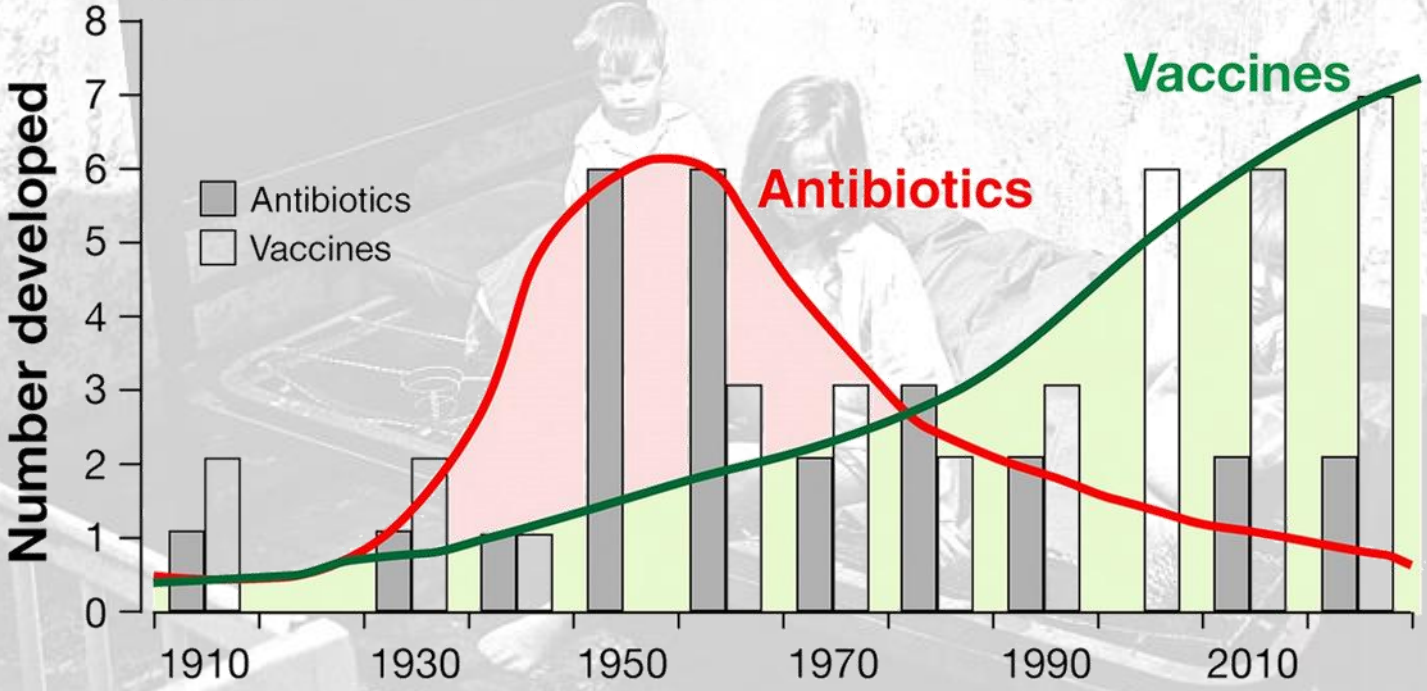
RogerJolly, London, United Kingdom,

More loony leftie claptrap that discourages individual responsibilty. They themselves refer to "public health services that help smokers quit, treat alcohol and drug dependence and tackle obesity". These are all things that individuals and families can sort out for themselves. Are they saying that poor people are too stupid to quit smoking, drinking, taking drugs, and eating chips? Encouraging people to be resposible for their own health will do more good than blaming society.

First Public Health Revolution (1880-1920)

- Improved sanitation, public water treatment, sewage management, food inspection and municipal garbage collection
- tuberculosis, pleurisy, typhus, cholera and dysentery

2nd & 3rd Public Health Revolution (1920 -)



4th Public Health Revolution

Behaviour Change

- Communities shape opportunities to adopt and maintain healthy behaviours

Professor Dame Sally Macintyre

COVID – 19

- How bad is it?
- Transmission?
- Control?
- What should homeless sector do?

- How bad is it?

Key Symptoms

- Fever
- Cough
- Difficulty Breathing
- Muscle Pain
- Tiredness

Key Figures

- 80% Mild Symptoms
- 14% have severe disease,
- 6% are critically ill

- Case fatality proportion - 0.3-1%

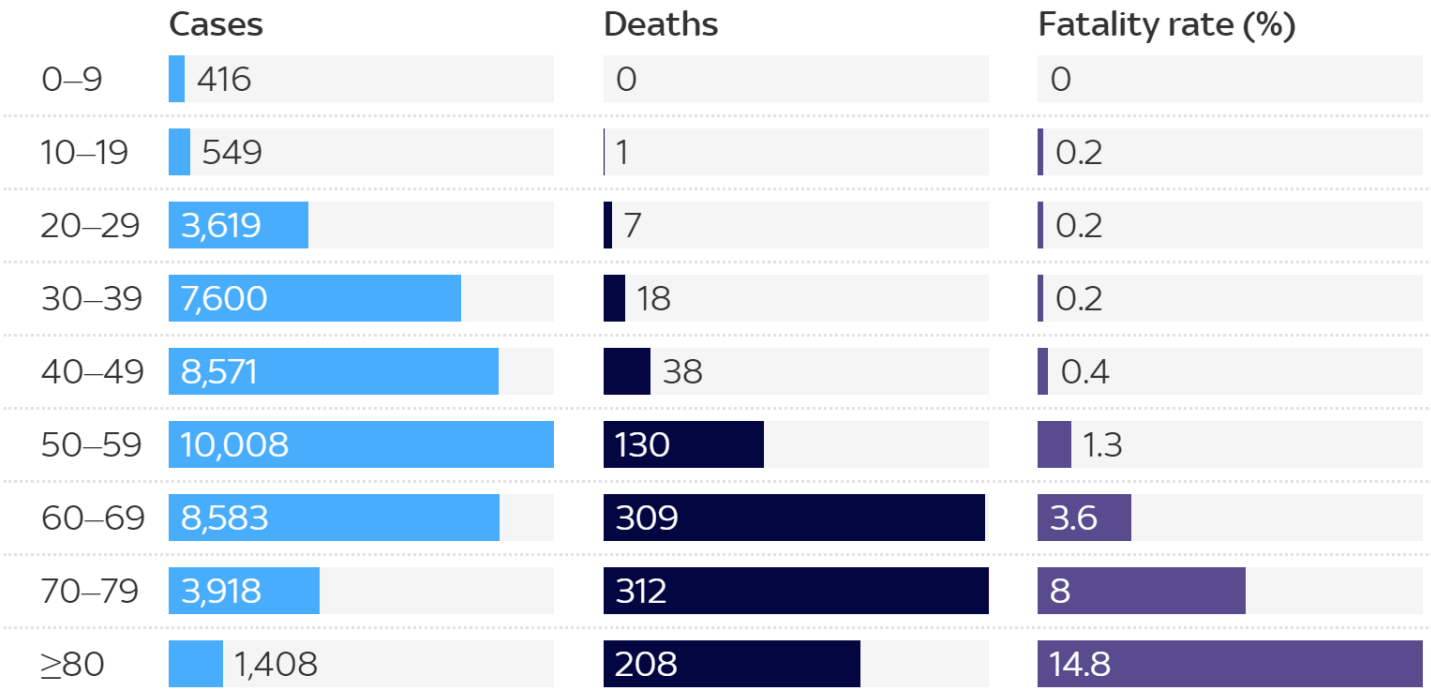
Emerging infections Mortality Case fatality

- 1918 Flu - ≥ 2% 20-50 million deaths
- 1957 Asian Flu - 0.1-0.2% - 33,000 deaths
- 1968 Hong Kong Flu - 0.2-0.4% - 1-4 million deaths
- 2009 Swine Flu - < 0.025% - 18,000 deaths
- 2012 MERS – CoV - > 30% - 861 deaths
- 2002 SARS - < 10% 774 deaths
- 2019 COVID-19 - 0.3-1% - High level of uncertainty

UK Coronavirus action plan

80% of the deaths are people over 60

60% of people infected are 40 - 69, although fatality rate is higher among elderly



44,672 confirmed COVID-19 cases in Mainland China as of February 11, 2020.

Source: The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19)

Wuhan hospitalised cases CXR changes

- Consolidation – 59%
- Ground glass opacities - 71%
- Pulmonary Infiltrate - 75%

Lancet 11/03/2020

Wuhan hospitalised cases Complications

- Sepsis - 59%
- Respiratory failure – 54%
- Heart Failure – 23%
- Secondary infection – 15%
- Sepic shock – 20%
- Acute cardiac damage – 17%

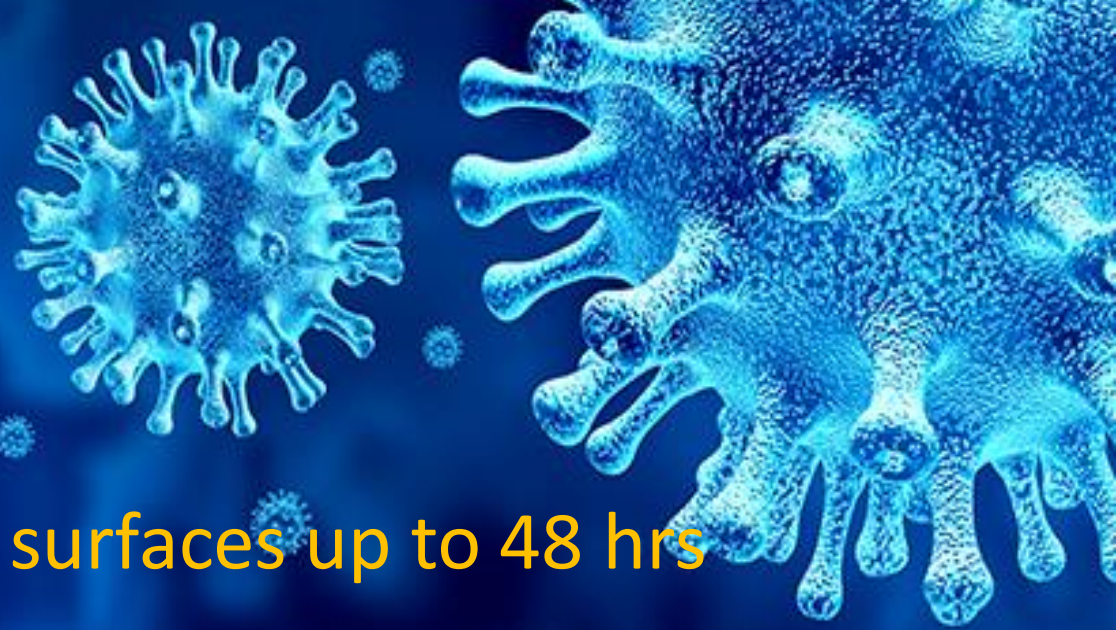
Lancet 11/03/2020

Wuhan hospitalised cases
Case fatality

- No comorbidity – 18%
- Smoker – 45%
- Comorbidity – 39%
- Hypertension – 45%
- Coronary Heart Disease– 87%
- COPD – 66%
- Diabetes – 47%

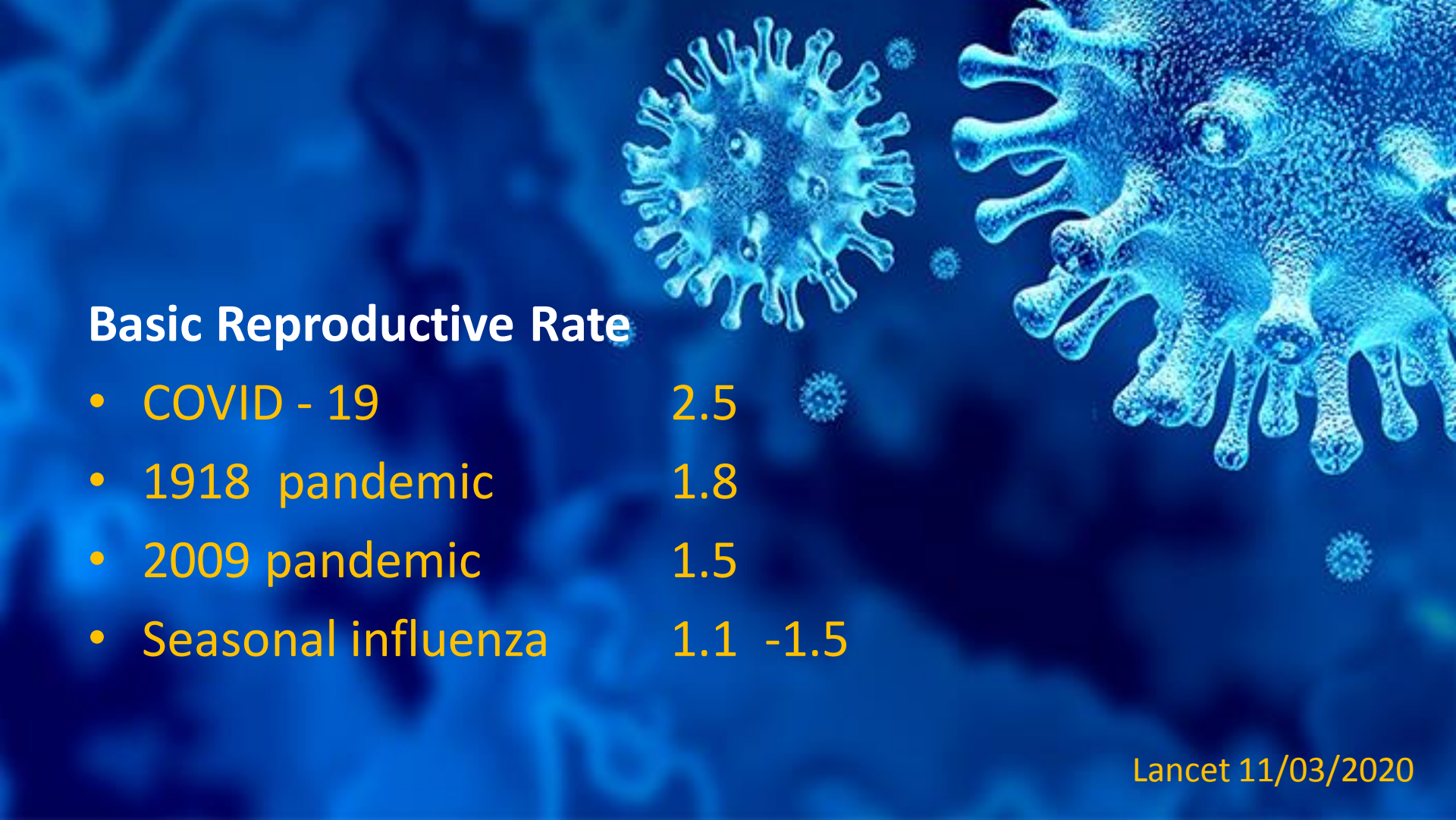
Lancet 11/03/2020

Transmission



- Direct Contact
- Indirect Contact
  - persists on hard surfaces up to 48 hrs

- Airborne Droplet – short range 1-2m
- Airborne aerosol - long range



Basic Reproductive Rate

- COVID - 19 2.5
- 1918 pandemic 1.8
- 2009 pandemic 1.5
- Seasonal influenza 1.1 -1.5

Lancet 11/03/2020

Key Figures

- Serial interval 4.4-7.5 days
- Incubation period - 5-6 days

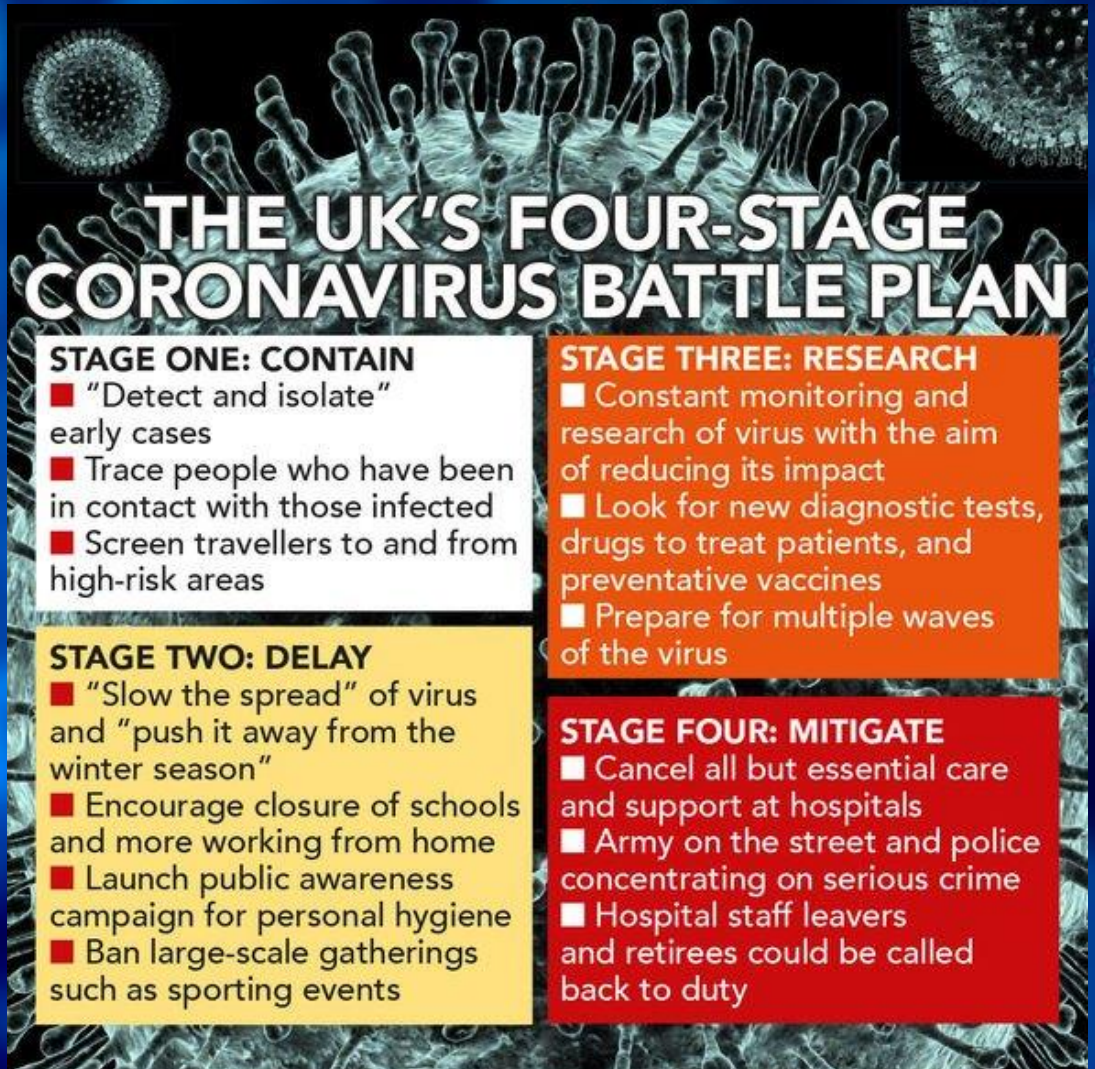
- Peak viraemia - 1-2 days before illness onset.

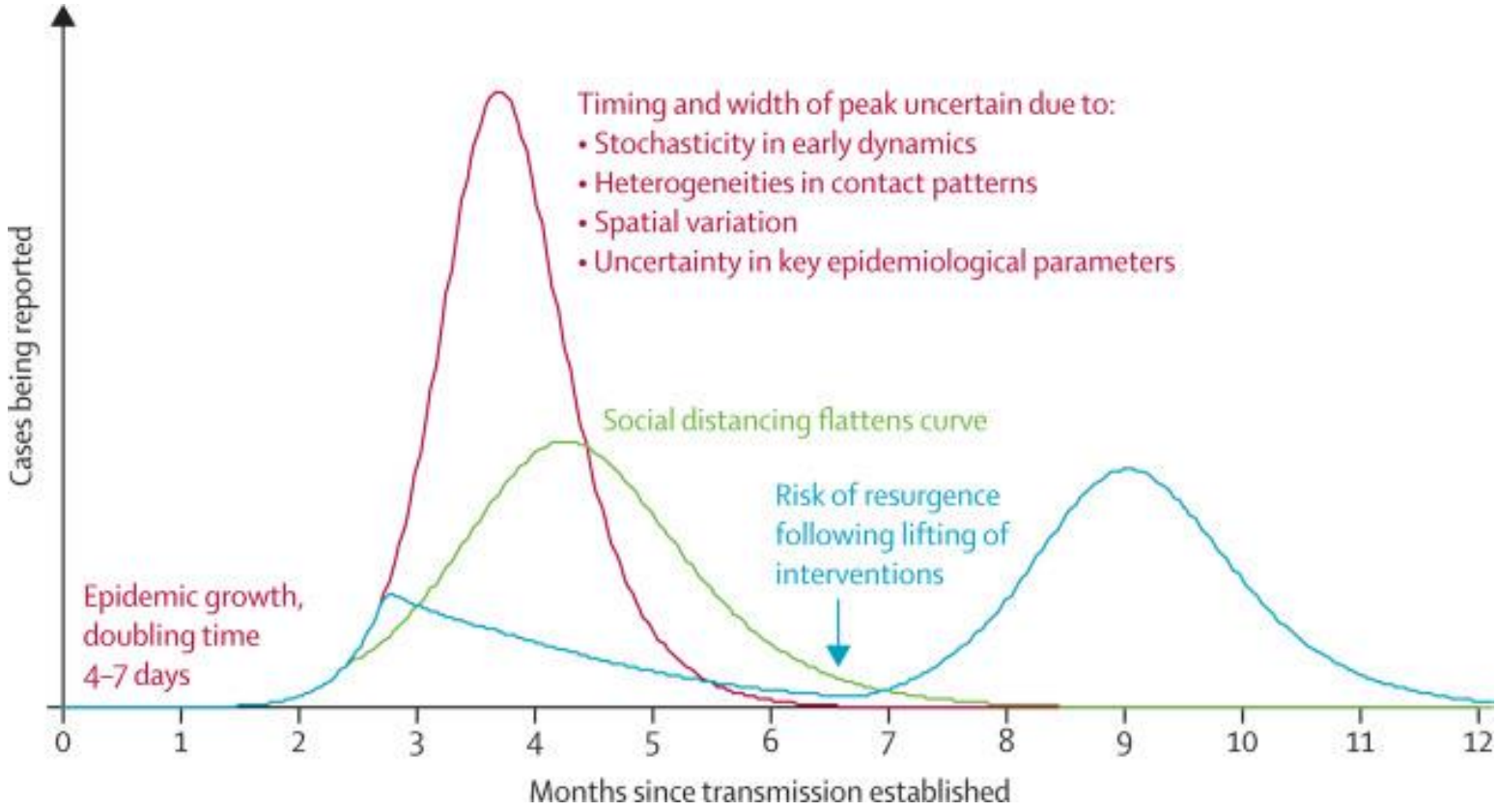
- These figures imply some pre-symptomatic transmission

- Duration infectiousness – About 10 days

Lancet 11/03/2020

Control


THE UK'S FOUR-STAGE CORONAVIRUS BATTLE PLAN
STAGE ONE: CONTAIN
■ "Detect and isolate" early cases
■ Trace people who have been in contact with those infected
■ Screen travellers to and from high-risk areas
STAGE TWO: DELAY
■ "Slow the spread" of virus and "push it away from the winter season"
■ Encourage closure of schools and more working from home
■ Launch public awareness campaign for personal hygiene
■ Ban large-scale gatherings such as sporting events
STAGE THREE: RESEARCH
■ Constant monitoring and research of virus with the aim of reducing its impact
■ Look for new diagnostic tests, drugs to treat patients, and preventative vaccines
■ Prepare for multiple waves of the virus
STAGE FOUR: MITIGATE
■ Cancel all but essential care and support at hospitals
■ Army on the street and police concentrating on serious crime
■ Hospital staff leavers and retirees could be called back to duty



Epidemic with case isolation only

Epidemic with highly restrictive social distancing

Epidemic with social distancing

- In seasonal coronavirus regular handwashing decreases risk of getting infected by one third
- Flu Watch - submitted

- In seasonal coronavirus washing hands regularly after coughing or sneezing reduces risk of passing on to household members by two thirds
- Flu Watch - submitted

Public Health England

Self-isolation

Advice for patients with & without symptoms of infection, who are isolating themselves due to potential exposure to novel coronavirus (COVID-19). These actions will help to protect others inside & outside of your home from infection.

Isolate yourself

- **Stay in your home or accommodation**, do not go to work, school or other public areas
- **Separate yourself** from others in your home or accommodation
- **Do not have visitors** in your home or accommodation
- Use **separate facilities** if sharing, these should be cleaned before use by others
- Have food, medication & other supplies **delivered to you**
- **Try to keep away from your pets**. If unavoidable, wash your hands before & after contact

Prevent the spread of infection

- **Cover** coughs & sneezes with a tissue
- Place the tissue in a **bin**
- Wash your hands with **soap & water**
- Use **separate household items** like towels, bedding, toothbrushes, cups & dishes
- **Wear a mask** when you are around others, if you have been told to do so

Wash hands with soap & water:

- Before cooking & eating
- After using the toilet

Take care of your health & wellbeing

For those with symptoms of infection:

- Get plenty of rest until you feel better
- Drink enough fluids so that you pass urine regularly
- Take paracetamol as advised, to reduce pain & fever

For everyone in self-isolation:

- Keep in contact with friends & family by phone, video & online
- Carry on hobbies & interests within your home if you are able to
- Take regular exercise within your home if able

Seek help if you develop symptoms or existing symptoms get worse (eg difficulty breathing) by calling NHS 111

Your healthcare provider will advise you on whether to remain in self-isolation following a negative test result

In an emergency, call 999 & inform the call handler about your potential exposure to COVID-19

- Spending more than five minutes in a room with someone with symptoms of a cold (other than a household member) – doubles your likelihood of infection.
- Flu Watch - submitted

Social Distancing

- The following activities are more common in week before respiratory infection onset
- Bus, Tube
- Café, Restaurant, Party
- Supermarket, Small shops
- Going to place of worship

Flu Watch - Submitted

Residential accommodation checklist

- Patient well enough?
- Capacity to understand instructions?
- Working phone?
- < 60 minutes from hospital?
- Can exposure of other residents be minimised sufficiently?
- Can the patient be accommodated elsewhere?
- Can their housemates be accommodated elsewhere?
- If more than one patient can they be cohorted?
- Are any housemates particularly vulnerable e.g. chronic illness?
- Can advice be issued to reduce transmission?

PHE

Residential accommodation checklist

- Single occupancy room?
- Handwashing facilities – soap, water, paper towels?
- Can the patient have their own toilet or can shared facilities be adequately cleaned between use?
- Sufficient cutlery and crockery to not need to share?
- Sufficient face masks, paper towels, waste disposal bags, cleaning products?
- Area to temporarily and securely store waste or laundry?
- Support for getting groceries, prescriptions & other “personal needs”

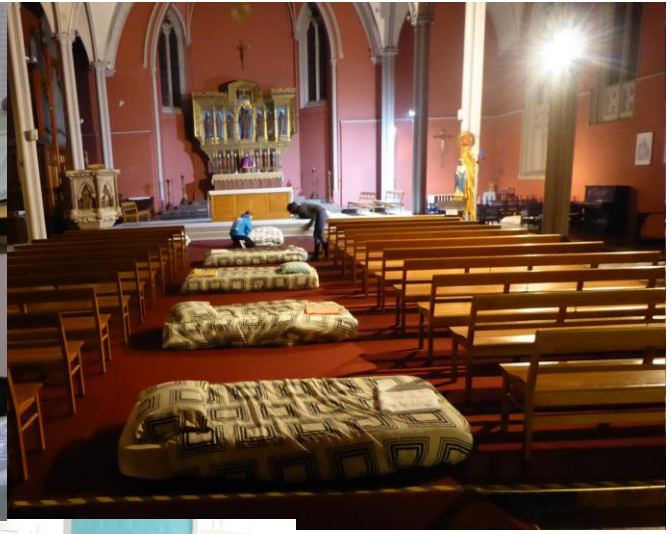
PHE

Despite intensive control
16% attack rate
3.5% Case Fatality

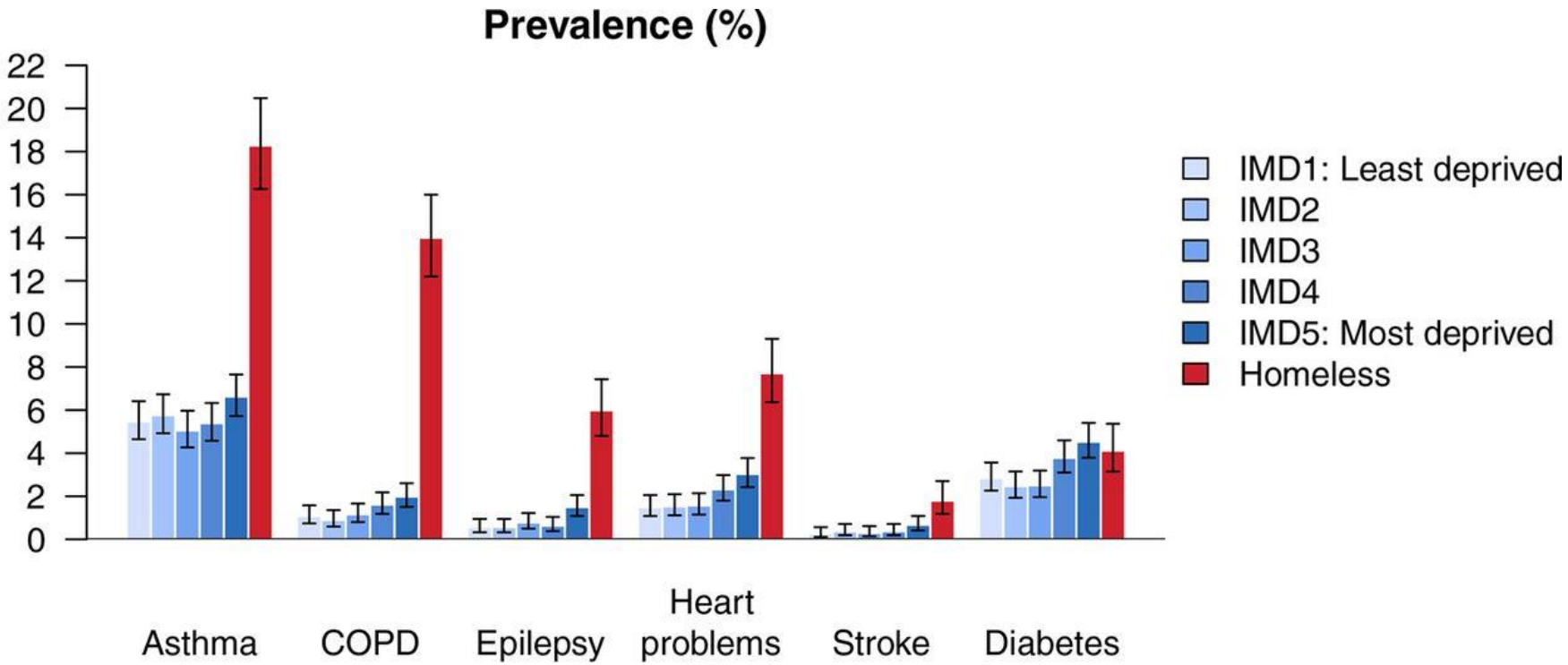
Kirkland Lifecare Centre Washington

- 20th Feb – 10th March

- 120 residents
- 56 COVID-19 confirmed
- 26 deaths
- 19 confirmed as COVID 19



Prevalence of long-term conditions, housed and homeless people ('Find&Treat'), England



https://bmjopen.bmj.com/content/9/4/e025192.full

COVID-19
Homeless strategy

- Current guidance based on premise that people with symptoms will seek help
- And be able to self-isolate!

Guidance

Guidance for social or community care and residential settings on COVID-19

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- Promoting hand hygiene and respiratory hygiene
- Increase availability and prominence of hand hygiene products
- Regular disinfection of frequently touched surfaces
- Face masks only recommended for cases/suspected cases
- Waste disposal
- Cleaning facilities after a case

PHE

COVID-19
Homeless strategy

- Prevent inverse care
- Reduce / delay transmission risk
- Prevent explosive outbreaks in residential services and congregate setting - day centres
- Prevent high mortality

COVID-19
Homeless strategy

- Hand Hygiene
- Respiratory Hygiene
- Hand washing materials prominently available
- Increased surface cleaning

- The right messages – Comms – Stigma – Blame
- Training and awareness – PPE
- Co-design - Peers

- Outreach active case finding -pyrexia? +/-Mobile CXR = ground glass / consolidation → Cohort -RT PCR
- Rapidly isolate suspected and confirmed cases
  - urgent need for multiple venues where patients can be cohorted AND cared for
- Prepare to provide intermediate level support including oxygen and p02 monitoring…?
- Clear triage protocol severe cases to ICU

- Stop bringing people off the street into congregate settings -NSNO
- Street packs - tent parks, food, water, sanitation
- Open air Kitchens
- Health outreach teams +++
- Police / LAS / LA co-operation
- Comms – Peers
- Evaluate and adapt

- Solidarity