

1	Calcium for Out of Hospital Cardiac Arrest	False Confidence in Clinical Signs	10
4	Volunteering During the Pandemic: COVID-19 Community Champions	Childhood Obesity Following the COVID-19 Pandemic	11
6	Do QALYs Overestimate the Benefits of Life-Saving Treatments?	Genetics of Irritable Bowel Syndrome	12
8	ARC WM Quiz	Estimating Seroprevalence of COVID-19 in Low-Income Countries	13
9	Social Isolation: More Evidence on Harmful Health Effects	Latest News & Events	14
		Recent Publications	16

ARC West Midlands News Blog



3 December 2021

Calcium for Out of Hospital Cardiac Arrest (COCA)

Gavin Perkins, Professor of Critical Care Medicine

Around the world, hundreds of thousands of people sustain a cardiac arrest each year. Within seconds of a person sustaining a cardiac arrest, blood supply to the brain ceases and consciousness is lost. Left untreated cardiac arrest is rapidly fatal. Even with treatment, survival rates are dismal, with less than one in ten surviving to hospital discharge, on average.[1] The longer it takes to restart the heart the less likely it is the person will survive. Fortunately for those who do survive, the majority have a favourable neurological outcome, albeit with some sustaining sequelae of post cardiac arrest brain injury, which can include impairments in cognition, emotional well-being, physical function, pain, fatigue.[2]

Community interventions comprising bystander cardiopulmonary resuscitation (CPR) and the use of an automated external defibrillator (public access defibrillation – PAD) are highly effective interventions, and provide people with the greatest chance of a survival and a favourable neurological outcome.[3] Although there remains scope to improve the implementation of these interventions, particularly in deprived communities,[4, 5] even when present they are not effective in all patients creating the need for other advanced life support interventions.

Drug Therapies

Cardioactive drugs have formed part of advanced life support algorithms for decades, despite little to no robust data being available demonstrating their safety and efficacy. Adrenaline, a commonly used drug in cardiac arrest, had, until recently, relatively little evidence of benefit, with some studies suggesting harm. The PARAMEDIC-2 study was a large pragmatic, placebo controlled,

randomised trial led by investigators in the West Midlands. It demonstrated that adrenaline was highly effective at restarting the heart. It also for the first time demonstrated that adrenaline increased survival to discharge (number needed to treat 112), although uncertainty remains about its effects on neurological outcomes (odds ratio, 1.18; 95% CI, 0.86 to 1.61).[6] Meta-analyses of randomised trials have shown that vasopressin (either in isolation or in combination with adrenaline) is ineffective at improving long-term outcomes,[7] creating a therapeutic vacuum of effective therapies.

Calcium

Ringer serendipitously discovered that calcium has a stimulatory effect on cardiac muscle cells in 1883 (Figure 1).[8] Subsequently animal studies and a case series describing four children resuscitated from intra-operative cardiac arrest stimulated interest in the use of calcium as a treatment for cardiac arrest.[9] On what appears to be very limited evidence, calcium was included in the US advanced cardiac life support guidelines in 1974 as an essential drug for the treatment of cardiac arrest due to non-shockable rhythms.[10] It remained in the guidelines through to 1986, after which its routine use was no longer recommended outside of specific special circumstances such as hyperkalaemia, hypocalcaemia or calcium channel blocker overdose. Despite guidelines moving away from supporting the routine use of calcium chloride, it remains in widespread use, particularly in the US setting with study recently reporting up to 40% of in-hospital cardiac arrests receiving treatment with calcium.[11]

It was on this background that Danish researchers launched the COCA trial (Calcium for Out of hospital Cardiac Arrest) – an individual patient randomised, placebo-controlled trial of calcium chloride for out of hospital cardiac arrest. [12] The trial sought to determine whether the addition of calcium chloride to currently advanced life support treatments would increase the chances the heart would be restarted. (i.e. achieve a return of spontaneous-ROSC). The trial aimed to enrol 674 patients, but was stopped prematurely after the third interim analysis at the recommendation of the independent data monitoring committee who were concerned the intervention was causing harm. In the final intention to treat analysis (n=397) the rate of ROSC (primary outcome) was 19% in the calcium group and 27% in the placebo group (risk difference: -7.6%; 95%CI: -16, 0.8; P = 0.09). A similar pattern was observed for 30-day survival (5.2% versus 9.1%) and survival with a favourable neurological outcome (3.6% versus 7.6%). An *a priori* planned Bayesian analysis reported low probabilities (i.e., a risk ratio > 1.0) of calcium being beneficial. (4% for ROSC, 6% for survival at 30 days, and 4% for survival with a favourable neurologic outcome at 30 days).

Stopping Trials Early

In the on-line presentation of the trial findings at www.criticalcarereviews.com much of the discussion focused around the decision to prematurely terminate the trial. There are several concerns related to prematurely stopping a trial. [13] Firstly stopping early tends to overestimate the treatment effect. I remember Keith Wheatley first alerting me to this phenomenon several years ago in the context of the MRC AML-12 trial. [14] The fact that a significant difference is reported increases the chances the research will be published in higher impact journals, thus gaining additional credibility. Finally it may have a freezing effect on future research (in other

words equipoise is lost for the intervention). Statistically the arguments for or against stopping a trial early for benefit or harm are the same. However, from a clinical and ethical perspective, the premise of first do no harm and reminding ourselves that the rights and well-being should always outweigh the benefits to the research or society more broadly provide a clear rationale for the recommendations from the data monitoring committee.

Where Does This Leave the Use of Calcium for OHCA?

As someone (like most practitioners in the UK), who has never used calcium routinely to treat cardiac arrest, the study will not change my practice. The study has flagged the need for further research in cases where calcium is currently used (hyperkalaemia, overdose) and I will think more carefully about its use in the future.

A FURTHER CONTRIBUTION REGARDING THE INFLUENCE OF THE DIFFERENT CONSTITUENTS OF THE BLOOD ON THE CONTRACTION OF THE HEART. By SYDNEY RINGER, M.D., *Professor of Medicine at University College, London.* (Plate I.)

AFTER the publication of a paper in the *JOURNAL OF PHYSIOLOGY*, Vol. III, No. 5, entitled "Concerning the influence exerted by each of the Constituents of the Blood on the Contraction of the Ventricle," I discovered, that the saline solution which I had used had not been prepared with distilled water, but with pipe water supplied by the New River Water Company. As this water contains minute traces of various inorganic substances, I at once tested the action of saline solution made with distilled water and I found that I did not get the effects described in the paper referred to. It is obvious therefore that the effects I had obtained are due to some of the inorganic constituents of the pipe water.

Calcium chloride solution added to the saline, sodium bicarbonate and potassium chloride solution, after the ventricle has lost contractility, restores good spontaneous beats which will continue for a long time.

But whilst calcium salts are necessary for the proper contraction of the heart, yet if unantagonized by potassium salts the beats would become so broad and the diastolic dilatation so prolonged that much fusion of the beats would occur and the ventricle would be thrown into a state of tetanus.

Figure 1: Initial report that calcium may affect cardiac muscle function

References:

1. Kiguchi T, Okubo M, Nishiyama C, et al. Out-of-hospital cardiac arrest across the World: First report from the International Liaison Committee on Resuscitation (ILCOR). *Resuscitation.* 2020; **152**: 39-49.
2. Perkins GD, Callaway CW, Haywood K, et al. Brain injury after cardiac arrest. *Lancet.* 2021; **398**: 1269-78.
3. Perkins GD, Graesner JT, Semeraro F, et al. European Resuscitation Council Guidelines 2021: Executive summary. *Resuscitation.* 2021; **161**: 1-60.
4. Brown T, Hawkes C, Booth S, et al. Identification of characteristics of neighbourhoods with high incidence of out-of-hospital cardiac arrest and low bystander cardiopulmonary resuscitation rates. *Resuscitation.* 2017; **118**: e67-8.
5. Brown TP, Perkins GD, Smith CM, Deakin CD, Fothergill R. Are there disparities in the location of automated external defibrillators in England? *Resuscitation.* 2021; **170**: 28-35.
6. Perkins GD, Ji C, Deakin CD, et al. A Randomized Trial of Epinephrine in Out-of-Hospital Cardiac Arrest. *N Engl J Med.* 2018; **379**: 711-21.
7. Finn J, Jacobs I, Williams TA, Gates S, Perkins GD. Adrenaline and vasopressin for cardiac arrest. *Cochrane Database Syst Rev.* 2019; **1**: CD003179.
8. Ringer S. A further Contribution regarding the influence of the different Constituents of the Blood on the Contraction of the Heart. *J Physiol.* 1883; **4**: 29-42.3.
9. Stueven HA, Thompson BM, Aprahamian C, Tonsfeldt DJ. Calcium chloride: reassessment of use in asystole. *Ann Emerg Med.* 1984; **13**: 820-2.
10. Standards for cardiopulmonary resuscitation (CPR) and emergency cardiac care (ECC). 3. Advanced life support. *JAMA.* 1974; **227**(7): 852-60.
11. Moskowitz, A, Ross CE, Andersen LW, et al. Trends Over Time in Drug Administration During Adult In-Hospital Cardiac Arrest. *Crit Care Med.* 2019; **47**: 194-200.
12. Vallentin MF, Granfeldt A, Meilandt C, et al. Effect of Intravenous or Intraosseous Calcium vs Saline on Return of Spontaneous Circulation in Adults With Out-of-Hospital Cardiac Arrest: A Randomized Clinical Trial. *JAMA.* 2021.
13. Guyatt GH, Briel M, Glasziou P, Bassler D, Montori VM. Problems of stopping trials early. *BMJ.* 2012; **344**: e3863.
14. Wheatley K & Clayton D. Be skeptical about unexpected large apparent treatment effects: the case of an MRC AML12 randomization. *Control Clin Trials.* 2003; **24**: 66-70.



Volunteering During the Pandemic: COVID-19 Community Champions



Ameeta Retzer (Research Fellow); Kate Jolly (Public Health Theme Lead)

Volunteers provide important support across health and social care, ranging from informal volunteers supporting an elderly neighbour to people who formally volunteer. The UK NHS long-term plan includes an aim to double the number of volunteers across the organisation as part of its move towards a ‘participation culture’. As volunteers become more integral to health and social care systems, there is growing interest in understanding their motivations [1] and needs, and the benefits of volunteering.[2]

The COVID-19 pandemic changed the volunteering landscape, disrupting usual patterns of formal volunteering and fundraising. Charities have struggled financially due to a marked fall in formal volunteering while the unprecedented nature of the pandemic inspired people to find ways to make a contribution, with more people than ever involved in informal volunteering in 2019-20.

Compared to the experience of the wider charitable sector, formal pandemic-related volunteering had a huge response; the NHS Volunteer Responder scheme far exceeded their volunteering targets. Observers to these trends are keen to maintain the positive patterns in volunteering and learn how this enthusiasm may be directed to other issues.

Many public health departments in local authorities rapidly set up COVID-19 Community Champion schemes to support the public health effort, particularly in communities where trust in government is low and where previous public health programmes have faltered. Members of the public could sign up and receive verified, up to date, locally relevant information to share with their networks.

As the need for locality-specific COVID-19 information reduces, there is a potential for Champions to take on a wider public health role.

This might include disseminating information on other public health issues, or advocating on behalf of their communities to the local authorities with whom they work.

ARC-WM rapidly evaluated Birmingham City Council's COVID-19 Champion scheme to explore the Champions' experiences and their views about taking on a wider role. Sixteen Champions contributed to focus groups or qualitative interviews between July and September 2021.

Some participants reported sharing information through their religious and cultural networks, accessing hundreds of people, while others worked on a one-to-one basis. Participants selected relevant information, would simplify and translate into various languages, or would share unedited, through: email, group-chats, and social media; some distributed home-made leaflets and telephoned people, working to reach those who were offline.

Participants joining the scheme because of the unique circumstances imposed by the pandemic were keen to retain their COVID-19 focus, adamant their role was still necessary in spite of

lessening government regulations. Some were wary of taking on an evolved role, feeling that others in the community, such as councillors or MPs, were better placed and mandated to do so. However, those who had engaged with the programme because of a pre-existing interest in volunteering, or for whom the Community Champion programme aligned with their professional or social role, were keen to take on additional activities unrelated to COVID-19.

Several participants shared how if their role moved away from COVID-19, their permission should be sought in the first instance, preferring to decide for themselves whether they had capacity and were interested. If they had more responsibility, there should be more support, such as expenses procedures and additional oversight and coordination.

Many participants were unsure about doing public health activities unrelated to COVID-19, showing us that a consultation process to identify keen individuals and seeking permission before changing the scope of the programme prevents alienation of those who are not. Other programmes interested in maximising their pandemic volunteering gains would benefit from doing the same.

References:

1. Tierney S, Mahtani KR. [Volunteering during the COVID-19 pandemic: What are the potential benefits to people's well-being?](#) *Oxford Social Prescribing Network*. April 2020.
2. Dolan P, et al. [Happy to help: The welfare effects of a nationwide micro-volunteering programme.](#) Centre for Economic Performance, May 2021.



Do Quality Adjusted Life Years Overestimate the Benefit of Life-Saving Treatments?

Richard Lilford, ARC WM Director

Expected Utility Theory

This normative theory applies to an individual who has to make a choice between two or more options. They should select A over B when the expected utility of deciding A (sum of the probabilities of relevant outcomes, each weighted by its utility) exceeds the expected utility of deciding B. In this feature article I question this axiomatic theory when applied to rationing decisions involving mortality outcomes at the population level where utilities are based on a scale that attributes zero utility to the state 'death'. This article is radical in its conclusion and may be wrong. In which case, please tell me where I have made an error.

The Opportunity Cost

When a decision must be made regarding the allocation of scarce resources a utilitarian calculus will favour the option that yields the highest utility for a unit of cost. These utilities are those of the decision-maker according to the axioms of expected utility theory.[1] But, when applied to health economics, the utilities reflect societal values, since the decision is made at the societal not individual level. This is problematic for all sorts of reasons.[2] Here I argue that a problem arises when the utility in question is the utility of being dead. The nub of my argument is that the utility an individual places on avoiding death should not be conflated with the value that society places on the dead state. To put this another way, the utility of 'dead' cannot be inferred directly from the utility of avoiding death.

Dying and Being Dead

Under expected utility theory, a person who has to trade a risk of death against another valued outcome, does so from the perspective of someone who is still alive and wishes to remain so. Such a utility value could be elicited by means of a multiple gamble or time trade off. Assuming that the utility is properly elicited, it may justifiably form the basis for a personal decision taken by a living person. However, Quality Adjusted Life Years (QALYs) apply mean utilities over each remaining year of the expected lives of people affected by a rationing decision. So, the disutility of death, relative to other states, accumulates over many years. The values of these years may be discounted over time, but even so the accumulative value is large. In this article, I argue that they skew decisions too far in favour of life-saving treatments.

Death

The fear of death is integral to the human condition. When we contemplate the future, one of our biggest fears is death. We ascribe a very low utility to death relative to disabilities. In fact, the state 'dead' is given the value of zero in calculations, since it is the reference standard in trade-off simulations. But once we are dead, it is others who will suffer (at least for a while). It is possible to make empirical inquiries into the utility of states from the living, including the state of bereavement and the state of anticipating ones death. The state for death elicited from a living person represents their fear while they are still alive, not the state of death itself, since that is ineffable. Moreover, we do not ascribe a utility to someone who never came into existence as a result of contraception. A person who has died of a sudden arrhythmia is returned to the state of someone never born. In fact, the person who dies without warning escapes the disutility of anticipating death, and the only disutility felt by anyone is that of relatives and friends. The utilities in play are those of the person who

contemplates death and/or the utilities of people who loved them. Yet a person, who never anticipated their death, and whose loved ones have 'got over' their bereavement, continues to accrue QALYs that attenuate only slowly, if at all, under current health economic methods.

Utility Calculus

Given that disutility is experienced by those dying and those who love the deceased, the relevant equation would be:

Expected utility = (utility of dying x time in dying) + (utilities of the bereaved)

These above quantities should be averaged over the population to whom the decision applies.

The QALY is Dead!

Many people will feel that the above argument is somehow wrong, even perverse. After all, if there was a group of people who had no loved ones and who died of arrhythmia with no forewarning, then they would not have access to services according to the above equation. And another uncomfortable thought – if we give death a utility based on the dread of dying (for however long it lasts, on average, in a reference population) and a utility when dead to account for the early (deferred) suffering of loved ones, then groups who take longer to die, or who have many people (on average) who love them, get premium disutilities for death. The ARC WM Director should be cancelled!

But is it the argument that is wrong or the premise? A QALY is a militantly utilitarian concept. So maybe that is where the problem lies.

Alternatives and Rationing Philosophies

Fortunately, there are many other approaches to the rationing problem, such as an approach based on the monetary value of a human life or a person trade off approach. A criticism of the latter is that it does not have an axiomatic base. But as pointed out, neither does the QALY, because it applies a theory of individual choice to rationing decisions at the population level.

Conclusion

I think there is a flaw in a utilitarian basis for resource allocation. The issue of the utility of death, when followed to its conclusion, is one more factor that throws the problem with QALYs into focus. In my (provisional) opinion, we should accept that the QALY is a poor instrument that serves a policy purpose for the moment, OR move to another method, such as cost-benefit.

References:

1. von Neumann J & Morgenstern O. Theory of Games and Economic Behavior. Princeton, NJ; Princeton University Press: 1944.
2. Lilford R. The health economics of infertility treatment. *Glob Reprod Health*. 2018; **3**(4): e23.

ARC WM Quiz

Fifty-four years ago the first human heart transplant was carried out on 3 December. Dr Christiaan Barnard transplanted Denise Darvell's donor heart into Louis Washkansky. *But for how long did the patient survive?*



email your answer to: ARCWM@warwick.ac.uk

Answer to previous quiz: Albert Szent-Györgyi was awarded the 1937 Nobel Prize in Medicine for his discoveries in connection with the biological combustion processes, with special reference to vitamin C and the catalysis of fumaric acid. Congratulations to Melita Harris who was first to answer correctly.



Social Isolation: More Evidence on Harmful Health Effects

Richard Lilford, ARC WM Director

Social isolation is associated with cognitive decline, physical frailty, disability and death in older adults. A recent interesting study shows that it is also associated with disability burden and one year mortality after admission to a critical care unit.[1]

The study was based on a large sample of elderly people in America who were admitted to an Intensive Care Unit (ICU). They were interviewed before admission to the care unit as part of their follow-up on the National Health and Aging Trends Study. That meant that only a proportion of the sample (those who were admitted to an ICU) were used to generate the cohort. Social isolation was measured using a standard tool. In total, 997 people entered the cohort following an admission to the ICU. A multi-variable model was adjusted for age, sex, dementia, frailty, length of hospital stay, use of mechanical ventilation, co-morbidity count, and pre-hospital disability. Various imputations and sensitivity analyses were carried out.

Isolation was inversely correlated with survival. Each one point increase in social isolation (on a six-point scale), was associated with a

14% increase in the hazard ratio for mortality. Disability rates also increased in association with isolation.

But is it causal? Could there be reverse causality? The measurement of social isolation before ICU admission is a strength of this study. Furthermore, it is consistent with social isolation and outcome identified in other contexts. In addition, there are numerous biological mechanisms, such as endocrine and inflammatory changes, which may make isolated people more vulnerable.

Our ARC WM has a long-standing interest in loneliness, both because of its personal importance for well-being and as a predictor of poor health. We are planning more work in this area and my colleague Dr Laura Kudrna would be interested to hear from others with a similar interest.

References:

1. Falvey JR, Cohen AB, O’Leary JR, et al. [Association of Social Isolation with Disability Burden and 1-Year Mortality Among Older Adults with Critical Illness. *JAMA Intern Med.* 2021; 181\(11\): 1433-9.](#)



False Confidence in Clinical Signs

Richard Lilford, ARC WM Director

When I teach medical students, I always point out that clinical signs are diagnostic tests, just like any others. They have sensitivities and specificities and they are often correlated. One of the most difficult signs to pick up relates to auscultation of the heart. While some murmurs are easy to detect, others are more subtle. As a student I found it difficult to master the art, but my superiors always seemed very confident. It turns out that they were falsely confident!

A recent study of experienced practitioners found that they achieved sensitivities of less than 70% against echocardiography as the reference standard.[1]

In our ARC WM, we are investigating handheld ultrasound as a diagnostic tool. We are planning to study the learning curve for the acquisition of this skill, and are considering various ways to carry out the study. We would be grateful for any thoughts or experience in conducting such a study.

Reference:

1. Jariwala N, Czako S, Brenton L, et al. [Clinically Undetectable Heart Sounds in Hospitalized Patients Undergoing Echocardiography](#). *JAMA Intern Med.* 2021; E1-2.



Childhood Obesity Following the COVID-19 Pandemic

Peter Chilton, Research Fellow

During the COVID-19 pandemic many of us may have changed our dietary habits – perhaps working from the kitchen office has led to more snacking during the day; or the increased stress has led to greater reliance of takeaway meals. Meanwhile lockdown has also curbed our activity levels. Research has already shown there to be an association with weight gain in US adults,[1] while a recently published study in JAMA has looked at children and adolescents.[2]

Using electronic health records (from the Kaiser Permanente Southern California database) the authors analysed a cohort of almost 200,000 adolescents aged 5-17 years. They compared BMI measurements from before the pandemic (March 2019-January 2020) with others taken during the pandemic (March 2020-January 2021), and then against the median BMI for sex and age. The authors adjusted for sex, race and ethnicity, health insurance, education, income and prevalence of park areas.

Results showed that children gained more weight during the pandemic than they had done before, with the greatest change (as measured by the difference to the median BMI) being in

those aged 5-11 years. When adjusted for height, this became equivalent to a mean gain of 2.3kg (95% CI 2.24-2.36) for this age group. The effect was also seen in other age groups, with those aged 12-15 gaining a mean of 2.31kg (95% CI, 2.20-2.44), and a mean gain of 1.03kg (95% CI, 0.85-1.20) in 16-17 year olds. The proportion of children who were classed as overweight or obese also increased in each age group – for example, rising from 36.2% to 45.7% in children aged 5-11.

Even prior to the pandemic we were struggling with the rise in childhood obesity, there is now a more pressing need for more to be done.

References:

1. Lin AL, Vittinghoff E, Olgin JE, Pletcher MJ, Marcus GM. [Body Weight Changes During Pandemic-Related Shelter-in-Place in a Longitudinal Cohort Study](#). *JAMA Netw Open*. 2021; 4(3): e212536.
2. Woolford SJ, Sidell M, Li X, et al. [Changes in Body Mass Index Among Children and Adolescents During the COVID-19 Pandemic](#). *JAMA*. 2021; 326(14): 1434–6.



The Genetics of Irritable Bowel Syndrome

Peter Chilton, Research Fellow

Many adults suffer from irritable bowel syndrome (IBS) to some degree, and patients can end up undergoing multiple procedures to exclude other causes of their symptoms, such as cancer. The condition is estimated to cost almost £12 billion each year across Europe, through direct and indirect costs. [1]

Previous research has suggested that IBS is two to three times more likely to develop in a person if one of their relatives also has IBS, suggesting a heritable component. To this end, a genome-wide association study was recently conducted and published in *Nature Genetics*, [2] looking at data from ~170,000 participants in the UK Biobank.

Analysis showed that a family history of IBS occurred in 24% of patients with IBS, compared to 9.5% of control patients (odds ratio 3.73 [95% CI 3.60-3.88]). Further genetic analysis of 53,400 cases and 433,201 controls (from the UK Biobank and an international initiative) found six loci that were associated with susceptibility

to IBS. Of these, four were also associated with mood and anxiety disorders and/or expressed in the nervous system. There was no evidence that genes expressed in the gut had any significance. Interestingly, there was also a significant association between IBS and self-reported exposure to antibiotics during childhood (OR 2.22, [95% CI 2.13-2.30]).

The research showed strong genetic correlations between the risk of IBS and anxiety, neuroticism and depression, with further analyses suggesting that this was due to a shared pathogenic pathway, rather than one condition causing the other.

References:

1. Hillilä MT, Färkkilä NJ, Färkkilä MA. [Societal costs for irritable bowel syndrome—a population based study.](#) *Scand J Gastroenterol.* 2010; **45**: 582–91.
2. Eijsbouts C, Zheng T, Kennedy NA, et al. [Genome-wide analysis of 53,400 people with irritable bowel syndrome highlights shared genetic pathways with mood and anxiety disorders.](#) *Nature Genetics.* 2021; **53**: 1543-52.



Estimating Seroprevalence of COVID-19 in Low-Income Countries

Peter Chilton, Research Fellow; Richard Lilford, ARC WM Director

While many of us in the UK and other high-income countries will have been double vaccinated, and may even be getting a ‘booster’, there is still a long way to go in low-income countries. A research group based in Kenya have been monitoring the seroprevalence of SARS-CoV-2 antibodies among the population of Kenya by surveilling over 3,000 blood donors.[1] Previous estimates from this group showed around 4.3% of the population carried antibodies in April-June 2020, rising to 9.1% by August-September 2020. After adjusting for age, sex and region, the authors estimated that the rate of seroprevalence had increased to 48.5% (95% CI, 45.2-52.1) by January-March 2021. This rate was higher in the capital city of Nairobi (61.8%), and lower in two rural regions, Nyanza and Western. For comparison the national vaccination programme began in Kenya in March 2021, and had been administered to ~2% of the population by July 2021.

So some cities in low-income countries may be getting towards herd immunity, and the marginal value of vaccination will be diminishing, albeit in a non-linear way. The question as to why Sub-Saharan Africa (South Africa apart), has not had more deaths is unanswered. It cannot be genetic because people of African origin have not fared well in other countries. The BCG hypothesis has been disproved. It cannot all be down to age, although that is a factor. Lack of registration may also play a part, but we have not had the scenes of mass burials reported from India, Brazil and Turkey. One theory is that people in Africa are exposed to a different spectrum of coronaviruses, conferring acquired cross-immunity.

Reference:

1. Uyoga S, Adetifa IMO, Otiende M, et al. [Prevalence of SARS-CoV-2 Antibodies From a National Serosurveillance of Kenyan Blood Donors, January-March 2021](#). *JAMA*. 2021; **326**(14): 1436–8.

Latest News and Events

International Conference on Integrated Care, ICIC22

ARC West Midlands have recently become a knowledge partner of the *22nd International Conference on Integrated Care*, which will take place in the [Odeon](#) in Odense, Denmark, from 23–25 May 2022.

The conference is a partnership with [Healthcare Denmark](#) in cooperation with the [Region of Southern Denmark](#), [Odense University Hospital](#), Municipality of Odense, Campus Odense and [Destination FYN](#). Denmark is among international frontrunners when it comes to integrated healthcare services.

The conference will operate as a hybrid event meaning that people who do not wish to travel can join and present at the conference via video link and present their paper digitally. However, a delegate fee and registration will still be required. There are special subsidised rates for students, and bursary places for patients, carers and community representatives.

ARC WM associates are eligible for a 10% discount, please email ARCWM@warwick.ac.uk

Call for Papers Deadline, 31 December

Submissions are currently being taken on research, policy or education and specifically related to the [Conference Themes](#) and the [Nine Pillars of Integrated Care](#). The deadline has been extended until 31 December.

Full abstract should be limited to 500 words. All accepted abstracts will be published in the [International Journal of Integrated Care](#) (IF 5.120), and recordings of presentations and workshops and all digital posters will be connected to the [Knowledge Tree](#).

Special consideration will be given to papers that can demonstrate active people involvement in design, implementation and/or evaluation.

For full details of the conference, please visit: integratedcarefoundation.org/events/icic22-22nd-international-conference-on-integrated-care

National NIHR ARC Newsletter - November 2021



The November issue of the national NIHR ARC newsletter is now [available online](#), with news including the disproportionate impact of COVID-19 on people in the North of England; an urgent need for research examining the link between COVID-19 and new-onset diabetes; and implantable heart technology. There are also links to recent blogs and details of upcoming online events.

To subscribe to future issues, please visit: <https://tinyurl.com/ARCSnewsletter>.

Congratulations to Mashkura Begum

Congratulations to Mashkura Begum, an ARC WM Public Contributor, who has recently been appointed to the NIHR Editorial Board.

Mashkura is also a non-executive director of Saathi house, an inner-city women's organisation.

The NIHR have published their first year of diversity data for funding programmes this week, covering the year 2020-21. This is their first annual collation of diversity data following the introduction of an Equality and Data Reporting System in early 2020, and will represent the benchmark against which future work will be measured.

A summary of the key findings can be found at: [nihr.ac.uk/news/nihr-publishes-first-year-of-diversity-data-for-funding-programmes/29420](https://www.nihr.ac.uk/news/nihr-publishes-first-year-of-diversity-data-for-funding-programmes/29420).

The full report is available at: [nihr.ac.uk/about-us/our-key-priorities/equality-diversity-and-inclusion/NIHR-Diversity-Data-Report-2021.pdf](https://www.nihr.ac.uk/about-us/our-key-priorities/equality-diversity-and-inclusion/NIHR-Diversity-Data-Report-2021.pdf)

NIHR RDS Residential Grant Writing Retreat

The NIHR Research Design Service (RDS) is offering a three-day residential *Grant Development and Writing Retreat* over 23-25 March 2022 in Kendal, Lake District.

The Retreat aims to provide a supportive environment for teams of two or three people, to develop and rapidly progress their social care research proposal for submission to the NIHR RfSC Research Programme in Jan 2023.

It is encouraged (but not essential) that a member of the wider research team is a social care professional employed in England. Successful applicants will be offered a free place at the retreat (including food and accommodation, but excluding travel). More details can be found at: rds-eoe.nihr.ac.uk/news-and-events/news/rfsc-writing-retreat/

If you are interested in applying, please [complete an expression of interest](#) by **Tuesday 7 December 2021**.

NIHR Population Health Career Scientist Award

The NIHR have recently launched the Population Health Career Scientist Award (PHCSA), which aims to enable senior researchers to make the next step to Reader/Professor level. This new award will help answer the most important research questions facing decision-makers at local and national levels to improve health and reduce inequalities.

Applicants representing the wide range of disciplines that undertake research in any

area that impacts the determinants of health (e.g. environmental science, mathematics, architecture, engineering, geography, education, social sciences, social policy, or arts) are welcome.

The deadline for proposals is **13 January 2022**. For more information and to apply, please visit:

<https://www.nihr.ac.uk/funding/population-health-career-scientist-award/28901>

Recent Publications

- Abel KM, Carr MJ, Ashcroft DM, Chalder T, Chew-Graham CA, Hope H, Kapur N, McManus S, Steeg S, Webb RT, Pierce M. [Association of SARS-CoV-2 Infection With Psychological Distress, Psychotropic Prescribing, Fatigue, and Sleep Problems Among UK Primary Care Patients](#). *JAMA Netw Open*. 2021; **4**(11): e2134803.
- AlSayegh A, Gassan AA, Bajpai RC, Muller S, Welsh V, Kwok CS, Mallen CD. [Readmission after index hospital discharge among patients with COVID-19: Protocol for a systematic review and meta-analysis](#). *Health Sci Rep*. 2021; **4**(4): e417.
- Ayorinde AA, Boardman F, McGranahan M, Porter L, Eze NA, Sallis A, Buck R, Hadley A, Ludeke M, Mann S, Oyebode O. [Enabling women to access preferred methods of contraception: a rapid review and behavioural analysis](#). *BMC Public Health*. 2021; **21**: 2176.
- Bala L, Pedder S, Sam AH, Brown C. [Assessing the predictive validity of the UCAT-A systematic review and narrative synthesis](#). *Med Teach*. 2021; **23**: 1-9.
- Brown TP, Perkins GD, Smith CM, Deakin CD, Fothergill R. [Are there disparities in the location of automated external defibrillators in England?](#) *Resuscitation*. 2021; **170**: 28-35.
- Brown TP, Perkins GD, Smith CM, Deakin CD, Fothergill R. [Bystander cardiopulmonary resuscitation for paediatric out-of-hospital cardiac arrest in England: an observational registry cohort study](#). *Resuscitation*. 2022; **170**: 17-25.
- Cruz Rivera S, Dickens AP, Aiyegbusi OL, Flint R, Fleetcroft C, McPherson D, Collis P, Calvert MJ. [Patient-reported outcomes in the regulatory approval of medical devices](#). *Nat Med*. 2021.
- Dunn KM, Campbell P, Lewis M, Hill JC, van der Windt DA, Afolabi E, Protheroe J, Wathall S, Jowett S, Oppong R, Mallen CD, Hay EM, Foster NE. [Refinement and validation of a tool for stratifying patients with musculoskeletal pain](#). *Eur J Pain*. 2021; **25**(10): 2081-93.
- Eshelby V, Sogut M, Jolly K, Vlaev I, Elliott MT. [Stay home and stay active? The impact of stay-at-home restrictions on physical activity routines in the UK during the COVID-19 pandemic](#). *J Sports Sci*. 2021: 1-13.
- Gardiner E, Lai JF, Khanna D, Meza G, de Wildt G, Taylor B. [Exploring women's decisions of where to give birth in the Peruvian Amazon; why do women continue to give birth at home? A qualitative study](#). *PLoS One*. 2021; **16**(9): e0257135.
- Gorman E, Shankar-Hari M, Hopkins P, Tunnicliffe WS, Perkins GD, Silversides J, McGuigan P, Krasnodembskaya A, Jackson C, Boyle R, McFerran J, McDowell C, Campbell C, McFarland M, Smythe J, Thompson J, Williams B, Curley G, Laffey JG, Clarke M, McAuley DF, O'Kane CM. [Repair of acute respiratory distress syndrome by stromal cell administration \(REALIST\) trial: A phase 1 trial](#). *EClinicalMedicine*. 2021; **4**1: 101167.

- Griffiths SL, Leighton SP, Mallikarjun PK, Blake G, Everard L, Jones PB, Fowler D, Hodgekins J, Amos T, Freemantle N, Sharma V, Marshall M, McCrone P, Singh SP, Birchwood M, Upthegrove R. [Structure and stability of symptoms in first episode psychosis: a longitudinal network approach](#). *Transl Psychiatry*. 2021; **11**(1): 567.
- Grove A, Pope C, Currie G, Clarke A. [Paragons, Mavericks and Innovators – a typology of orthopaedic surgeons’ professional identities. A comparative case study of evidence-based practice](#). *Social Health Illness*. 2021.
- Harris B, Ajisola M, Alam RM, Watkins JA, Arvanitis TN, Bakibinga P, Chipwaza B, Choudhury NN, Kibe P, Fayehun O, Omigbodun A, Owoaje E, Pemba S, Potter R, Rizvi N, Sturt J, Cave J, Iqbal R, Kabaria C, Kalolo A, Kyobutungi C, Lilford RJ, Mashanya T, Ndegese S, Rahman O, Sayani S, Yusuf R, Griffiths F. [Mobile consulting as an option for delivering healthcare services in low-resource settings in low- and middle-income countries: A mixed-methods study](#). *Digit Health*. 2021; 7.
- Knight T, Lasserson D. [Hospital at home for acute medical illness: The 21st century acute medical unit for a changing population](#). *J Intern Med*. 2021.
- Kokab F, Jones E, Goodwin L, Taylor B, Kenyon S. [Community Midwives views of postnatal care in the UK; a descriptive qualitative study](#). *Midwifery*. 2022; **104**.
- Lackey S, Schmidtke KA, Vlaev I. [A mixed-methods study describing behavioral factors that influenced general practitioners’ experiences using triage during the COVID-19 pandemic](#). *BMC Fam Pract*. 2021; **22**(1): 146.
- Miller R, Glasby J, Dickinson H. [Integrated Health and Social Care in England: Ten Years On](#). *Int J Integrated Care*. 2021; **21**(s2): 6.
- Nakafero G, Grainge MJ, Card T, Taal MW, Aithal GP, Zhang W, Doherty M, Fox CP, Mallen CD, Abhishek A. [Development and validation of a prognostic model for leflunomide discontinuation with abnormal blood-tests during long-term treatment: cohort study using data from Clinical Practice Research Datalink Gold and Aurum](#). *Rheumatol*. 2021: keab790.
- Perkins GD, Callaway CW, Haywood K, Neumar RW, Lilja G, Rowland MJ, Sawyer KN, Skrifvars MB, Nolan JP. [Brain injury after cardiac arrest](#). *Lancet*. 2021; **398**(10307): 1269-78.
- Pilosof NP, Barrett M, Oborn E, Barkai G, Pessach IM, Zimlichman E. [Inpatient Telemedicine and New Models of Care during COVID-19: Hospital Design Strategies to Enhance Patient and Staff Safety](#). *Int J Environ Res Public Health*. 2021; **18**(16): 8391.
- Price K, Lee K C, Woolley K, Falk H, Peck M, Lilford R, Moiemmen N. [Burn injury prevention in low- and middle- income countries: Scoping systematic review](#). *Burns & Trauma*. 2021; **9**: tkab037.
- Routen A, O’Mahoney L, Ayoubkhani D, Banerjee A, Brightling C, Calvert M, Chaturvedi N, Diamond I, Eggo R, Elliott P, Evans RA, Haroon S, Herret E, O’Hara ME, Shafran R, Stanborough J, Stephenson T, Sterne J, Ward H, Khunti K. [Understanding and tracking the impact of long COVID in the United Kingdom](#). *Nat Med*. 2021.

Schmidtke KA, Drinkwater KG. [A cross-sectional survey assessing the influence of theoretically informed behavioural factors on hand hygiene across seven countries during the COVID-19 pandemic.](#) *BMC Public Health.* 2021; **21**(1): 1432.

Singh SP, Tuomainen H, Bouliotis G, Canaway A, De Girolamo G, Dieleman GC, Franić T, Madan J, Maras A, McNicholas F, Paul M, Purper-Ouakil D, Santosh P, Schulze UME, Street C, Tremmery S, Verhulst FC, Wells P, Wolke D, Warwick J; and the MILESTONE Consortium. [Effect of managed transition on mental health outcomes for young people at the child–adult mental health service boundary: a randomised clinical trial.](#) *Psychol Med* 2021: 1–12.

Smith CM, Lall R, Spaight R, Fothergill RT, Brown T, Perkins GD. [Calculating real-world travel routes instead of straight-line distance in the community response to out-of-hospital cardiac arrest.](#) *Resusc Plus.* 2021; **8**: 100176.

Stewart S, Newson L, Briggs TA, Grammatopoulos D, Young L, Gill P. [Long COVID risk - a signal to address sex hormones and women's health.](#) *Lancet Reg Health Eur.* 2021; **11**: 100242.

Tyldesley-Marshall N, Greenfield S, Parretti HM, Gokal K, Greaves C, Jolly K, Maddison R, Daley AJ. [Snackivity™ to promote physical activity: A qualitative study.](#) *Int J Behav Med.* 2021: 1-12.

Weddell J, Hider SL, Mallen CD, Muller S. [What non-pharmacological treatments do people with polymyalgia rheumatica try: results from the PMR Cohort Study.](#) *Rheumatol Int.* 2021.

Werkö SS, Staniszewska S. [Patient and public involvement in Health Technology Assessment: a new dawn?](#) *Int J Technol Assess Health Care.* 2021; **37**(1):e54.