The potentials and challenges of electronic referrals in transforming healthcare

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Abstract

Referrals are traditionally defined as sending a patient to another program or practitioner for services or advice. The increasing adoption of electronic referral systems (eReferrals) requires a more complex model and shared understanding of what a referral is. eReferrals are designed to support writing referrals and automating referrals processing, and sometimes triaging. The reported benefits of eReferrals include secured delivery of referrals, improved efficiency, access to care, quality of care and continuity of care, better quality of documentation and communication, as well as reduced cost.

Improvement in the time to prioritise referrals, more reliable and transparent referral handling, and better-supported hospital-community communications have been observed in regional eReferral trials in New Zealand. In the authors’ opinion, teleconsultation and virtual shared care relationships have the potential to transform healthcare delivery, and they can be facilitated by eReferral technology. But the opportunities introduced by information technologies for eReferrals present several complex and contentious issues. This paper explores the potential roles and models for eReferral and its challenge to what constitutes a medical consultation. Future research is needed to understand how to facilitate and fund virtual clinics, and to support mentorships among healthcare professionals as well as for health consumers.

Background

The United States National Library of Medicine has defined ‘referral and consultation’ as “the practice of sending a patient to another program or practitioner for services or advice which the referring source is not prepared to provide”. The Cole’s Medical Practice in New Zealand states that “referring involves transferring some or all of the responsibility for some aspects of the patient’s care. Referring the patient is usually temporary and for a particular purpose, such as additional investigation, or treatment that is outside your scope of practice”. Within the New Zealand context, different types of referrals with different levels of clinical responsibility transfer are already recognised. For example, the Ministry of Health guideline to obstetric referrals recognises four types and distinguishes between consultation referrals and transfer of care referrals.

In addition to referring for a physician consultation, the referral model also encompasses requests to other services such as clinical laboratory services, physical therapy services, occupational therapy services, outpatient speech-language pathology services, radiology and other imaging services, as well as radiation therapy services. Traditional referrals often default to referring a patient for a face-to-face consultation with a physician or other service provider. However, electronic referral systems
(eReferrals) have the potential to “transform the primary-specialty care interface by enabling a move away from a narrow reliance on visit-based care”.

What is a ‘medical consultation’?

In cases of referring for consultation by a specialist or other clinicians, a relevant question is what constitutes a medical consultation. To the best of our knowledge, there is no definition published by the Medical Council of New Zealand (MCNZ) or Royal New Zealand College of General Practitioners (RNZCGP). But the structure of patient consultation has been suggested to include introductions, information gathering, exploring the patient’s thoughts, feelings and ideas, education (including to negotiate the choice of treatment), and closure (e.g., mini-summaries).

MCNZ also states that in providing good clinical care, practitioners are expected to consult and take advice from colleagues when appropriate. In the context of referral discussions herein, we use the term ‘medical consultation’ to include consultations between a clinician and a patient as well as between healthcare professionals.

What should be included in a referral?

MCNZ states that when you refer a patient, you should provide all relevant information about the patient’s history and present condition. The RNZCGP standard for general practice further defines the essential information to be included in referrals as:

- Special considerations: interpreter needed, language, disability, transport
- Current problem
- Current medical warnings
- Long-term medications
- The reason for referral
- Background information and history
- Key examination findings
- Current treatment
- Appropriate investigations and results.

The referral document itself, traditionally sent as a paper-based letter but more and more electronically delivered, forms part of the patient’s medical record; and therefore, must meet legal requirements to describe and support the management of health care, as well as to facilitate continuity of care, e.g., by initiating the transfer of care process.

eReferrals: from automation to transformation

eReferral have been introduced in many countries, including Finland, Denmark, Norway, Netherlands, Australia, and New Zealand (NZ). eReferrals aim to support the writing of referrals, particularly by auto-populating patient information from electronic medical records, and to automate the processing, and sometimes triaging, of referrals at the receiving end.
The benefits associated with eReferrals include secured delivery of referrals, improved efficiency, access to care, quality of care and continuity of care, better quality of documentation and communication, as well as reduced cost. In NZ regional eReferral trials at Hutt Valley, Northland, Canterbury and Waikato district health boards, improvement in the time to prioritise referrals as well as benefits to referral handling and hospital-community communications have been observed. For instance, rapid secure delivery of eReferrals and the ability to track an individual eReferral’s status, addressed the issue of uncertainty in paper referral processing.

The functions implemented and achieving sustained uptake in the NZ eReferral trials include auto-population of patient information (such as demographics, medical history and medications) from the GP electronic medical records to eReferral forms, decision support by embedding referral criteria and collecting appropriate information for referral triage in structured condition- or investigation-specific eReferral forms, and electronic communication.

The NZ experience suggests that eReferrals offer the capability for faster, more reliable and more transparent referral from community to secondary services, and have laid a foundation for further support and innovation in healthcare processes. The potential to transform healthcare delivery with eReferrals and other technologies may start with facilitating teleconsultation and a virtual shared-care relationship, e.g., with the support for electronic communication.

**eReferral potential: initiating and facilitating teleconsultation**

Although referral itself does not determine the nature or mode of subsequent care delivery, eReferral technology can provide a pathway into use of teleconsultation. Information and communication technologies, ranging from telephone to video conferencing and remote presence robots, have made it possible to provide healthcare services without in-person interactions. The ‘remote consultation’, or sometimes called ‘teleconsultation’, is defined as “consultation via remote telecommunications, generally for the purpose of diagnosis or treatment of a patient at a site remote from the patient or primary physician”.

Teleconsultation, supported by shared patient records, is seen as ‘cheap green care’ that can deliver direct patient care remotely or support the GP to treat patients in primary care with remote support by specialists. It is also associated with reduced number of in-person referrals and subsequently more effective use of health facilities. With eReferral’s capacity to support electronic communication between clinicians at both ends of the referral, teleconsultation naturally occurs for cases where advice is given regarding patient management.

A study in Kaiser Permanente Colorado comparing teleconsultation and traditional in-person consultations found that the utility of information provided by consultants and satisfaction with consultations did not differ between the two modes; they also found that more traditional consultations than teleconsultation requested transfer of patient care, or assistance with diagnosis or initiating treatment.

Increasing use of ‘advice only’ eReferrals has been reported in the NZ setting, indicating uptake of teleconsultation as facilitated by the eReferral technology; for instance, the Northland implementation of web based referral triage with electronic
messaging back to the referrer has been associated with ready access to specialist advice.\textsuperscript{17} The Canterbury experience in providing online feedback by GP triagers for community referred radiology service suggests that it can also help shape referrer’s understanding of referral criteria and management options.\textsuperscript{21}

In terms of patient teleconsultation, there are standards published by MCNZ with regard to treating patients and prescribing medicine without face-to-face consultation.\textsuperscript{6} The MCNZ statement on telehealth particularly highlights the risks in providing treatment without physical examination; it recommends “if a physical examination might add critical information then you should not proceed until a physical examination can be arranged. In some circumstances it may be reasonable to ask another practitioner in the patient’s location to conduct a physical examination on your behalf”.\textsuperscript{22} However, it is believed that no physical examination is necessary in a third of general practice consultations, suggesting the potential and appropriateness for teleconsultation.\textsuperscript{2} And video consulting is associated with advantages, including to enable fair and equitable access to care, which may apply particularly to rural, Māori and Pacific patients.\textsuperscript{2}

\textbf{eReferral potential: supporting mentorship and shared care relationship}

Related to eReferral’s potential to facilitate teleconsultation, the relationship between referrers, e.g. GP, and the referral recipients, e.g. specialist, is strengthened with timely and applicable responses. Therefore, eReferrals offer the opportunity to foster (and document) virtual mentorship which is traditionally established in informal consultations, sometimes called ‘curbside’ consultations.\textsuperscript{23,24} Such virtual mentorship may relate to a particular patient, as case-based education; it may also develop the mentee’s capacity to manage similar patients.

In addition to providing a medium for mentorship, eReferral may facilitate a virtual shared care environment. The use of eReferral in San Francisco General Hospital is reported to support virtual ‘co-management’ (shared care) of certain conditions by allowing iterative communication between primary care provider and designated specialist reviewer (triager).\textsuperscript{5}

A developmental potential for eReferrals could be to integrate or even merge with shared care record systems as part of the virtual shared care environment for managing patients, especially those with long term conditions. This will not only help to maintain ‘mentoring’ relationships between primary care clinicians and secondary (or other) services, but also promote patient engagement and shared decision making by supporting patient access to their own medical record and facilitating patient-clinician communication via an electronic patient portal.

\textbf{Developing an eReferral model}

As part of the patient medical record, eReferrals have the same medico-legal and ethical roles in the delivery of care as paper-based referrals. Achieving the full potential of eReferral technology requires understanding their relationship to provider responsibilities. For instance, eReferral-enabled teleconsultation may indicate no discharge of responsibility from the referring clinician, which is different from the transfer of care in a traditional referral process. This may introduce contention
regarding the medico-legal ramification surrounding eReferral technology. Therefore, the accountability issues need to be thought through in designing eReferral systems, along with other issues such as the quality of information, the workload and workflow for both the referrers and the referees.

The Northland experience recognised that it can take longer to triage a referral electronically; and to undertake ‘noncontact work’ (potentially providing teleconsultation advice) takes even longer – up to 15 minutes per referral for a complex patient. Moreover, the volume of this noncontact work is increasing with GPs seeing the value in requesting advice rather than requesting a clinic appointment. But this inevitably challenges the current ‘face-to-face first specialist assessment’ funding model, opening the question of how the eReferral receiving end is to support the work by specialist triagers. Research is needed to explore eReferral delivery models, including funding models and the enabling system and policy framework to facilitate ‘virtual clinics’ that provide teleconsultation services via eReferrals.

The meaning of medical consultation may change with eReferral technologies maturing and possibly merging into shared care record systems. And the role of eReferral may also change in the future shared care environment that supports mentorships among healthcare professionals, the spectrum of collaboration, stepped care model, and shared decision making with the patient. In the authors’ opinion, eReferral has the potential to transform the healthcare delivery process by facilitating teleconsultation and shared care, e.g., through a model as proposed in Figure 1.

Figure 1. eReferral pathways

Figure 1 demonstrates the potential of eReferrals to enable multiple referral pathways that include the traditional visit-based care, virtual consultation (with detailed reply to the referrer and potentially supporting virtual mentorship in managing the patient in the community) and shared care, as well as advice and ‘sign posting’ (e.g., an appropriate service to refer to). In addition, the face-to-face first specialist assessment could lead to not only the one-off contact with the patient (and the referrer via clinical
letter); but also on-going shared care and on-going support to the community-based referring clinician (virtual mentorship/shared care relationship).

Similarly, virtual consultation could potentially develop into on-going shared care and could be used on an on-going basis to provide support to the referrer in a shared care relationship. However, complex and contentious issues remain; for instance, who, among the referrer, the referral receiving clinician and the patient, makes the decision to choose between the referral pathways? Traditionally, triage is undertaken at the referral receiving end; but will the power dynamics change, e.g., towards a stepped care approach, with the technological capacity to support virtual clinics and shared care?

Research is needed to understand the change of responsibility, of power and decision making in referring. Studies to collect evidence and lessons regarding eReferral development and implementation are also needed to evaluate the technology impact, to understand what eReferrals might become and what it should not be, as well as to promote sustainable use of the technology.

**Conclusion**

It is the opinion of the authors that teleconsultation and virtual shared care relationships have the potential to transform healthcare delivery, and they can be facilitated by eReferral technology. However, research is needed to inform the re-design of a sustainable and enabling health care system and appropriate policy framework, and to gather evidence and lessons for achieving the potential of the technology.

**Competing interests:** Nil.

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