

# IMCZ NEWS



JUNE / JULY 2020



## EDITORIAL

There is light at the end of the Covid-19 tunnel. I'm just hoping it's not an oncoming train (it's being so cheerful that keeps me going). But seriously, the dramatic reduction in cases in Switzerland and in most of Europe, is really good news. Hopefully, if we manage things properly, the worst is behind us and we can find a way to live with the pandemic while enjoying a reasonably normal life.

Unsurprisingly, this edition of the Newsletter has a strong Covid-19 flavour. Even the sports and humour sections are substantially Covid themed. That wasn't my plan, but it's how it evolved because of the focus of the contributors. It's also a bit shorter as there is no travel section and, of course, no reporting of events held. Still, I hope you enjoy what's there.



As for the IMCZ, we are looking to return to normal as far as possible.

All our in-person events have been suspended for the duration of lockdown and we've been running a virtual Stammtisch every Thursday in place of our regular meetings. We will now resume our planning for our traditional Summer Event and for Special Stammtisch meetings and find ways to make them happen within whatever constraints are required to contain the pandemic. We hope to see as many of you as possible at these events.

In the meantime, enjoy the relaxed rules on association with others, but stay safe. The virus is still with us and we need to work together to keep it at a manageable level so we don't have to experience lockdown again.

Alan Cattell

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## FUTURE EVENTS

In the immediate future we'll continue with the virtual Stammtisch meetings, every Thursday at 18:00 on Zoom. But now that the lockdown is being relaxed, we will be starting up our programme of events again. We still need to respect the measures which have been defined by each branch – which we don't yet know fully. We'll be having a Board meeting early in June and shortly after that we'll announce how we're going forward and start publicising the events which we've organised. So keep an eye on the events section of the website. We're assuming we can restart the regular Stammtisch from 18th June, but please check the website for up to date information.

Welcome to the new normal...

See you soon

Alan

## ZIWC

The Zug International Woman's Club recently held its AGM remotely by post and confirmed its new Board appointments. On behalf of the IMCZ, I would like to congratulate Cristina Rocco on her election as President of the ZIWC and also all the other members of their Board on their appointments. The IMCZ looks forward to continuing the collaboration between our two Clubs with the aim of supporting each other's events and also promoting new joint events.

Bill Lichtensteiger, President of the IMCZ



## Epidemics and Pandemics in History

Contributed by IMCZ honorary member Muthana Kubba

A pandemic is the global outbreak of a disease. There are many examples in history, the most recent being the [COVID-19 pandemic](#), declared as such by the World Health Organization on March 12, 2020.

Pandemics are generally classified as epidemics first, which is the rapid spread of a disease across a particular region or regions. The [Zika virus](#) outbreak that began in Brazil in 2014 and made its way across the Caribbean and Latin America was an epidemic, as was the [Ebola](#) outbreak in West Africa in 2014-2016. The U.S. has been experiencing an [opioid](#) epidemic since 2017 because of the widespread misuse and high numbers of deaths caused by the drug, according to the [U.S. Department of Health and Human Services](#).

COVID-19 began as an epidemic in China, before making its way around the world in a matter of months and becoming a pandemic. But epidemics don't always become pandemics, and it's not always a fast or clear transition. For example, [HIV](#) was considered an epidemic in West Africa for decades before becoming a pandemic in the late 20th century. Now, thanks to advances in modern medicine, HIV is considered endemic, which means the rate of the disease is stable and predictable among certain populations, according to the [American Medical Association](#).

The Corona virus has now been with us for more than 11 weeks and has caused total global chaos. Apart from the unfortunate toll of up to 300'000 fatalities worldwide, it has disrupted whole economies with untold damage. The total shutdown in virtually all countries has had mixed consequences. On the one hand it has caused immeasurable financial hardship with very large numbers of law-abiding citizens suddenly losing their livelihoods and becoming unable to feed their families. On the other hand, with most manufacturing plants shut down, and the vast reduction in air and road traffic, has resulted in a substantial improvement in air quality and the environment generally.

What makes the Corona virus exceptionally dangerous is the fact that it has a relatively long incubation period, up to 10 days, and is highly contagious during a large part of this incubation period. Furthermore, the infected persons show no symptoms during the incubation period.

Some easing of the draconic measures ordered by governments to contain the corona virus, have been announced, but it will take a long time for the economies to go back to normal. Mind you, even then there is no guarantee that the nasty virus will have disappeared for good. The danger will lurk and stay with us for as long as no medications to treat and immunise against it are available.

In the meantime, we mortals have to wait and hope that we manage somehow not to be infected until such medications are developed and become available. Needless to say, most laboratories, research centres and pharma companies are working flat out to develop vaccines and treatments to support infected persons.

In the past two decades, humanity has seen at least 19 epidemics, almost one every year. It would be helpful to review some of them in order to see the present one in perspective.

### 1. West African Ebola Epidemic 2014-2016

With over 30'000 reported infection cases and almost 12'000 deaths, this was one of the worst epidemics to hit West Africa recently. There is no cure for Ebola and no vaccine has yet been developed. It is therefore, still a potentially very dangerous virus that can emerge any time.

### 2. Swine Flu Pandemic H1N1 2009-2010

In one year the virus infected as many as 1.4 billion people across the globe and killed up to 500'000 people. It primarily affected children and young adults and 80% of the deaths were in people younger than 65 years. Luckily a vaccine has been developed and is now included in the annual flu vaccine.



### 3. AIDS Pandemic 1981-Present

It became a global pandemic in the 1980's and continues to the present day as an epidemic in certain parts of the world. It is estimated that it had claimed 35 million lives since it was first identified. The virus causing it is called HIV had made its way around the world and it is estimated that up to 40 million people are infected with it. Medication to treat it has been developed and many people are now able to lead normal lives after having been infected.

### 4. Asian Flu 1957-1958

This spread rapidly to cover most parts of the globe. It had claimed up to one million lives with 116000 deaths in United States alone. The pandemic was caused by a family of avian flu viruses.

### 5. The Spanish Flu 1918-1920

It is estimated that up to 500 million people fell ill with this flu, with at least 100 million deaths. In spite of its name, it did not start in Spain. It spread just after World War I, with high lethality due to cramped conditions of soldiers and poor wartime nutrition.

### 6. Polio Epidemic 1916

It started in the United States with 27000 infections and 6000 deaths. The disease



## IMCZ BOARD MEMBERS

Thumbnail biographies of board members can be found on our website [www.imcz.club](http://www.imcz.club) under 'About Us' section

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affects mainly children but the Salk vaccine, developed in 1954, has put an effective end to it. President Franklin Roosevelt was diagnosed with polio in 1921.

### 7. The Flu Pandemic 1889-1890

It was first reported in St. Petersburg, Russia but spread rapidly throughout Europe and the rest of the world. It is estimated that up to 1 million people were killed by it, and it took only five weeks for it to reach peak mortality.

### 8. Russian Plague 1770-1772

Moscow became plague ravaged in 1770, and the terror of quarantined citizens erupted into violence with riots spreading throughout the city and culminated in the murder of Archbishop Ambrosius. The empress of Russia, Catherine the Great, was so desperate to contain the plague and restore public order that she issued a hasty decree ordering that all factories be moved away from Moscow. As many as 100'000 people had lost their lives through the plague.

### 9. The Great Plague of London 1665-1666

This was the famous black death which caused a mass exodus from London in 1666. It started in April 1665 and spread rapidly through the

hot summer months. By the time it ended 100'000 people, including 15% of the population of London, had lost their lives. Soon after it ended, the great fire of London started in September 1666. It lasted for four very long days, devastating large portions of the city.

### 10. The Black Death 1346-1353

It came all the way from Asia to Europe leaving devastation in its wake. It is said that up to 50% of the population of Europe was wiped out during this outbreak. The bodies of victims were burned in mass graves. This plague changed the course of Europe's history. Labour became harder to find, bringing about better pay for workers who could afford better nutrition and it ended Europe's system of serfdom. The lack of cheap labour contributed to technological innovation.

Pandemics have not disappeared yet, as the case of Corona had shown, and they will probably stay with us for quite a while yet.



However, we have developed lots of ways to handle them and minimise the damage they can cause.

### Further reading

[Total number of fatalities in Switzerland](#)  
[Pandemics in history](#)



## Investment Commentary July 2020

*Contributed by IMCZ Member Christian Wagner  
WAGNER & ASSOCIATES Investment Consulting*

### Economics And Politics

The figures for the first quarter confirm the worst fears for the world's economy, even more so since only the last month was really affected by the Coronavirus. Interestingly, the Euro area GDP lost the least with -3.8%, while the USA (-4.8%) and China (-6.8%) were hit harder. State help packages in the trillions have been set up but they are probably not enough even if the implementation goes smoothly. The second quarter is bound to be worse.

### Bond Markets

The central banks are pulling out all the stops to support the economy and markets. The Fed has established a whole series of mysterious acronyms (e.g. CPFF, MMLF, PMCCF, SMCCF) which all help in different ways. However, it runs the danger of violating the Federal Reserve Act since it is giving money without any security. The ECB for its part is already confronted with a judgement by Germany's highest court which has ruled that it overstepped its authority with the Public Sector Purchase Programme (PSPP). The fact that the EU's highest court had approved it in December 2015 doesn't make things easier.

### Equity Markets

The markets pose a conundrum, solvable only by conjecture. On one hand, institutional investors are buying because they have little alternative, government bond yields are paltry or even negative and alternative investments limited. This money is concentrated on



pharmaceuticals and technology shares which are already over-represented in the common indices. On the other hand, the fundamental economic data is anything but positive and the valuations (PER, PBV) already at record highs again. Furthermore, it is assumed that both consumer and industry activity will be back at the same levels as before the Corona crisis.

### Currencies

The Trio USD, CHF and JPY remain the preferred currencies, and their relative strength versus other currencies is probably increasing. This is primarily true for the exchange rates against currencies of developing and threshold countries of which Argentina, Ecuador and Lebanon have already declared insolvency. In view of the disagreements in the EU with regard to domestic and foreign policies, the EUR will stay under pressure.

### Food For Thought

The whole world is waiting impatiently for a speedy end to the Corona crisis, and the financial world has already determined that we are on the verge of it with little damage. Economic models presuppose that consumer and corporate behaviour have not changed, and the consequences of corporate and state over-indebtedness cannot be taken into account.

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## Protein Transition: Artificial Meat And Other Substitutes

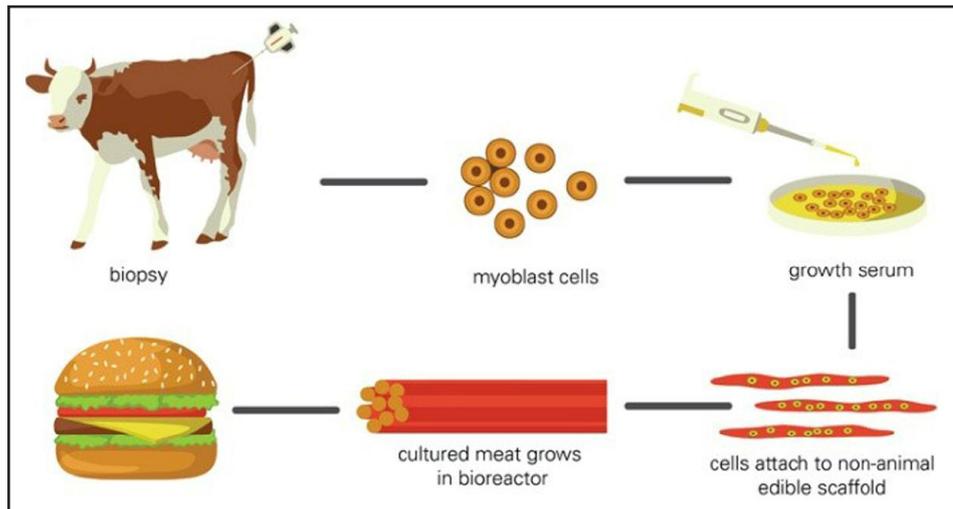
Contributed by Remo P. Jutzeler van Wijlen, Head R&D Sponser Sports Food, Ing. Appl Food Sciences, MAS Nutrition & Health ETHZ

*“Emerging technologies across the alternative protein landscape are poised to transform protein production in the coming years by offering higher efficiency, greater consistency, and less harm to public health, the environment, and animals than conventional meat production. Within this landscape, the cultivated meat industry — meat produced through animal cell culture, ... — is a relatively young but rapidly growing field. Cultivated meat builds upon deep insights into cell biology and biological manufacturing procured through the development of much more mature industries like biopharma and industrial biotechnology, and these fields serve as informative models for scale-up and growth.”*

This introduction is taken from a non-profit stakeholder’s report about costs and production volumes for cultivated meat (The Good Food Institute). As an interested reader in scientific and industry news, you have probably already read about “lab meat” in the papers. Whereas the public discussion mostly is about the still seemingly science-fictional technology, taste and acceptance of cell-cultivated steaks and burgers, the scientific and industry discussions centre on partnerships to develop time-, cost- and resources-efficient processes to achieve commercial feasibility. The report concludes that price parity with conventional meat production is achievable with industrial scale production, though not without

mycoproteins, are believed to be not only healthier but also more sustainable than meat. On a large scale, however, evidence on their overall sustainability as meat substitute is disputed. In particular, the carbon footprint of fungal mycoprotein production is quite substantial due to the necessary processing steps. Recent analyses are missed. One study (Souza Filho, 2019) estimates environmental impacts similar to those of chicken and pork farming, while a stakeholder’s review in the *Journal of Cleaner Production* (2020) claims a 10 to 4 times lower carbon impact and even higher land and water savings. Either way, neither soya nor mycoproteins can ever achieve parity with the sustainability potential of aquaculture and insects, nor of some protein-rich crops.

Sustainability, however, is not just a question of input-output comparisons to traditional meat sources. First and foremost comes consumer acceptance. Only substitutes seen as palatable will be welcomed by consumers. For a protein source to become sustainable in practice, market success is a prerequisite. In this respect, new developments targeted to hit the sweet spot of meat and fish consumers by creating products as authentic in organoleptic features as possible should have a major



substantial, multi-factorial optimisation. For instance, a lot of potential synergies with by-products or waste streams from agriculture need to be considered.

Besides this relatively recent cell cultivation technology, the food industry has developed meat substitutes from various sources for some time. Well-established substitutes in the supermarkets such as “classic” Tofu foods from soya, and Quorn, made from fungi

advantage. Even the macronutrient composition can be adjusted, e.g plant-based fish substitutes are enriched with algal omega-3 fatty acids. For my part, I doubt that a complex food such as “fish-free tuna” with added micronutrients really offers a high grade of sustainability. Nevertheless, if such fancy foods help to reduce fishing on a large scale, they may well be a significant step forward, all things considered.

**FISH-FREE TUNA NAKED IN WATER**

Nutrition Facts	
1 serving per container	
Serving size 1 pouch (94g)	
Amount per serving	
<b>Calories</b>	<b>90</b>
	% Daily Value*
<b>Total Fat</b> 2.5g	3%
Saturated Fat 0g	0%
Trans Fat 0g	
Polysaturated Fat 1g	
Monounsaturated Fat 0g	
Cholesterol 0mg	0%
Sodium 450mg	20%
<b>Total Carbohydrate</b> 5g	2%
Dietary Fiber 1g	4%
Total Sugars 0g	
Includes 0g Added Sugars	0%
<b>Protein</b> 14g	22%
Vitamin D 0mcg	0%
Calcium 30mg	2%
Iron 1mg	6%
Potassium 100mg	2%

\* The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

INGREDIENTS: WATER, GOOD CATCH™ 6-PLANT PROTEIN BLEND (PEA PROTEIN ISOLATE, SOY PROTEIN CONCENTRATE, CHICKPEA FLOUR, LENTIL PROTEIN, FABA PROTEIN, NAVY BEAN FLOUR), ALGAL OIL\*, SEA SALT, SUNFLOWER OIL, SEAWEED POWDER (SEAWEED, SALT), CITRIC ACID, ONION POWDER, YEAST EXTRACT (YEAST, SALT), GARLIC POWDER, SOY LECITHIN. CONTAINS SOY

\*PLANT SOURCE OF OMEGA-3 DHA





## How to live with SARS-CoV-2

Contributed by IMCZ member Alan Cattell

### A complex and puzzling disease – which we need to learn to manage

The first pandemic in “modern” times (post genome analysis) is certainly challenging us. It’s turned a lot of what we took for granted on its head. The reduction of contact with friends and family and being unable to enjoy the simple pleasures of communal eating, drinking and socialising is a significant strain for all – and these are some of the least important impacts of the virus.

Now that the tide has turned in Switzerland (for the moment at least), we look forward to ever more freedom to re-establish a more normal life. *But the disease is not defeated* and the number of cases *will* grow exponentially again if we can’t find a way to eliminate it, or at least manage it. If we go back to our collective behaviour of last year, then Covid-19 will explode again just as it did this year. Nothing is more certain.

In addition to following the key principles of distancing where possible, wearing masks when you can’t keep your distance and observing the hygiene rules, we have only four main ways to address the disease (plus lockdown of course – which we want to avoid):

- Let it have its way and accept the casualty level resulting (10’s of millions of deaths at least).
- Develop treatments which mitigate the severity of the disease and reduce mortality.
- Develop viable vaccines against the disease and vaccinate a large percentage of the population (between 65% and 80% is estimated for herd immunity).
- Find ways to manage the infection in the community through aggressive track-and-trace coupled with quarantine and contact isolation to keep the number of active cases low and prevent the explosive growth we saw in the early days.

The first option is, hopefully, not a serious option, at least where we have a choice. Option b) is important, but does little to manage the number of cases and prevent health systems being overwhelmed. Options c) and d) will minimise the number of cases but option c) requires a breakthrough while option d) is implementable now. This last option is the main focus of this article.

### Covid-19 understanding is growing - but it’s early days

In the April newsletter I summarised some of what was known about the SARS-CoV-2 Coronavirus at that time. Since then there has been an unprecedented amount of work

to understand the virus and how it works and identify treatments. The scientific understanding is developing at an astonishing pace. Keeping track is a challenge in itself. At the time of writing, I found 1,673 clinical trials<sup>[1]</sup> of treatments to mitigate Covid-19, documented by the US NIH. These are mainly aimed at exploring the therapeutic value of existing drugs or therapies. On the WHO site, there is reference<sup>[2]</sup> to 10 candidate vaccines in clinical evaluation and an additional 114 in preclinical evaluation (research phase). The effort is huge and involves the Pharmaceutical industry, Biotech start-ups, Universities and many others.

Our understanding of the disease and how it spreads is also maturing – and it’s complicated. A large percentage of cases are asymptomatic or have mild symptoms. 5% or so of patients have longer term effects, lasting several weeks, and we don’t yet know if there are long term consequences. Some people (including younger people) have a massive immune overreaction some time after becoming symptomatic, even if their initial symptoms are not severe. Fortunately this is rare, but it’s often fatal. The death rate amongst older patients is very high and accounts for the vast majority of Covid-19 deaths. There is also some evidence of marked variations in death rates between ethnic groups – up to 4 times higher risk for some. This latter evidence, while preliminary, is interesting as it points to some genetic based effects which we can hopefully use to understand the disease mechanisms better and develop more targeted therapy to protect everyone.

Some treatments which have been trialled look promising. Good results have been achieved from transfusion of plasma from recovered patients into those who are critically ill. The anti-viral drug Remdesivir is reported to have positive therapeutic value. However, it’s early days and establishing a full array of effective treatment protocols will take time.

Improved therapeutic means are important, but they don’t prevent a health system being overwhelmed by the scale of the pandemic. Therapeutic improvements can help those in need, and might reduce the time a patient spends in hospital, but they don’t help control the spread of the disease. They don’t help us much in keeping the overall number of active cases to a manageable level.

### Vaccine Development

The ideal solution to the SARS-CoV-2 virus is the development of effective vaccines which stimulate long-term immunity. However, as I mentioned in my April article, rapid vaccine development is by no means certain. The fastest vaccine development to date (for mumps) took around 4 years. Most virus development attempts fail because the

necessary immune response is not stimulated, or because of side-effects (and there are many other reasons). Remember, unlike drugs for life-threatening conditions, vaccines are given to HEALTHY people and negative reactions need to be below the 1:100,000 level to be acceptable (i.e. effectively unmeasurable). Drugs for severe conditions only need to show a net benefit – i.e. more people survive with the drug than without it. (e.g. in a sample of 100 patients, 20 survive with drug X and only 10 survive with a placebo – but it might be a different 10!) For vaccines the safety requirement is MUCH higher and adverse reactions are tracked continually after a vaccine is licensed. Also, possible allergic reactions need to be clarified so that those patients likely to suffer from these don’t receive the vaccine. So making good vaccines is difficult.

There is still no vaccine against HIV after all this time despite major investment. Known coronaviruses do not tend to trigger long-lasting immunity. About a quarter of common colds are caused by human coronaviruses, but the immune response fades so rapidly that people can become re-infected the next year. Worryingly, there is some evidence<sup>[3]</sup> (early stage – to be confirmed) that the immune response of people who have recovered from Covid-19 follows this pattern and falls off quite quickly. If this is correct, then herd immunity cannot be established in a population through natural infection and regular (e.g. annual) vaccination would be required.

However, as mentioned, the size of the current effort, and the number of vaccine candidates, are unprecedented so there is good reason to hope. Scientists have worked on coronavirus vaccines before, so are not starting from scratch. The two coronaviruses which have caused lethal outbreaks previously, SARS-CoV-1 and MERS, were studied intensively and vaccine research went ahead for both. But no vaccines were licensed, partly because SARS fizzled out and MERS is regional to the Middle East.

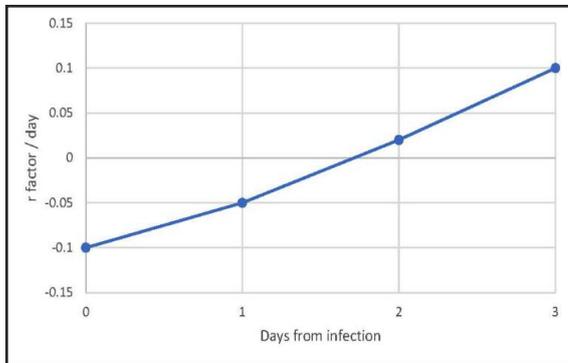
### Hope for the best, Plan for the worst

The only one of our four main options to manage the infection which can be implemented immediately is that of contact tracing, quarantining of infected people and isolation of their contacts. This is only realistic while the number of active cases of the disease is low, otherwise the amount of work needed is unfeasibly huge.

So what is involved? When a person has symptoms, they need to be tested. Given a positive test result, it is necessary to track as many as possible of the people they’ve been in close contact with in the past few days. Risk of infection for a contact is assessed and those at risk are isolated (at home). In this way

the chain of further infection is broken. But it's not easy. Do you remember all your contacts over the last 4 or 5 days? How can you warn the strangers you sat next to on the train for 30 minutes? Identifying contacts is a time consuming and labour intensive process and is far from complete. Also, before designing a tracking approach, we need to understand the parameters of this particular disease so we can answer the questions:

1. For how many days before a positive test result must contacts be traced?
2. How quickly does this tracing need to be done before it's too late to make a difference? (i.e. "contacts" are already infectious and spreading the disease.)
3. What success rate do we need to achieve in identifying contacts to make it worthwhile?



These topics are being looked at in great detail by epidemiologists. A recent paper in Science has given us some good initial answers to these questions.<sup>[4]</sup> The authors looked at the parameters of the disease and used the best actual real-world data available to model transmission by people who are symptomatic, asymptomatic and pre-symptomatic and also environmental transmission (e.g. via contaminated surfaces). Using these parameters they built a model which unfortunately shows that contact tracing needs to happen quite quickly. The graph above shows (for a given % success in isolating cases and quarantining contacts) the daily r factor for transmission. (r is the exponential growth rate. A negative r means falling case numbers.  $r = 0.1$  means number of cases doubles in a week) The clear conclusion is that contact tracing and isolation need to happen **within 2 days** to have a significant benefit. "Instant" contact tracing has a dramatic effect on the ability to manage disease propagation. (For a more detailed explanation have a look at Fig.3 of reference 4.) So how can "instant" contact tracing be realised?

## Track and Trace App

In addition to the normal, manual, track and trace activities already in place in Switzerland, we have the opportunity to use technology to improve overall tracking efficiency. To increase tracking speed, and to address contacts with strangers, some form of automation is desirable and Smart Phone App technology can deliver it

with existing technology. No app is "the solution" to the pandemic, but rather it can be an additional rapid response tool which compliments existing measures and therefore helps reduce the overall rate of infection.

There are, however, major issues around public acceptance given people's entirely reasonable privacy concerns. Early apps use geo-location information and allowed people to be tracked (location and time), with unfortunate personal consequences for some users. A great deal of embarrassment was caused by the app used in South Korea for example.

To address these challenges, Google and Apple have joined forces to provide a defined API (Application Programming Interface) which will allow the development of apps which meet the needs of the various national health bodies but respect the privacy of users by preventing mass surveillance by malicious actors (state or otherwise). The two main Swiss Technical Universities (Lausanne and Zurich) have been working with them and have implemented the first app design based on this API which fully respects privacy.

## Apple / Google API rules

The rules governing the use of the API are as follows: Any app :

- must be made by or for the use of an official government public health authority, and they can only be used for the purpose of responding to Covid-19. It will be withdrawn when the need is no longer there.
- needs to ask consent of the user to actually employ the API before it can actually be used.
- requires a user's consent to share a positive test result with the back-end system (see later)
- should gather only the minimum info necessary for the purposes of exposure notification, and should use that only for the sake of COVID-19 response. (Use for advertising or other purposes is blocked.)
- can't access, or even seek permission to access, a device's Location Services, which provides specific geolocation data.
- should work country wide and be unique in a country.

An additional benefit of using this API is that the different national apps will be interoperable, so your app will work in other countries.

This framework is a good start for ensuring privacy, and therefore gaining acceptance, but the app itself needs to go further.



1. Install App

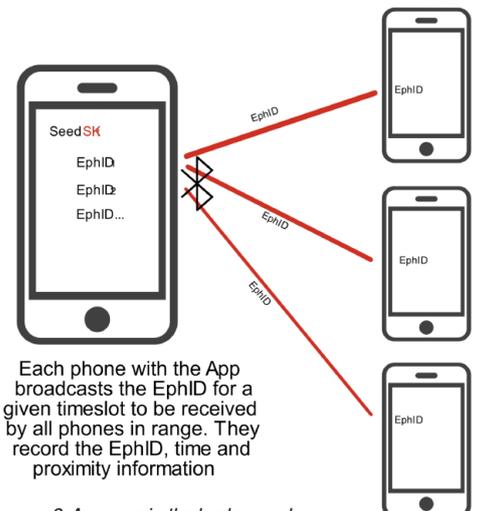
## The Swiss DP3T App

The EPFL and ETHZ, together with colleagues from KU Leuven, TU Delft, UCL, CISPA, Oxford and Torino have developed a **Decentralized Privacy-Preserving Proximity Tracing** application architecture. In this, *all* of the data gathering and the infection risk assessment is done in each phone and is *not* shared with any central computer / back-end, thus ensuring privacy. It's the first app to use the Apple / Google API and it aims to meet the goals:

- quick notification to people at risk + guidance on next steps
- help epidemiologists to analyse spread (voluntarily opt-in function)
- completeness of contact events: contact history is comprehensive regarding contact events, is precise (reflects actual physical proximity) and is authentic (cannot be faked)
- ensures confidentiality: A malicious actor cannot access the contact history of a user.

This development is published on GitHub<sup>[5]</sup> to allow detailed technical discussions with all interested parties to optimise the solution. This also allows public scrutiny of the approach and the source-code of the application. (GitHub is a software development platform know to all software developers.)

So how does it work? Each smartphone with the app installed generates an identifier code and broadcasts this using Bluetooth Low Energy beacons (very short range). The code is generated in each phone and is ephemeral (changes regularly – many times per day – to prevent tracking of users). It is calculated using an encryption algorithm *in the phone* from a "seed" unique to each phone. This "seed" changes daily, calculated from the previous day's "seed" using a cryptographic hash function<sup>[6]</sup>. The seed for the following days can be calculated from the initial seed. This seed



Each phone with the App broadcasts the EphID for a given timeslot to be received by all phones in range. They record the EphID, time and proximity information

2. App runs in the background

is known only to the phone (until infection is reported – see later). Other phones in the close proximity of the broadcasting phone collect the ephemeral IDs (EphIDs) and store them locally in their own memory. These IDs contain no personal information, only the code and timestamp.

If an app user has a positive test result for Covid-19, they are authorised by the health authority (they get a code) to upload their “seed” data and the time from which they were infectious. This data is distributed by a back-end system to every phone. Each phone can then calculate the EphIDs of the infected persons from the “seed” / time information provided and looks for matches with the beacon EphIDs it collected. A risk calculation is performed *locally in the phone* based on proximity and duration of contact. The user is informed if their risk of infection is above a threshold defined by the local health authority (based on an algorithm defined using the best epidemiological data available – see later).

The back-end system which distributes the exposure information does not have any personal information which would allow it to contact individual people. It is UNTRUSTED as far as user privacy is concern (which means that privacy does not depend on any actions of the server). It only needs to be trusted not to add or remove information. It is not used by the people doing manual track-and-trace as it has no information they could use.

All the processing of risk is carried out *locally* in each phone and is *not* shared with any back-end system. The back-end is not informed if a risk of infection is identified for a given person. It’s up to the phone user to respond to an alert and follow up, isolate and get tested. If they have a positive test result then they can notify the back-end as described above and alert all their contacts in turn. If they choose not to respond to an alert nobody will know.

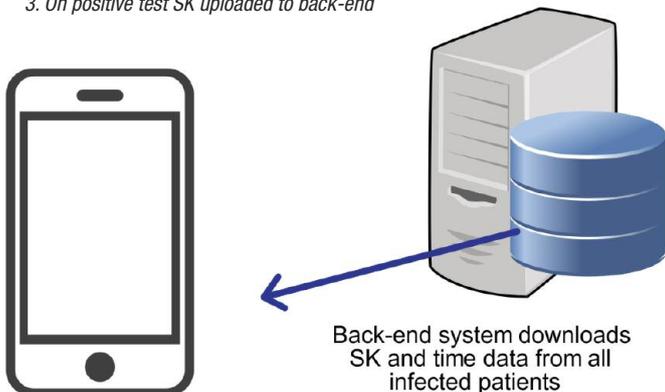
When an infected person uploads their “seed” information it is obviously no longer private. Therefore the “seed” in their phone is changed randomly and it is no longer possible to derive previous seed values from their current seed.

Phones receiving information from infected phones have no way to identify the person who potentially infected them or where this event happened.

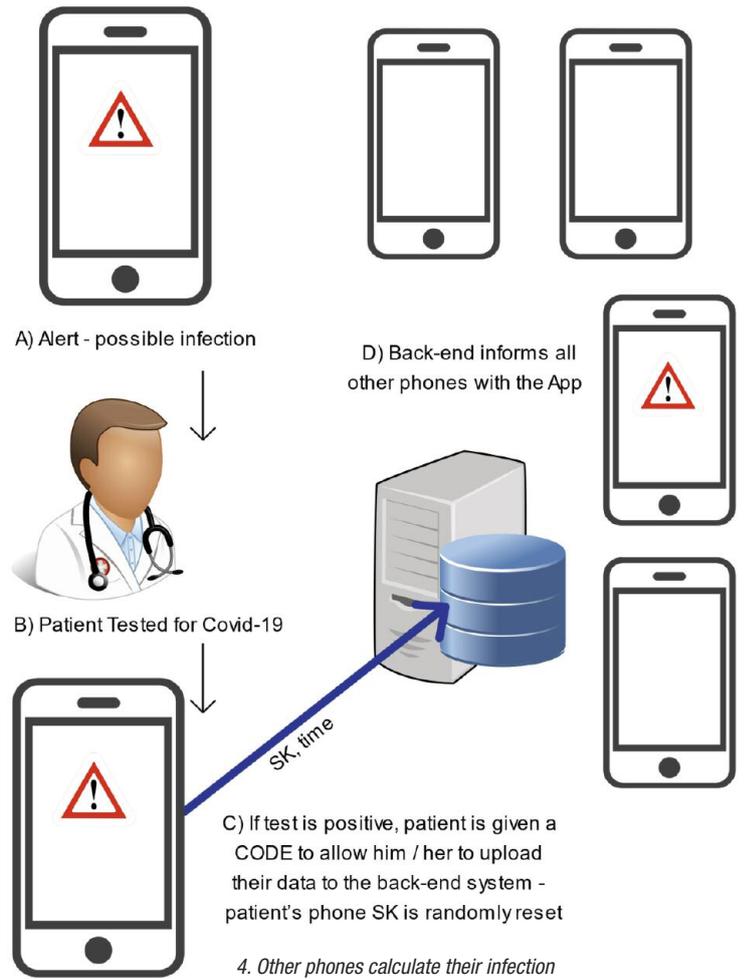
Any infected patients will also have the option to upload their data anonymously for epidemiology analysis. This analysis will in turn result in improvements in the risk algorithm and improve understanding of how the disease spreads.

There are three main variants of the application outlined in the White Paper (ref 5). These are variants with different detailed trade-offs of security / cost / complexity but the same general approach is used.

### 3. On positive test SK uploaded to back-end

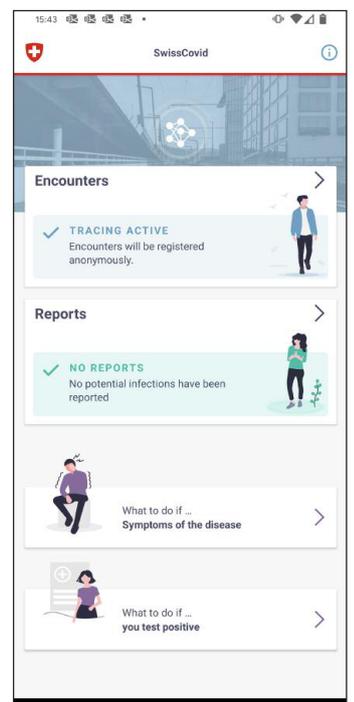


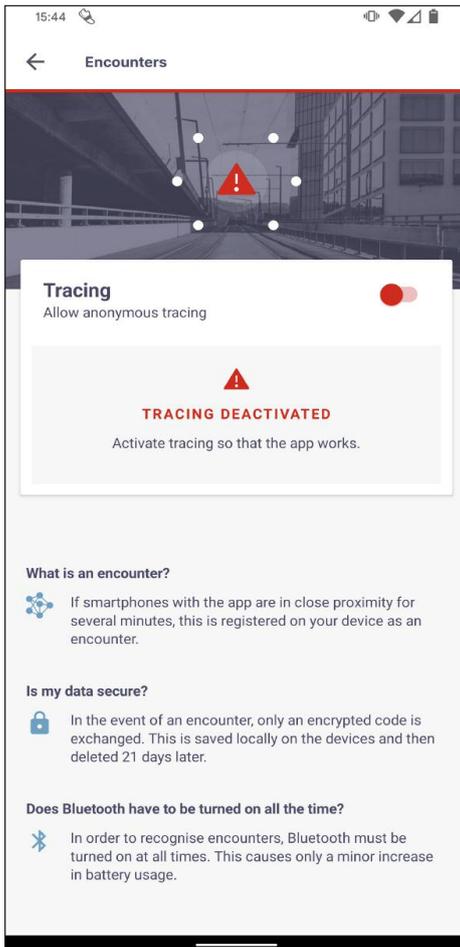
In phone the “infected” EphIDs are calculated and compared with EphIDs measured. Based on exposure duration and proximity, a risk calculation is done in the phone.



## Initial Impressions of the App

At time of writing, the SwissCovid app is in an extended test phase. The Swiss Parliament is due to pass legislation to further ensure the privacy of users of the app in June '20. However, I was fortunate enough to be able to download the app when it briefly appeared on Google Play for the pilot. Installation is really simple and is mainly concerned with giving permission for the app to access Bluetooth, for it to be active when in the background (essential for proper function) – and that’s it. There is no function to login to the app or provide any personal data. It does not ask for location data as this is not allowed by the Google / Apple API rules – and it’s not needed anyway. The screenshot on the right, captured from my android phone, is the normal screen when the app is running and no warnings have been received. The screenshot on page 8 shows what happens when you turn off tracking which you can do by selecting the “Encounters” arrow on the first screenshot. I’m not sure why anyone would want to do this, but if you’re even more paranoid about security than I am (and that’s *really* paranoid) and you’re visiting your lover or .... and you don’t trust the anonymity of the system, it’s possible to turn it off. This is not a major problem as, if you become infected,





you're likely to be able to remember your last rendezvous with your lover or..... You can personally give them the good news.

A lot of thought has gone into practical issues such as the impact on battery life and the data volumes which need to be downloaded from the back-end system. Battery optimisation is helped by close integration into the operating system via the API. A few MB per day is all that would be needed for several thousand daily cases reported, and we are currently at low double digit numbers.

If you are interested in more information, the white paper (ref [5]) has good descriptions of the way the App works, some of which is not very technical.

## Public Acceptance and use

This is the crucial issue and the reason for the caution by the Swiss Parliament. It's estimated that it's necessary to get the app installed (and active) on at least 50% of smart phones for the automated tracking to make a major contribution to keeping infections low. The higher the number the better we will be able to manage the disease. For this to happen, it's important that people have confidence in the privacy / security issues around the app. That's why there is this unprecedented collaboration. To summarise the major privacy / security related elements, they are:

- Google and Apple have together defined an API and clear rules around how an app will be authorised to use the API to limit what data can be collected and optimise battery life, memory usage etc.
- The DP3T application design is published, both the architecture and the source code. This allows interested technical people to look at the code and convince themselves that it works as advertised and be sure privacy is properly handled.
- A specific legal framework is promised to add the weight of law to user's rights with respect to this app.
- EphIDs are generated locally in each phone and EphIDs from other phones are stored locally in receiving phones. All analysis of infection risk is done in each phone. No analysis is done on a back-end server.
- At all stages, the user is responsible for making decisions on what to do with his / her data. If a person is infected, when they upload their data to warn others, their own data on their phone is changed to break any link to their previous data. An infected person can choose not to upload their data, and nobody will know.
- Sharing information with epidemiologists is anonymous, entirely voluntary, and fully independent of uploading infection related data.
- App data is not shared with the manual track and trace people. It does not have any information they could use.

- The app cannot be used for monitoring quarantine or isolation. It is not linked to an individual and contains no location information.

Hopefully, for all of the above reasons, the vast majority of smart phone owners living or travelling in Switzerland will install the app and keep it turned on. None of us wants to go back to a lock-down situation and using this app is a very simple way of helping avoid that with no significant downside. Remember, until such time as we have a viable vaccine, the only real way to keep numbers low is track-and-trace. Given the characteristics of SARS-CoV-2, this track-and-trace needs to happen quickly and one practical way to achieve that is to use the SwissCovid app. Please install it and use it when it becomes available.

The iOS version will be available through the App Store for all iPhones with OS 13.5 and up. The Android version will be distributed through Google Play and should install on a wide range of Android versions, not only the most up-to-date.

If anyone has any questions or concerns about the app, please feel free to contact me by email or at our regular Stammtisch meetings.

## References

1. See <https://clinicaltrials.gov> and filter for Covid-19
2. WHO site – [Draft landscape of Covid-19 vaccines](#)
3. Oxford University – Blood from recovered Covid-19 patients showed decreasing levels of IgG antibodies after infection. Rockefeller University NY did not find many “killer” antibodies in the blood of recovered patients.
4. [Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing](#)
5. GitHub DP3T documentation (<https://github.com/DP-3T/>) The white paper can be found [here](#).
6. [https://simple.wikipedia.org/wiki/Cryptographic\\_hash\\_function](https://simple.wikipedia.org/wiki/Cryptographic_hash_function)



# Dual Use? Don't put away that ski mask, just yet!

Contributed by IMCZ Sports' editor Joseph Dow

Joe's Mask Collection



SnoZones

Not the article I ever thought I would write for a June issue, but ... it has been suggested that homemade masks can be worn for some limited degree of coronavirus protection, in the absence of a proper medical grade facemask. As a substitute for the KN95 respirator, which might not be available until China can ramp up production and ship them here, the efficacy of a DIY cloth mask sounds suspect to me, but who knows? So, what about ski face coverings?

As a skier, who grew up on the frigid slopes of New England, I consider myself one of the world's foremost experts on face/neck coverings. Unlike sunny Switzerland, skiing in Vermont and New Hampshire involves temperatures likely to cause frostbite to any exposed skin. A *bluebird day* happens maybe three times per season, if that. A single mask alone is not effective and a multiple component "system" is a must.



My rig centered on several neck gaiters and the **SnoZone Hat Trick**. This peculiar contraption consisted of a neoprene "hat," which doubled as a small bag cinched at the top with a cord, connected to a mask sewn around to completely enclose the ears and face exactly like a niqaab. Man, was it ugly and ski friends enjoyed reminding me of that until we would come in for lunch. When I took it off, filled the bag with my gloves, goggles, liners, neck gaiter, etc., cinched up the cord and slung it over my shoulder, a meek "Um, where'd you get that . . . hat?" was always the only comment. The advent of near-universal helmet wear for skiing ended the age of the SnoZone, but head injury safety aside, I have yet to find a more effective weather protection system.

So, you may think I'm being facetious to entertain using these items to counter Covid-19, but ski accessory companies are actually presenting the use of their products in a coronavirus setting. **SOGGLE** was promoting their visor covers as repurposed facemasks. Subsequently, they removed from their website the mention of using the cloth covers against the virus, probably for legal reasons. Instead, SOGGLE has now introduced a limited special edition "Community" series mask "to support the awareness of "SocialDistancing" and a health-related and attentive behavior" along with the cautionary note: "The SOGGLE Community Mask is not a medical product and does not protect against infection. . . . [I]t reduces the risk of infecting others because it can reduce the risk of droplet infection through speaking, coughing or sneezing." However, as of this writing, the news section of their website still has photos of customers wearing the regular visor covers as masks with statements about the covers "working as masks; useable as mouthguards; and as protection for the mouth and nose." Similarly, **turtelfur**, citing an April 3<sup>rd</sup> CDC recommendation on cloth face coverings, enthusiastically encourages using their products for "essential errands" and touts their coverage and other benefits. Conversely, **BUFF**, which makes fabric face coverings for sports, specifically states their products do not prevent diseases or the spread of viruses and refrains from even suggesting their use in any way against Covid-19. Yet, I also received an email from **SkiEssentials.com** about the campaign, **GogglesForDocs**, urging people to donate their snow goggles and coordinating delivery to medical professionals experiencing shortages of PPE (personal protective equipment). There is no coherent, definitive message about the value of these improvised "masks."

Nonetheless, what are the various types of face coverings available for eventual skiing and these other more uncertain uses?

## Types of masks / face coverings

### Neoprene facemask

These have limited breathability, so many perforations are required, which seems to make them useless for any corona protection.



### Heat Exchange Mask

These masks, represented by the PolarWrap Exchanger, with interior coils of copper make it very hard to breathe and are not useful for any physical activity, but they are great for extreme cold when snowmobiling. Possibly somewhat effective as a limited barrier.



### Bandana

(my personal favorite) made of high-tech fibers treated with antibacterial silver with Polarfleece lining. These are very comfortable and the three small holes could be sewn closed easily. Hello, cowboy!



### Balaclava

These can be made of silk (thin – works well with a helmet), merino wool or high-tech fibers. Off the slopes, you will definitely look like a bank robber or hijacker.



Fleece and wool

### Neck Gaiter / Scarf

wool or Polarfleece (wind blows right through fleece – never wear just a fleece jacket skiing in the spring, only for insulation; so not likely much of a barrier) Similar to a bandana, but not as comfortable worn over the face.



### Buff Tube

made mostly of high-tech fibers. These can be worn in multiple ways, are thin, and are easy to bring along. Wearing one around your neck could be useful if you encounter an unexpected situation requiring the wearing of some kind of mask.



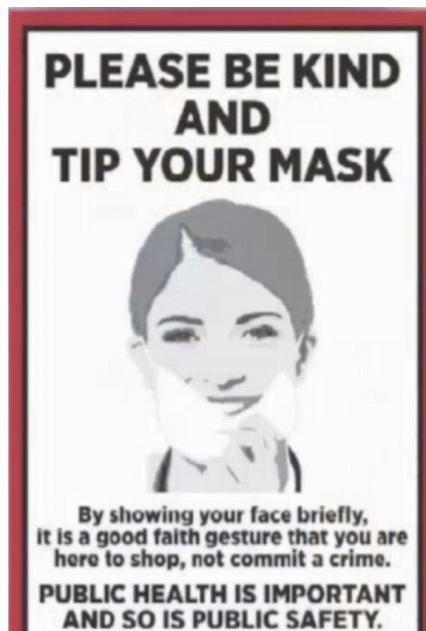
Buff Original - Cows & Edelweiss

### Worn in combination

For skiing, I wear various items in combination, depending on the temperature and weather. I often use a balaclava, two neck gaiters (one thin high-tech and one wool or fleece), and a bandana. More layers might stop droplets/particles better but the heat and breathability may be an issue.

**Goggles** – Some people are even suggesting adding goggles and I have a friend from New Jersey, who is wearing Speedo swim goggles because he worries ski goggles have too much ventilation. It would seem things are getting a bit ridiculous, but the **GogglesForDoctors** campaign is a real thing, encouraged by a long list of hospitals.

**As a side note:** No mask or face covering system seems feasible with a helmet because of their fogging problems when worn with goggles and visors. Luckily, the requirement for a mask while skiing in Switzerland is extremely rare. As  $-18^{\circ}\text{C}$  seems to be the facemask threshold, I may have needed a mask about three or four times in twelve ski seasons. I imagine goggles and a mask in an indoor hospital setting would be similarly problematic.



I do have concerns about the proper wearing, handling (on and off), disinfecting and transporting of a mask, be it a BUFF Bandana or a KN95. In my opinion, their effectiveness against coronavirus is highly dubious and should only be an option of last resort. However, I do remember a television program where a doctor comes upon an active tuberculosis patient unexpectedly and frantically slaps his own hand over his mouth for protection. Then we have the ludicrous “Tip Your Mask” initiative to show storeowners you are not a criminal threat seeming to confirm the necessity of a mask as absurd and pointless. At the very least, the ski face coverings have better styling and exhibit your personal flair. Hopefully, come winter, we will be using these things for their intended purposes!

## Additional Information

**SOGGLE:** <https://soggle.com/en/product-category/soggle-community-mask-en/> & <https://soggle.com/en/news/>

**turtlefur:** <https://www.turtlefur.com/pages/coronavirus-covid-19-update>

**BUFF:** [https://www.buff.com/ch\\_de/informationen-covid-19/](https://www.buff.com/ch_de/informationen-covid-19/)

**GogglesForDocs:** <https://gogglesfordocs.com>

**Tip Your Mask:** <https://www.distractify.com/p/tip-your-mask>

**Icebreaker:** [https://www.icebreaker.com/en-ch/womens-hats-neckwear/oasis-balaclava/102739.html?dwvar\\_102739\\_color=001](https://www.icebreaker.com/en-ch/womens-hats-neckwear/oasis-balaclava/102739.html?dwvar_102739_color=001)

**Seirus Masque:** [www.skiessentials.com/seirus-neofleece-comfort-masque.html#color=12921](http://www.skiessentials.com/seirus-neofleece-comfort-masque.html#color=12921)

**NEXT SKI SEASON: 2021-2022?!! Are we Steinbock or are we sheep?**

## Self-isolation Diary – first 2 weeks



- Day 1 – I can do this!! Got enough food and wine to last a month!
- Day 2 – Opening my 8th bottle of wine. I fear wine supplies might not last
- Day 3 – Strawberries: Some have 210 seeds, some have 235 seeds. Who knew??
- Day 4 – 8:00pm. Removed my day pyjamas and put on my night pyjamas.
- Day 5 – Today, I tried to make hand sanitizer. It came out as jello shots!!
- Day 6 – I get to take the garbage out. I'm so excited, I can't decide what to wear!
- Day 7 – Laughing way too much at my own jokes!!
- Day 8 – Went to a new restaurant called "The Kitchen". You have to gather all the ingredients and make your own meal. I have no clue how this place is still in business!
- Day 9 – I put liquor bottles in every room. Tonight, I'm getting all dressed up and going bar hopping.
- Day 10 – Struck up a conversation with a spider today. Seems nice. He's a web designer.
- Day 11 – Isolation is hard. I swear my fridge just said, "What the hell do you want now?"
- Day 12 – I realized why dogs get so excited about something moving outside, going for walks or car rides. I think I just barked at a squirrel.
- Day 13 – If you keep a glass of wine in each hand, you can't accidentally touch your face.
- Day 14 – Watched the birds fight over a worm. The Cardinals led the Blue Jays 3-1.
- Day 15 – Anybody else feel like they've cooked dinner about 395 times this month?

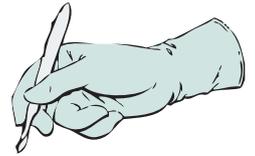
## Medical opinions on a proposed Congressional Health Care Package

The Allergists were in favor of scratching it, but the Dermatologists advised not to make any rash moves. The Gastroenterologists had sort of a gut feeling about it, but the Neurologists thought the Administration had a lot of nerve. Meanwhile, Obstetricians felt certain everyone was laboring under a misconception, while the Ophthalmologists considered the idea short-sighted. Pathologists yelled, "Over my dead body!" while the Pediatricians said, "Oh, grow up!" The Psychiatrists thought the whole idea was madness, while the Radiologists could see right through it. Surgeons decided to wash their hands of the whole thing and the Internists claimed it would indeed be a bitter pill to swallow. The Plastic Surgeons opined that this proposal would "put a whole new face on the matter." The Podiatrists thought it was a step forward, but the Urologists were pissed off at the whole idea. Anaesthesiologists thought the whole idea was a gas, and those lofty Cardiologists didn't have the heart to say no. In the end, the Proctologists won out, leaving the entire decision up to the assholes in Washington.



## Skin Graft

A married couple were in a terrible accident in which the woman's face was severely burned. The doctor told the husband that they couldn't graft any skin from her body because she was too thin. So the husband offered to donate some of his own skin. However, the only skin on his body that the doctor felt was suitable would have to come from his buttocks. The husband and wife agreed that they would tell no one about where the skin came from, and requested that the doctor also honour their secret. After the surgery was completed, everyone was astounded at the woman's new beauty. She looked more beautiful than she ever had before! All her friends and relatives just went on and on about her youthful beauty! One day, she was alone with her husband, and she was overcome with emotion at his sacrifice. She said, "Dear, I just want to thank you for everything you did for me. There is no way I could ever repay you." "My darling," he replied, "Think nothing of it. I get all the thanks I need every time I see your mother kiss you on the cheek."



## Improving English

Updated by Roger Brooks from an original article by W.K. Lessing in 1946, published in "Astounding Science Fiction"

In view of the increasing use of English globally as "lingua franca" among speakers of other languages, and in view of the difficulty presented by the numerous irregularities in English spelling, a multi-year program to reform and simplify English spelling is under consideration. This would merely accelerate the normal process by which the language is continually modernized.

In the first year, "s" would replace the soft "c". Certainly, such an improvement would be celebrated in all civic-minded circles, and students in all cities would be receptive toward any change eliminating the necessity of learning the difference between the two letters. Similarly, the soft "g" could be replaced by "j" and the voiced "s" could be replaced by "z". The letter combination "ch", which is also a source of great confusion, would be replaced by the phonetic spelling, "tsh".

In the second year, since only the hard "c" would be left, it could be replaced by the letter "k", both letters being pronounced identically. Imagine how greatly only two years of this process would clarify the confusion in the minds of students. Already we would have eliminated an entire letter from the alphabet.

There will be growing public enthusiasm in the third year, when the troublesome "ph" would be replaced by "f". This would make words like "fotograf" 20% shorter in print. Conversely, the letter "x" could be replaced by its phonetic equivalent, "ks".

By the fourth year, public acceptance of a phonetic alphabet can be expected to have increased to the point where a more radical step forward can be taken without fear of undue criticism. We would therefore urge the elimination at that time of all unnecessary double letters, which have always been a nuisance and a deterrent to accurate spelling.

With so much progress already made, it might be possible in the fifth year to delve further into the possibilities of phonetic spelling. After due consideration of the reception afforded the previous steps, it should be possible by this time to start spelling all diphthongs phonetically. Most students do not realize that the long "i" and "y," as in "time" and "by," are actually the diphthong "ai," as it is written in "aisle," and that the long "a" in "fate" is in reality the diphthong "ei" as in "rein". Similarly, other diphthongs, such as "ou" and "ea," which are pronounced as single vowels, could be simplified by eliminating the unnecessary vowel.

Although perhaps not immediately apparent, the saving in time and effort will be tremendous when we later eliminate the silent "e," as mentioned previously. As the horrible mess of the silent "e"s in English is caused principally by the present need to indicate whether the preceding vowel is long or short, we could simply eliminate all silent "e"s".

Since the sounds of "th" and "w" cause much distress and confusion among speakers of English as a second language, people will be receptive by the seventh year to steps such as replacing "th" with "z" and "w" with "v". Continuing this process, year after year, we would eventually have a reliable sensible language. After twenty years, we ventur tu sei, zer vud bi no mor uv zes teribli trubsum difikultis, and evrivun vud faind it ezi tu understand etsh ozer.



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