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10-MINUTE CONSULTATION

What is my covid risk?

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What you need to know

- Take time to establish what decision the patient is considering and what factors they are weighing up in that decision—medical, financial, and social
- Risk calculators can give an estimate of the risk of dying from contracting covid-19 given an individual's characteristics, but the figures the tool provides will need to be given context before they can be a meaningful part of a decision
- Consider an individual's risk from covid-19 in two parts; the risk of catching it and the risk of poor outcome if they do. Both can usually be modified to some extent

A 60 year old woman with type 2 diabetes and rheumatoid arthritis contacts her GP to discuss her risk from covid-19. Her daughter is getting married next month and is planning a socially distanced ceremony with 30 guests.

One of the many unprecedented challenges that covid-19 has presented is the need for members of the public to be able to assess and mitigate personal risk in rapidly evolving circumstances. Thanks to analysis of large datasets, we are able to estimate risk of death from covid-19 based on identified risk factors such as age, ethnicity, and comorbidities.¹ But what do these numbers mean for an individual patient, and how should they modify their activities and interactions in light of them? Patients may look to their GPs or other healthcare professionals to help them make sense of these risks and make more informed decisions. Here we outline an approach to discussing an individual's risks from covid-19. Any discussions regarding covid-19 risks with patients should also incorporate the public health consequences of infection and reiterate any relevant local or national guidance or legislation.

What you should cover

First you need to establish what decisions the patient is considering, and exactly what she is expecting from the appointment. Is she considering not attending the wedding or encouraging postponement? Does she want advice about mitigating the risk? Understanding the patient's expectations ensures we explore the right question with her.

Next establish what is important for the patient, her values and preferences, any decisions she might be trying to make, and her attitude towards risk. Individuals vary considerably in their attitudes towards risk, and our patients' attitudes are likely to be different from our own (have you considered your

own risk from covid-19?). Understanding attitudes towards risk will inform subsequent discussion and decision making.

Ask how the patient has reacted to the pandemic so far. Has she been working, shopping, and meeting people, or has she been self isolating for several months? Who is at home with her? Does she have caring responsibilities? The answers will give you a sense of her level of worry about covid-19 and what pressures she has in her life.

The patient may have already been ill with, or known people who have been very unwell with, covid-19. Stories from people she knows, as well as media and social media coverage, are likely to have a substantial impact on her interpretation of the likelihood of infection and its possible effects.

Alongside perceptions of likelihood and severity, perceptions of personal vulnerability are a vital component of risk perception. Explore whether the patient thinks she is at increased risk of both catching and of having a poor outcome from covid-19. Consider both the medical and social aspects of her perceived vulnerability. What would being ill with covid-19 mean for her financially, in terms of her caring and work responsibilities?

The patient may have had conversations about her medical vulnerability earlier in the pandemic, perhaps when people were first being advised to "shield."² Some patients with rheumatoid arthritis were advised to shield, whereas others were not.³ Previous uncertainty, or the impression that opinions keep changing, may make discussions about risk more challenging. Also relevant to the patient's medical vulnerability is whether she has had a confirmed SARS-CoV-2 infection or been vaccinated against it. At the time of writing, the degree to which these factors will reduce her risks is not certain, but they should be considered based on the latest available information, and they are certainly likely to affect her perceptions.

Finally, you may also ask what friends or relatives have said to her about the situation. Their opinions are likely to be important to her but may not be based on good quality information and may need to be challenged.

What you should do

Explain that there are two components to an individual's risk from covid-19: the risk of catching it and the risk of a poor outcome if you do. The first component is largely affected by the risk of exposure to the SARS-CoV-2 virus, which is dependent on people's circumstances and behaviour as well as the

This is part of a series of occasional articles on common problems in primary care. *The BMJ* welcomes contributions from GPs.

local prevalence of the virus. Not everyone exposed to SARS-CoV-2 will become infected, and susceptibility to infection depends on multiple factors.⁴ The risk of a poor outcome (death or prolonged symptoms) is largely affected by people's physiology.

Estimating and mitigating the risk of catching covid-19

Start with the risk of catching it. Discuss preventive strategies to reduce the patient's risk of contracting covid-19 and to reduce her risk of transmitting it (box 1). Find out what she knows about risk mitigation and give practical advice where necessary. Depending on her appetite for information and numbers, she could look at the MicroCovid website, which allows you to compare different scenarios with different degrees of mitigation and get a sense of how much difference to the risk of transmission each of these sorts of factors makes.⁶ Of course, these numbers are only estimates and the website is clear that considerable uncertainty exists, but using this tool may help contextualise the potential impact of different behaviours. You should stress that these steps only reduce the risk of getting covid-19, they do not negate it. Ensure that the patient understands that anyone with symptoms of covid-19 should be isolating and arranging testing, and that the virus can be spread by people without any symptoms so relying on symptoms alone will not eliminate the risk.⁷

Box 1: Advice about reducing transmission of covid-19*

- Face coverings—These should have two or three layers of material, should cover the nose as well as the mouth, and should fit as close to the skin as possible around the edges
- Social distancing
- Singing or talking in a loud voice increases risk, so lower background noise may allow people to talk more quietly and reduce risk
- Discuss the importance of ventilation; meet people outside where possible
- Encourage regular hand washing

- Discuss not sharing objects that have been touched by others, particularly items of food and drink, which will end up near the face

* Adapted from UK government advice for England in January 2021⁵

Putting a rough number on the risk of catching covid-19 at an event such as a wedding is tricky, as it is so contingent on individual circumstances: if nobody present is infected, then the risk is essentially zero. The risks are significantly reduced if everyone follows the “test, trace, and isolate” rules, but there will still be a risk of infection from asymptomatic cases. Clearly, the risk to an individual is influenced considerably by the behaviour of others, which is difficult to predict or influence.

Estimating risk of death if infected

What about the consequences if the patient caught covid-19? The risk of death from covid-19 is difficult to estimate because of improving management options and the impact of vaccination, but online risk calculators can provide an estimate. However, before using these, warn patients that any numbers represent averages for people who tick the same boxes, but, of course, everyone is unique and cannot be summarised by a few questions. The values can, however, be useful ballpark figures and, in practice, the results can pragmatically be referred to as the patient's risk.

One tool that may help us is the ALAMA COVID-19 Medical Risk Assessment,¹ based on the Open-Safely study of 17 million people in UK general practices. Entering our patient's characteristics produces a “Covid-age” of 71, compared with her chronological age of 60 (table 1). This means that she has the mortality risk, if she catches covid-19, of a healthy 71 year old man; around a 1 in 70 chance of dying. By way of comparison, the risk threshold for being considered at high risk and being advised by the government in England to shield has been set at 1 in 200 risk of death over the whole of the first wave, or a relative risk of >10 compared with someone of your own age and sex but without health problems.

Table 1 | Estimated covid-19 mortality for different individuals based on the ALAMA COVID-19 Medical Risk Assessment¹

Individual	Risk factors	“Covid-age”	Estimated mortality if infected (range of uncertainty)
Your patient	60 year old woman White BMI <30 Type 2 diabetes Rheumatoid arthritis	71	14 per 1000 (7 to 28 per 1000); ~1 in 70 chance of dying
Your patient without medical risk factors	60 year old female White BMI <30	55	3 per 1000 (1 to 5 per 1000); ~1 in 333 chance of dying
High risk friend (father of groom)	75 year old man Asian BMI 35-39.9 Heart failure	≥85	60 per 1000 (30 to 119 per 1000); ~1 in 17 chance of dying
Low risk friend (daughter)	31 year old woman White BMI <30	26	0.1 per 1000 (0.07 to 0.3 per 1000); ~1 in 10 000 chance of dying

BMI = body mass index

Putting risk into context

You will need to help put these numbers in context for your patient. To start with, it may be helpful to know that around 1 in 200 60-year-old women die each year from other causes.⁸ You could consider the risks of comparator individuals that the patient can

conceptualise: someone she thinks of as high risk, and someone she thinks of as low risk. Then put these details into the risk assessment tool (table 1). You can then put those three absolute risks in a line for her (fig 1). Where does she lie compared with what she imagines a low risk and a high risk person to be? This kind of

context is important to help people get a sense of the distribution of risk, and where they are within it, and helps make sense of the numbers. We've found this is more helpful to people than trying to

compare someone's risk from covid-19 with their risk from other illnesses.⁹

Fig 1 | Visual representation of risk estimates that could be sketched in clinic

Remember that the positive or negative framing of the number is likely to make a big difference to the way that the patient perceives it. Describing “1 out of 70 people with these characteristics is likely to die” sounds different from “69 out of 70 will survive.” Flip the framing to balance out the impression (“but remember, that also means....”).

Considering other risks

Finally, it is important for your patient to consider risks of covid-19 other than death. Many survivors of covid-19 have protracted hospital admissions with possible long term health consequences. Furthermore, whether hospitalised or not, people may develop “long covid” with symptoms for many weeks or months.¹⁰ There is also the potential risk to others: your patient may unwittingly spread covid-19 at an event such as a wedding through asymptomatic transmission. This may be an important consideration when making decisions, both in terms of protecting other wedding guests who may be more clinically vulnerable and in terms of the social responsibility on us all to minimise the risk of transmission in the community.

As you bring the conversation to its conclusion, check how the patient feels about the risk now. How does this information feed into the decisions she is making? Whether she's considering a binary decision or not, discussing how much difference the behaviours she can adopt might make will be important. Can the risks be mitigated to an acceptable level for her and her friends and family? How do the risks stack up against the benefits as she sees them? She may want you to decide for her, which clearly you could not do, but hopefully, by your summarising the consultation and

encouraging the contextualisation of her risk, she will be better able to come to a decision.

Education into practice

- How good are you at estimating an individual's risk of contracting or dying from covid-19?
- What do you think the major risk factors are? How do they compare when you look at the values that come out of the ALAMA Covid-19 Medical Risk Assessment tool?
- How do you personally think about your own risk from covid-19? Do you attach a number to it, or is it more of a feeling? How might you explain your perception of your own risk to another person? Can you use those thoughts to improve the way you communicate risks to patients?

How this article was created

DJS has extensive knowledge and experience in risk communication and has been advising on this topic in the context of covid-19 throughout the pandemic. The currently available covid-19 risk calculators were considered for this article, but only the most relevant included. SF provided clinical context and expertise in shared decision making.

How patients were involved in the creation of this article

No patients were involved in the creation of this article.

Contributors: DJS conceived of the article. Both authors wrote and reviewed the article and are guarantors. SF created the boxes, table, and figure.

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- 1 ALAMA. Covid-19 medical risk assessment. 2020. <https://alama.org.uk/covid-19-medical-risk-assessment/>.
- 2 Public Health England, Department of Health and Social Care. Guidance on shielding and protecting people who are clinically extremely vulnerable from COVID-19. 2021. <https://www.gov.uk/government/publications/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19>.
- 3 British Society for Rheumatology. Action needed: coronavirus and identifying patients for shielding 2020. <https://www.rheumatology.org.uk/news-policy/details/Action-needed-coronavirus-identifying-high-risk-patients>.
- 4 Meyerowitz EA, Richterman A, Gandhi RT, Sax PE. Transmission of SARS-CoV-2: a review of viral, host, and environmental factors. *Ann Intern Med* 2021;174:69-79. doi: 10.7326/M20-5008 pmid: 32941052
- 5 Cabinet Office. Guidance: Coronavirus (COVID-19): meeting with others safely (social distancing). 2021. <https://www.gov.uk/government/publications/coronavirus-covid-19-meeting-with-others-safely-social-distancing/coronavirus-covid-19-meeting-with-others-safely-social-distancing?priority-taxonomy=774cee22-d896-44c1-a611-e3109cce8eae>.
- 6 microCOVID Project. 2020. https://www.microcovid.org/?distance=normal&duration=60&interaction=oneTime&personCount=2&riskProfile=average&setting=outdoor&subLocation=United_Kingdom_England&theirMask=basic&topLocation=United_Kingdom&voice=normal&yourMask=basic.
- 7 Johansson MA, Quandelacy TM, Kada S, et al. SARS-CoV-2 transmission from people without COVID-19 symptoms. *JAMA Netw Open* 2021;4:e2035057. doi: 10.1001/jamanetworkopen.2020.35057 pmid: 33410879
- 8 Office for National Statistics. National life tables - life expectancy in the UK: 2017 to 2019. 2020. <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/bulletins/nationallifetablesunitedkingdom/2017to2019>.
- 9 Freeman AL, Kerr J, Recchia G, et al. Communicating personalised risks from COVID-19: guidelines from an empirical study. *medRxiv* 2020.
- 10 Cortinovis M, Perico N, Remuzzi G. Long-term follow-up of recovered patients with COVID-19. *Lancet* 2021;397:173-5. doi: 10.1016/S0140-6736(21)00039-8 pmid: 33428868