

QUARANTINE ADHERENCE: FINDINGS & RECOMMENDATIONS

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Cautionary note concerning interpretation of findings

Many studies that superficially seem to be on quarantine are truly about containment (e.g., Guillon & Kergall, 2020), isolation (Rubin et al., 2020), or prevention measures generally (Carlucci et al., 2020). Caution is needed in the cross-application of findings because (a) People seem to adhere more to isolation than to quarantine and containment (Carlsen et al., 2020; Smith, 2020¹) and (b) Determinants may differ. For example, in contrast to containment, a quarantine order may make people feel ‘singled out’ without a subjectively felt reason (as with isolation).

Some quick facts

- Self-stated **intended adherence** to isolation & quarantine is **far from perfect**: isolation $\pm 70\%$, quarantine $\pm 65\%$ in the UK (Smith et al., 2020).
- Self-reported **actual adherence** is **even (much) lower**: isolation $\pm 17-25\%$ (Machida et al., 2020; Rubin et al., 2020; Smith et al., 2020), quarantine $\pm 11\%$ (Smith et al., 2020).
- Self-reported adherence to quarantine and isolation is **lower in younger people, people with a dependent child, and people suffering financial hardship** (Smith et al., 2020).
- Self-reported quarantine adherence **may decrease over time**, part. in asymptomatic people (Norway: Steens et al., 2020); but this was not replicated in other research (UK: Smith, 2020).
- **Adequate risk perception, social support and feasibility (practical, financial) seem the most important drivers of adherence.**

Definitions

Quarantine =

- seclusion of people who (may) have been exposed to a contagious disease (e.g. high risk contact)

Isolation =

- seclusion of people who have been diagnosed with a contagious disease

Containment =

- restriction of movement in a town, region or country

Although these labels are sometimes used interchangeably, determinants of adherence to each measure may differ.

¹ The results of this study concerning overall quarantine adherence must be treated with caution; the authors have announced a revision to address the surprising proportion of participants reporting a quarantine request (3%, whereas only 1% of the population had truly received such a request at the time of the study).

Important determinants of quarantine and isolation adherence

1. Clarity of and knowledge about rules

Unambiguous and concrete rules, communicated through a variety of *channels* and using a variety of *means* (e.g. visuals, infographics, etc.) avoid that people construe their own rules based on what they believe about how the disease is transmitted and about the riskiness of certain behaviors (Webster et al., 2020).

2. Social norms and values

Perceived social norms strongly affect quarantine adherence. The fewer other people seem to adhere to quarantine orders, the less people are willing to adhere to these themselves (Webster et al., 2020). Values and social pressure from inside one's community may work in either direction. People who strongly value obeying rules and regulations are more likely to adhere to quarantine orders. People who strongly value (and actually take) care of relatives are more likely to breach quarantine orders if this would force them to discontinue their care tasks (it would run counter personal values on them; Van Rooij et al., 2020; Webster et al., 2020; Zhang, 2020).

3. Perceived risk of the disease

Perceived risk consists of two main elements: the perceived *likelihood* of infection, and the perceived *severity* of the disease outcome. Both affect quarantine adherence (Smith et al., 2020; Webster et al., 2020), isolation adherence (Smith et al., 2020), and containment adherence (Guillon & Kergall, 2020). More generally, better knowledge (through using a variety of appealing means, such as personal stories, visuals, infographics, etc.) about COVID-19 is associated with a more positive attitude towards quarantine (Mamo et al., 2020).

4. Perceived effectiveness of quarantine

People who are aware that quarantine effectively helps curbing the disease are more likely to comply (Webster et al., 2020; in the case of containment: Guillon, & Kergall, 2020). Using didactic means (graphic tools depicting if-then scenario's) are important to demonstrate the effects of quarantine. Not experiencing symptoms inhibits adherence to both quarantine and isolation, suggesting that some people still erroneously believe that asymptomatic individuals cannot spread the disease (Smith et al., 2020).

5. Financial impact

Quarantine adherence is greater when people do not have to worry about their income and their job (Smith et al., 2020; Webster et al., 2020). In one study, intended quarantine adherence was 94% if respondents could assume that lost wages would be compensated but only 57% without that assumption (Bodas & Peleg, 2020). People with a higher education are more likely to self-isolate (Smith et al., 2020) and have a positive attitude towards quarantine (Mamo, 2020). Higher educated people may more often have jobs that allow working from home (without wage loss). In South-Korea, where a financial compensation is in place, quarantine adherence is very high (Ryu et al., 2020).

6. Practical obstacles

Quarantine adherence is greater when people do not have to worry about supplies and the organization of their household and care tasks outside it (Smith et al., 2020; Webster et al., 2020).

7. Well-being

Experiencing adverse mental health effects reduces an individual's adherence to isolation and quarantine (Guillon, & Kergall, 2020, Webster et al., 2020). This is important because isolation and quarantine provoke stress-related disorders, depression, anxiety, and anger (Henssler et al., 2020).

Recommendations

1. Help create accurate perceptions of the risk of the disease and of the public health benefits of quarantine through continuous effort (the “why” of quarantine)

Do *not* assume that people's perceptions match objective data, even if these are communicated fully and clearly. E.g., most people believe that likelihoods of infection do not hold for them personally (comparative optimism; Asimakopoulou et al., 2020).

Special attention needs to be devoted to communication about the fact that people can transmit the disease without experiencing symptoms themselves.

Vivid personal stories work better than statistics – people tend not to apply statistics to themselves, or apply them in a distorted manner. If statistical information is deemed necessary, enrich verbal labels (e.g. 'likely') with numerical information, as people interpret verbal labels in distorted, self-serving manners (Smits & Hoorens, 2005).

2. Give unambiguous, specific quarantine instructions (the “how” of quarantine)

Describe clearly what quarantine and isolation means (the “do's and don't's”). Where choices are possible, these must be highlighted to maximize people's felt autonomy and thus avoid reactance² (Reynolds-Tylus, 2019). However, the stated options must be unambiguous. The less freedom of interpretation there is concerning the instructions, the better. Also avoid references or appeals to

- Voluntariness: these suggest that orders are merely recommendations that people are free to follow or to reject
- Common sense: these seduce people to overestimate their own expertise about the disease and unduly rely on own riskiness appraisals.

3. Minimize communication about low quarantine adherence rates

Publicizing low adherence rates may give the impression that it will not make much of a difference if one complies with quarantine orders or that one pays an unreasonably larger price than others. However, do not deliberately inflate communicated adherence rates (besides out of respect for citizens, to avoid inflating conspiracy theories). Publicize as much as possible positive personal stories of people having gone through a quarantine period (how they have been coping with the challenges and problems).

4. Take away *financial barriers*.

Suffering financial consequences of quarantine and isolation are strongly related to noncompliance across studies.

² Reactance is a motivational state elicited by a perceived threat to one's autonomy, involving a desire to reaffirm one's freedom. Reactance may thus provoke boomerang effects.

5. Analyze and address value-related and practical obstacles against quarantine adherence

This involves:

- Social support for people to overcome practical barriers (e.g. buying supplies, organizing medical care).
- Provide assistance with the fulfillment of felt moral and social obligations (e.g., help to provide solutions for the care of relatives if the quarantined individual normally functions as a caregiver, such as replacement by volunteer help).

Implementation

Recommendations 1-3 can be implemented largely through traditional and social media.

Recommendations 4 requires in-depth personal contact, an individual analysis of obstacles, and individually tailored support (possibly through contact tracers?)

A note on enforcement of quarantine or isolation through sanctions

There is a widespread lay belief that rewarding is always preferable to punishing. However, when it comes to teach people that there is a *moral obligation* to act in a certain manner (rather than that one behavior is appreciated more than another), the awareness that transgressions may be punished is more effective than awareness that good behavior may be rewarded (Barrera et al., 2020; Mulder, 2008; 2018).

Still, the enforcement of quarantine mainly or solely through the threat of punishment would be problematic because it may give rise to legal disputes, chaotic confrontations (with the spread of footage through social media causing unrest), and mental health issues. *Because of these effects, and because the large scale on which quarantine orders may need to be issued, there might be a considerable risk of public backlash (Webster et al., 2020). We therefore suggest to apply sanctions when it is needed, but not to use it as the main element in communications to induce motivation to adherence to quarantine instructions.*

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