# Cost of contact: redesigning healthcare in the age of COVID

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Received 25 May 2020
Revised 29 July 2020
Accepted 30 July 2020



**To cite:** Bhatia RS, Shojania KG, Levinson W. *BMJ Qual Saf* Epub ahead of print: [please include Day Month Year]. doi:10.1136/bmjqs-2020-011624

During the last decade healthcare leaders, along with campaigns such as Choosing Wisely, have called for major efforts to curb the high cost of healthcare by reducing unnecessary care and eliminating waste.[1 2] While these efforts have enjoyed substantial success in terms of raising awareness of unnecessary care among selected physician groups, there has been limited uptake among the majority of patients and providers. Members of the public have continued to worry more about underuse than overuse.[3] Healthcare providers continue to deliver low-value care because of the lack of sufficient incentive to behave otherwise.[4–6] The COVID-19 pandemic may lead to fundamental behaviour change. Now patients and healthcare providers will need to do a new kind of calculus of weighing the benefits of care against the 'cost of contact'.

For patients and providers, the risk of acquiring COVID-19 from any physical interaction with the healthcare system now constitutes a palpable cost of contact. Acutely aware of the potential risks of physical contact with the health system, many patients are deferring medical care they do not regard as essential,[7 8] out of fear of contracting COVID-19. One recent analysis in the USA indicates that, while 30% of ambulatory care visits now occur virtually, the combined volume of in-person and virtual visits has decreased by 40% from prepandemic levels.[9 10]

Sitting in a crowded waiting room for a routine medical appointment or screening test no longer seems worth the risk. Providers also view the cost of contact with fresh eyes and a more palpable sense of risk, including the risks associated with contracting COVID and consequent transmission to other personnel, as well as consuming scarce materials, like personal protective equipment (PPE). Patients and providers will share the goal of limiting interactions with the healthcare system to medically necessary ones. This alignment could allow us to eliminate some wasteful care entirely and to deliver necessary care in less wasteful forms. COVID may have increased patients and providers' desire to prioritise care that is high value and avoid care that is low value or even harmful. Patients who previously feared missing out on getting a test or treatment may now want to know if they really need it—harm of overuse has new meaning.

What are the implications of this public shift in perception regarding the costs of contact? One is that virtual care, or medical care delivered at a distance using technology, may be welcomed as a powerful tool to reduce the cost of contact.[11] Virtual care has been around in some form since the 1970s, initially as part of the US National Aeronautics and Space Administration's research programme, but despite significant technological advances, failed to achieve broad uptake.[12] Since the onset of the pandemic, the fear of in-person contact and shortages of PPE, in combination with financial incentives (ie, virtual care fee codes), and relaxing regulatory policies (ie, privacy requirements) have led to the rapid virtualisation of medical services. Some healthcare systems are noting a 10-fold increase in video visits compared with pre-COVID levels.[13] Many of the previously noted barriers to virtual care adoption, including a lack of a payment mechanism, lack of portability of medical licensure and physician hesitation to use virtual care, have largely vanished due to a combination of policy changes and healthcare workers' fears of getting sick.[9 14 15]

The cost of contact could be dramatically reduced by redesigning care based on the answers to two questions; is this medical encounter necessary and could it be done virtually? Consider what a

**Table 1** Potential workflow changes considering the costs of contact in the pre-COVID and COVID/post-COVID eras

| Medical condition | Medical encounters typically associated with the medical condition | | | | |
|---|---|---|---|---|---|
| **Elective laparoscopic cholecystectomy** | **Preoperative consult with surgeon/anaesthesia** | **Preoperative ECG** | **Preoperative laboratory** | **Surgery** | **Postoperative follow-up with surgeon** |
| Pre-COVID | In person | In person | In person | In person | In person |
| COVID/post-COVID | Virtual | Unnecessary | Unnecessary | In person | Virtual |
| **Outpatient assessment of mechanical back pain** | **Visit to primary care** | **Physiotherapy** | **Follow-up primary care** | | |
| Pre-COVID | In person | In person | In person | | |
| COVID/post-COVID | In person/possibly virtual | In person/virtual mix | Virtual | | |
| **Routine annual follow-up after percutaneous coronary intervention (PCI)** | **Stress test** | **Bloodwork including lipid profile** | **ECG** | **Follow-up visit with cardiologist** | |
| Pre-COVID | In person | In person | In person | In person | |
| COVID/post-COVID | Unnecessary | In person | Unnecessary | Virtual | |

redesigned pathway of care could look like under this new paradigm for non-urgent care. Table 1 outlines three clinical scenarios (one surgical, one primary care and one specialty care) redesigned to minimise the cost of contact. For ambulatory laparoscopic cholecystectomy, we identified six potential in-person interactions a patient would have had in the pre-COVID era, four with physicians. The redesigned COVID model reduces the number of in-person interactions to one, the surgery itself, with three virtual interactions and two interactions considered unnecessary and therefore omitted. This clinical redesign approach will likely occur more easily for routine clinical encounters, like a diabetes follow-up visit, than for more medically complex encounters, especially ones where the physical examination plays a key role, such as a neurology appointment for a patient with multiple sclerosis. That said, publications have already appeared describing ways of conducting elements of the neurological examination virtually,[16] and similar publications have appeared for other specialties where the physical examination plays a key role.[17 18] While the redesigned flow of care may require a nuanced approach, reconsidering old patterns through the lens of cost of contact may disrupt old habits that do not add value, and that potentially expose patients and providers to needless risk.

## CHALLENGES TO MAKING VIRTUAL CARE THE CENTRAL SOLUTION

This type of health service redesign would provide needed patient care while substantially reducing the risk of infection as well as lowering patient and system costs. Yet, this transformative redesign also faces important challenges. One of the major challenges will be reconsidering clinical approaches to common conditions. For example, think of how physicians will handle a virtual visit with patients presenting with respiratory tract symptoms this coming fall. Based on the symptoms and without being able to examine the patient, the physician will need to decide if the patient might have COVID, whether the patient is sick enough to require further testing, and if so, whether the patient should be seen at an assessment centre or an emergency room. Patients will likely require closer follow-up as physicians develop comfort with the new modality. There are already concerns that physicians may be more liberal in prescribing antibiotics in the virtual setting, hence exacerbating another public health problem of antibiotic resistance.[19] Routine visits will challenge physicians to rethink even some simple algorithms for diagnosing and managing routine problems, a task which is psychologically fatiguing.

A potential solution to the clinical challenges posed by COVID will be to leverage allied health providers, particularly at common points of contact. For example, homecare nurses could conduct clinical assessments in concert with a virtual visit by the primary care physician. Community pharmacists have been shown to support medication reconciliation and adherence, which can improve chronic disease management.[20–24] Retinal screening in people with diabetes can be done using remote technology at an optometrist's office, with data being analysed off-site by trained ophthalmologists.[25] Technology, including wearable devices like portable oxygen saturation monitors and home blood pressure monitors that connect to electronic medical records, may also partially fill in portions of the clinical exam.

Virtual care will pose other challenges that will need novel solutions, including some patients' linguistic and cognitive barriers and access to mobile devices. Wearable devices will add logistical challenges and cost. And, we will need to make sure such challenges and

costs are not simply passed on to patients, as this will create inequities of access. The healthcare system will need to evaluate in real time how the new approaches are working for physicians and patients and develop methods to monitor patient outcomes. Finally, avoiding a reversion to unnecessary in-person contact will require broader dissemination of payment systems that incentivise providers on factors other than volume of activity.

We must also remain vigilant to the ways in which fluctuations in virtual care utilisation do not always correlate with need or appropriateness. Inappropriate care explains very little of the well-known variations in the frequency of performing discretionary procedures across geographic regions.[26 27] The same will likely occur with virtual care, with areas of high and low usage both managing to have some patients who may receive excessive or inappropriate care while others miss out on necessary care. In fact, a classic example very relevant to the 'cost of contact' from COVID is the RAND Health Insurance Experiment. In this 15-year study (1971–1986), which remains the largest health policy study in US history, participants who paid for a share of their healthcare used fewer health services than a comparison group given free care.[28] Yet, cost sharing reduced the use of highly effective services in roughly equal proportion to the reduction in ineffective ones.

For patients, copayments for medical care constitute a literal 'cost of contact'. If such copayments reduce how often patients seek necessary care as often as they do necessary care, we will need to watch for underuse in the current context. Health systems will need to develop ways of identifying and reaching out to patients who have had less contact in recent months than their known medical conditions would predict. Some hospitals have seen reductions in patients with emergency conditions, such as strokes, heart attacks and appendicitis. As we move forward with new models of care, whatever the balance of virtual and in-person care, we must remain alert to the possibility that patients' health-seeking behaviours, including their willingness to interact with the healthcare system at all, may have changed substantially. New models of care will need to include more active outreach than in the past and we will need to figure out how to mitigate avoidance of care.

## CONCLUSIONS

Adapting to the new model of a combination of virtual and in-person care will require innovative approaches, nuanced for the particular clinical scenario. Inevitably there will be challenges one cannot anticipate requiring designing and redesigning systems of care as we learn. Patient perspectives will be critical to navigate some of the trade-offs that this new way of delivering care will force us to consider. The increased convenience and other ancillary benefits of virtual care for patients have many healthcare experts believing that patients will not want to go back to predominantly in-person care.[29] On the other hand, historically patients have valued the relationship with physicians and visits have addressed both the clinical condition and patients' emotional well-being or distress; both of which influence patient outcomes. Whether the relationship and emotional needs can be managed virtually, especially for new patients without a history with the physician, is unknown. Engaging patients as partners in this clinical redesign, to both understand their key care priorities and what they expect from their care experience, will be a necessary step to addressing many of the thorny issues raised above.[30]

The pandemic has changed the way providers and patients interact with one and other and has forced us to ask fundamental questions about the best way to deliver care. Reducing unnecessary care and virtualising care where possible have been effective ways of reducing the cost of contact during the pandemic. This redesign may have other long overdue benefits by avoiding visits requiring transportation, work or childcare disruption and financial costs. Redesigning care to reduce the cost of contact in the long term, while not easy, may form the foundation for a safer, and more patient-centric healthcare system.

**Acknowledgements** We would like to thank Mr. William Falk for his helpful suggestions on the manuscript.

**Contributors** SB, WL and KGS conceptualised, drafted and edited the manuscript.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Not required.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** There is no data in this work.



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