What works: Mitigating inequalities in telephone and digital triage for primary health care

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EVIDENCE BRIEF

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Summary

Satisfaction with access to general practice is at a record low. Telephone triage, including internet telephony, and digital triage, such as online consultation and messaging tools, aim to improve access by making early clinical decisions with signposting where necessary. However, the impact of triage systems on health and care inequalities remains uncertain. This brief examines the differential impacts of telephone and digital triaging systems on disadvantaged groups.

Current evidence is insufficient to provide a clear understanding of the impact of triaging systems on health inequalities. The limited available evidence suggests that low income, ethnic minority, and displaced patients may face worse outcomes due to telephone triage systems. Digital exclusion may worsen access for rural, remote, and displaced patients. Additionally, Artificial Intelligence (AI) triage systems have the potential for bias, possibly further exacerbating inequalities. We recommend ensuring monitoring systems are in place to assess the impact on disadvantaged groups; ensuring flexibility in triage systems on a case-by-case basis; involving patients from disadvantaged communities in co-designing triage services; and refraining from implementing AI-based systems until their impact on inequalities is known.

Current challenges

General practice in England is facing a significant mismatch between demand and capacity. Difficulty in getting an appointment is well documented, with just under half (49.8%) of patients reporting they can easily contact their practice by phone, and only 54.4% of patients describing their overall experience of making an appointment as good – the lowest on record (1). Additionally, 27.9% of patients report avoiding attending primary care due to the difficulty of making an appointment (1).

The number of fully qualified general practitioners (GPs) in England has declined every year since 2015 (1), exacerbating the mismatch between demand and capacity, and creating a vicious cycle of increasing workload pressures and decreasing access (2). To better manage demand, policymakers and practices have developed and implemented a range of flexible access models.

Telephone triage involves reviewing the urgency and needs of a patient before arranging an appointment, ensuring they are seen by the appropriate staff at the right time. Although the design and use of telephone triage predates the pandemic, its implementation accelerated during the pandemic (3). Patients using digital triaging systems submit their care request via an online consultation tool (website or app) or online messaging tool, which is then reviewed by practice staff (4). NHS England recommends a blended triage approach, incorporating new digital tools alongside traditional methods (4). While new triage tools using artificial intelligence have been proposed, they are not currently widely used (5).

Advocates argue that triage allows practices to allocate appointments based on clinical need rather than on a first-come, first-served basis. It also frees up capacity for those without digital access to use telephone lines (4). However, there are concerns about the impact on health inequalities. Here we summarise the evidence.

Summary of the evidence

Currently, there is no evidence identifying interventions aimed at addressing inequalities in primary care triage systems. Research describing how these inequalities are dispersed across different patient groups is also limited. We identified nine studies that assess the relationship between primary care triage and existing inequalities.

Socioeconomic status

The University of Cambridge used pre and post pandemic data from the GP Patient Survey (GPPS) and Understanding Society (USoc) to investigate the impact of telephone triage on access for patients living with multiple long-term health conditions (6). Data from over 1.2 million survey respondents was analysed to explore the introduction of triage in 154 practices. Participants were analysed by number of long-term conditions, age, sex, ethnicity, deprivation score, rurality, and employment status, providing responses on the time taken to see or speak to a GP. Telephone triaging resulted in being seen slightly sooner for women, urban patients and employed patients. There was no evidence of differential impact for ethnicity or area-level deprivation, although employment is likely to be a marker of individual-level socioeconomic status (SES). There was no evidence that the introduction of telephone triage created disparities in time taken to see or speak with a GP between people with multiple co-morbidities and those without, nor did the presence of co-morbidities alter the type of appointment offered.

A Dutch study analysed electronic health records from 1.3 million patients using telephone triage in out-of-hours primary care in the Netherlands (7). Patients were categorised into five groups based on household income, with the lowest and second lowest income groups making up 37.8% and 46.2%, respectively. Patients of non-Western immigrant status used the service almost twice as much as the general population (23.2% versus 12.7%), with 41.8% of this group being from the lowest category for household income. Following telephone triage, high income patients were one-third more likely to be followed up with an in-person consultation than low-income patients, even when adjusted for patient characteristics and urgency. Home visits were more than twice as common for low-income patients, particularly in patients reporting trauma or injury. Symptoms were more likely to go unrecorded (not documented by the clinician) for low-income patients.

A similar study in Denmark examined the relationship between SES, telephone triage, hospitalisation and 30-day mortality in patients calling a medical helpline (8). A total of 6,869 adult callers were categorised by SES, based on their education and household income. Patients from lower income households were more likely to be triaged to a telephone consultation rather than a face-to-face consultation compared to those with middle/high household incomes (odds ratio 0.86, 95% CI). Low educational attainment was associated with higher 30-day mortality than middle/high educational attainment (odds ratio 1.99, 95% CI). There was no association between low income or educational attainment and hospitalisation after triage compared to middle/high income and educational attainment. While this study found that low SES was associated with worse outcomes, without a direct comparison to people not using telephone triage, it is possible that inequalities may be linked solely to SES.

Access to primary care via telephone and digital triaging is limited for vulnerable patient groups (9). In 2018, only 77% of UK households had indoor mobile (4G) internet coverage with varying rates between nations (69% in Wales and 78% in England). There is a higher proportion of rural and remote premises without fixed broadband access or with slower connection speeds. Smart phone ownership also varies between patient groups; in the UK, in 2019, 79% of all adults owned a smart phone compared with only 57% of those over 75 years old. A rapid evidence synthesis of 'digital first' primary care models in the NHS identified multiple sources of evidence indicating that individuals using digital consultations are more likely to be younger, have fewer co-morbidities, have a higher SES, and be female (10). While most of this evidence is derived from patients using digital consultations, the distribution of uptake across population groups is likely to be similar for digital triage systems.

The electronic health records of over 53 million patients, registered across 6,400 practices between January 2019 and December 2020, were analysed using OpenSAFELY-TPP and OpenSAFELY-EMIS (11). Alongside examining various trends, the study explored sociodemographic characteristics of patients, with coding activity linked to the use of online consultation systems. It found that online consultations (OC) were less prevalent among the most deprived patients, accounting for 16% of patients in quintile 1, compared to less deprived cohorts: 20% in quintile 2, 22% in quintiles 3 and 4, and 21% in quintile 5 ($p<0.001$). Female sex, age between 18-40 years-old, living in an urban area, and white ethnicity were also associated with higher frequency of OC-relevant coding.

Ethnicity

The ESTEEM trial, a cluster-randomised controlled trial, compared GPs or nurses supported by computer decision software telephone triage systems with the usual care for patients requesting a same-day appointment in general practice (12). A total of 12,132 patients across 42 GP practices in England were included in the study. Results showed that usual care and GP triage were associated with 65% of all patients reporting being 'very' satisfied, whereas in the nurse triage group only 59% of patients reported being very satisfied. Across all groups, individuals of an ethnic minority background were associated with lower satisfaction and a higher reported difficulty obtaining medical help/advice compared to white patients (mean difference 5% and 5.86%, respectively). However, disaggregated results by sociodemographic group were not reported.

Artificial intelligence and ethnicity

AI systems can be inherently prone to bias with the potential to exacerbate inequalities (13). Data collection and modelling of AI systems, mainly in high income countries, has led to algorithms that overlook minority groups. A primary study recruited 438 clinicians and 516 civilians to assess their susceptibility to be influenced by racially-biased AI systems in a mental health emergency (5). The findings revealed that both clinicians and civilians were significantly more likely to identify African American and Muslim patients as violent while using the racially biased system.

In a separate study, AI algorithms were used to make diagnoses based on chest radiographs (CXRs) (14). Algorithms exhibited underdiagnosis bias in younger, female, African American and Hispanic patients, and patients of lower SES. In some instances, likelihood of underdiagnosis was compounded by belonging to more than one of these groups; for example, being Hispanic and female put patients at higher risk for underdiagnosis than being Hispanic alone. High quality research on how AI systems can exacerbate inequalities, and the application of this to primary care triage, is currently limited.

Other disadvantaged groups

A pilot study of Lewisham stakeholders and GP practices highlighted qualitative and quantitative data examining the potential impact of total triage and remote-by-design consulting on vulnerable groups (15). Reduced access due to total triage was reported as a concern by 22 out of 27 GP respondents, and 11 respondents also believed it had negatively impacted continuity of care. Qualitative data from semi-structured interviews with 13 stakeholders from minority ethnic communities reported positive aspects, including increased appointment availability and ease of prioritisation for those requiring immediate care. However, numerous concerns were raised including reduced uptake of phone or digital registration systems due to data confidentiality concerns, challenges in accessing or navigating online registration and booking systems, and the inability to access 'walk-in' appointments for vulnerable patients without advocates. Additionally, concerns about losing patients to follow-up and the subsequent de-registration of displaced patients were also raised – an issue observed by GPs during the "Everyone In" campaign, which aimed to house the street homeless during the pandemic.

A retrospective cohort study involving over 5,000 patients across 48 GP clinics in Canada identified that telephone consultation was advantageous for patients with opioid addictions (16). Engagement with care was maintained over a 1-year period for 59% of patients receiving phone appointments, compared to only 48% of patients receiving in-person consultation.

Safety of triage

A multi-method qualitative study examined 95 cases of safety related to triage and remote primary care between 2021 and 2023 (17). Although cases involving avoidable morbidity or mortality were rare (15 cases), disregard for a social circumstance was identified as a contributory factor alongside inappropriate consultation modality, clinical pathway and information gathering, limited clinical assessment and poor rapport building. The authors observed that remote consultations may exacerbate poor outcomes for patients who are already disadvantaged by factors such as age, deprivation, language and literacy barriers, and multi-morbidity. These factors, as well as disability and other conditions that create communication barriers (for example autism), digital exclusion and residing in a care home in which staff are not confident to take vital signs, are cited as reasons to strongly consider face-to-face consultation. Appropriate lenience of triage protocols on a case-by-case basis was recommended to mediate risk and overcome inequalities.

What works: key recommendations

There is limited evidence on the impact of telephone or digital triage on health and care inequalities. The evidence that does exist is drawn from out-of-hours services. To produce evidence-informed recommendations, we have drawn upon guiding principles based on the EQUALISE study.

Recommendation	Target audience	GRADE certainty
Improve accessibility of digital triage platforms		
Co-design and obtain feedback from disadvantaged and digitally excluded patients in the design of triage systems	ICBs/ National	⊕⊕◯◯ LOW
Ensure digital triage platforms are accessible to patients from diverse cultural backgrounds, such as being available in multiple languages, and to those with poor health and digital literacy	Practices/ ICBs/ National	⊕⊕◯◯ LOW
Implement triage on a case-by-case basis ensuring flexibility, especially in regards to social circumstances and disadvantaged groups	Practices/ ICBs	⊕⊕⊕◯ MODERATE
Promote community resources that support patients with digital access to primary care services	ICBs	⊕◯◯◯ VERY LOW
Ensure flexible access		
Ensure triage forms are easy to use and flexible to avoid barriers for patients with complex social circumstances	Practices/ ICBs	⊕⊕◯◯ LOW
Allocate capacity and resources proportionate to patient needs; promote digital access for patients with digital literacy and devices to free-up capacity for those patients requiring more support in accessing primary care	Practices/ ICBs	⊕◯◯◯ VERY LOW
Ensure triage processes function across multiple access routes to ensure that patients get the same access irrespective of their access route; telephone, digital, walk in	Practices/ ICBs	⊕◯◯◯ VERY LOW
Monitoring for inequitable decision making in digital triage software		
Artificial intelligence-based triage systems should not be used until there is sufficient evidence to demonstrate their safety and equity	Practices/ ICBs/ National	⊕◯◯◯ VERY LOW
Monitor allocation of triage categories and consultation types across socioeconomic groups and ethnic minorities to identify any evidence of inequalities	Practices/ ICBs	⊕◯◯◯ VERY LOW

Useful resources

- Doctors of the World. A Rapid Needs Assessment of Excluded People in England During the 2020 COVID-19 Pandemic, May 2020
- NHS England Improving access for all: reducing inequalities in access to general practice services, 2018
- Interventions which increase or decrease inequalities in General Practice (EQUALISE study)

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