**To:** 5.1.2e , 5.1.2e , 5.1.2e (5.1.2e )[ 5.1.2e @minvws.nl]; 5.1.2e 5.1.2e 5.1.2e )[ 5.1.2e @minvws.nl]; 5.1.2e 5.1.2e ( 5.1.2e )[ 5.1.2e @minvws.nl]
**Cc:** 5.1.2e , 5.1.2e [ 5.1.2e @minvws.nl]; 5.1.2e , 5.1.2e . ( 5.1.2e )[ 5.1.2e @minvws.nl]
**From:** 5.1.2e , 5.1.2e . ( 5.1.2e )
**Sent:** Mon 4/13/2020 2:51:09 PM
**Subject:** Storyline / argumentatie apps
**Received:** Mon 4/13/2020 2:51:10 PM

Dag 5.1.2e

Ik heb vandaag besteed aan het zoeken naar (wetenschappelijk) bewijs en achtergrond om gebruik apps te rechtvaardigen. 5.1.2e handig voor gesprek RIVM om hen mee verder te laten gaan voor opbouwen verhaal?

Ook handig voor kamervraag wellicht.

In short; Er is weinig bewijs en academisch materiaal, maar wel voldoende argumentatie mi om mee ad gang te gaan.
Er zijn geen percentages genoemd mbt uptake (gebruikspercentages) om succesvol te zijn, wel % contacten getraced moeten worden voor isolatie bij bepaalde R0 (zie artikel lancet)
De drie stappen van de WHO over contact tracing brengen samenhang in verhaal 5.1.2e Apps kunnen daarmee ook richting geven in stap 1 & 2: versnelling door app contact tracing, stap 3: versnelling in follow up via app thuismonitoring. (Zie onderaan deze mail de stappen van WHO).

**Waarom apps?**
Storyline

- de who heeft aangegeven aggressieve en nieuwe methodes te hanteren in bestrijding, inclusief met betrekking tot contactonderzoek
- het virus verspreidt zich namelijk snel en verspreidt zich ook bij asymptomatisch geinfecteerden
- tracing apps richten zich, als ingebed in een brede strategie, op het terugbrengen van de tijd **(vertraging)** tussen bewezen besmetting en signalering mogelijk geinfecteerden, die tijd heeft een grote impact op de verspreidingsgraad R0. Dit betreft Versnelling in met name de eerste 2 van de 3 traceerstappen (identificatie, informeren, follow up)
- Er is weinig bewijs van effectiviteit van specifieke corona apps gezien stadium waarin we zitten qua besmetting, en verschil in ghebruik van reeds bestaande tracing apps. Eerdere studies tav inzet van apps (zoals bij ebola) slecht vergelijkbaar- zoals artikel in de lancet; kan snelle contact tracing enorm helpen in het maximaal controleren van het virus. (Zie onder, lancet)
- Simulatiemodellen geven wel de indruk dat, zelfs bij inachtneming beperkt gebruik door smartphone users en mensen zonder gebruik, het reduceren van de tijd tussen besmetting, tracing en signalering kan bijdragen aan de reductie van R0 (zie studie van Oxford University in Science)
- de whitepaper van MIT (Apps Gone Rogue, zie onder) geeft argumenten dat zelfs bij geringe uptake/gebruik van app R0 kan worden beinvloed

**BRONNEN EN FRAGMENTEN:**

**MIT: apps gone rogue:**

With an application that allows for users to understand potential exposure to an infected individual, and appropriate action of the exposed individuals, it may be possible to reduce the contact rate by more rapidly identifying cases/exposures which will remove them from the contact chain. For example, if we assume uptake of an application amongst x% of a population, and assuming that portion of the population responds to known exposure by self-quarantining or pursuing texting to confirm lack of infection, the R0 will decrease in turn by a multiple of that percentage based on the degree of mixing in the population. The reason for the multiple decrease is R0 partially depends on the population size and density and the exact number of people an individual may come in contact with after exposure which varies amongst individuals. Furthermore, with an increasing number "x" in terms of user base, there will be an exponential decrease in R0 (e.g., for 100% use and appropriate action, R0 would be expected to fall <1 due to maximal reduction of contact rate). Thus, for example, a 10% uptake will have downstream impacts on individuals that person may have come in contact by more rapid exposure/contact identification. This may eventually disrupt the contact rate with may significantly reduce the R0 more than is accounted for by the 10%.

**Oxford studie**:

Hele artikel: https://science.sciencemag.org/content/early/2020/04/09/science.abb6936.full

Samenvatting (en fragment)
The mathematical modelling indicates that app-base contact tracing can stop the epidemic with partial real world effectiveness. This approach shows promising outcomes even taking into account that not everyone has smartphone access, not everyone with smartphone access will adopt the app and social distancing and self-isolation instructions will be carried out imperfectly.
Bron: https://045.medsci.ox.ac.uk/mobile-app

**Lancet**:
In most scenarios, highly effective contact tracing and case isolation is enough to control a new outbreak of COVID-19 within 3 months. The probability of control decreases with long delays from symptom onset to isolation, fewer cases ascertained by contact tracing, and increasing transmission before symptoms.

Rapid and effective contact tracing can reduce the initial number of cases, which would make the outbreak easier to control overall. Effective contact tracing and isolation could contribute to reducing the overall size of an outbreak or bringing it under control over a longer time period.

Bron: https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(20)30074-7/fulltext

**WHO speech:**
Asking people to stay at home and other physical distancing measures are an important way of slowing down the spread of the virus and buying time – but they are defensive measures.

To win, we need to attack the virus with aggressive and targeted tactics – testing every suspected case, isolating and caring for every confirmed case, and tracing and quarantining every close contact.

bron: https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---23-march-2020

**WHO stappen contact tracing**

This monitoring process is called contact tracing, which can be broken down into 3 basic steps:

1. **Contact identification:** Once someone is confirmed as infected with a virus, contacts are identified by asking about the person's activities and the activities and roles of the people around them since onset of illness. Contacts can be anyone who has been in contact with an infected person: family members, work colleagues, friends, or health care providers.

2. **Contact listing:** All persons considered to have contact with the infected person should be listed as contacts. Efforts should be made to identify every listed contact and to inform them of their contact status, what it means, the actions that will follow, and the importance of receiving early care if they develop symptoms. Contacts should also be provided with information about prevention of the disease. In some cases, quarantine or isolation is required for high risk contacts, either at home, or in hospital.

3. **Contact follow-up:** Regular follow-up should be conducted with all contacts to monitor for symptoms and test for signs of infection.

Bron: website WHO