

Turning on a dime— pre- and post-COVID-19 consultation patterns in an urban general practice

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ABSTRACT

AIMS: To investigate changes in general practice consultation patterns in response to reduced face-to-face patient contact during the COVID-19 pandemic.

METHODS: A retrospective before and after case notes review study of one urban general practice to investigate patient contact in the first two weeks of New Zealand general practices' COVID-19 response in 2020, compared to the same period in 2019.

RESULTS: Twenty percent of patients had contact with the practice in both samples, with similar proportions by age, gender, ethnicity, deprivation and presence of multimorbidity or mental health diagnoses. Similar numbers of acute illness, accident-related and prevention patient contacts occurred in both samples, with more long-term condition-related contact in 2020. While 70% of patient contacts were face-to-face in 2019, 21% were face-to-face in 2020. Most acute illness, accident-related and long-term condition-related contacts were able to be provided through virtual means, but most prevention-related contacts were face-to-face.

CONCLUSIONS: This single practice study showed total patient contact was similar over both sample periods, but most contact in 2020 was virtual. Further longitudinal multi-practice studies to confirm these findings and describe future consultation patterns are needed to inform general practice service delivery post-COVID-19.

The COVID-19 virus was first detected in New Zealand in late February 2020, and by the third week in March, cases were starting to increase rapidly.¹ On Saturday 21 March, 2020, in response to the emerging COVID-19 pandemic in New Zealand and restrictions announced by the government, the Royal New Zealand College of General Practitioners (RNZCGP) requested all general practices in the country to immediately adopt virtual triage for all patient contacts and aim to provide most (70%) consultations by virtual means, starting on Monday 23 March.² The pressing nature of the emerging pandemic was viewed as serious enough by the body of general practitioners and their nursing, practice management and administration colleagues, that most general practices across the country had changed their model of service delivery within a

few days. Regardless of whether practices had experience with virtual consultations before, for example through the healthcare home model of care,³ or not, New Zealand general practice started providing the majority of patient contact virtually through phone or video consultations. Two days into the changed service delivery mode, New Zealand went into a state of national emergency under Alert Level 4, requiring all but essential services to cease across the country and people to stay at home.⁴

Although New Zealand commentary has suggested that many patients stopped contacting their general practices during this time,⁵ no published data has quantified this impact. The aim of this study was to measure the impact of these changes to how general practice services were provided by investigating changes in volume and nature

of patient contact with the practice in one general practice. This included exploring if any patient groups (by age, gender, ethnicity or socioeconomic status) had reduced contact with the practice and if any services were being under-provided compared to the 'business as usual' general practice provided in the same time period of the previous year.

Methods

Practice characteristics and response

The general practice described was an urban Dunedin general practice with about 2,500 patients providing the traditional model of doctor-led general practice care.⁶ Prior to COVID-19, face-to-face consultations were the mainstay of consulting; phone consultations and nurse triage were not established work patterns in the practice, although general practitioners (GPs) and practice nurses (PNs) would phone patients when requested. In response to the RNZCGP's call, general practice team members met and outlined how the new methods of delivery would be implemented. The Monday of the first week of the new style of care delivery was a regional public holiday, which gave an extra day of preparation. The practice had no experience with or hardware available for video consultations, so all virtual contact was by telephone. Virtual triage and virtual consultations were all undertaken by GPs. Due to various COVID-19 risk-related reasons, only two GPs and no PNs were able to see patients face-to-face. Patients were charged for phone consultations, but the study was not designed to look at financial impacts.

Study design and data collection

A single practice retrospective before and after case notes review study was conducted during April and May 2020. The two weeks following the regional anniversary day public holiday in 2020 (24 March to 3 April) were compared to the same two weeks in 2019 (26 March to 5 April). Details of all patient contacts during these two time periods were extracted from the electronic patient record (MedTech practice management system) through query builds of appointments, patient portal requests and patient tasks across the date ranges. Demographics of patients interacting with the practice were captured (age, gender,

ethnicity and deprivation). Patients were categorised as having multimorbidity or not (two or more long-term health conditions defined using established criteria)⁷ from long-term classifications lists. Mental health, alcohol or other drugs-related long-term classifications were separately recorded. Data were manually reviewed (CA) and patient contacts with the practice was categorised according to the type and nature of patient contact, as shown in Table 1. COVID-19 related consultations were categorised as acute problems.

The funded and enrolled patient age-sex register of March 2019 and March 2020 were obtained. The list of registered patients in April 2020 was extracted from MedTech, to give age, gender, ethnicity and quintile data for the practice population. Ethics approval was obtained from the Human Research Ethics Committee of the University of Otago, HD20/043.

Data analysis

A descriptively focused statistical analysis was conducted using frequencies, percentages and cross tabulations with exact 95% confidence intervals (CI) reported. The associated 95% CI were presented to aid in interpreting potential clinical significance of findings. Statistical analysis was done using Stata-15 software.

Results

Practice population

There were 2,528 registered patients in April 2020, comprised of 48% female and 52% male patients. Fifteen percent of patients were aged 0–14 years, 11% 15–24 years, 24% 25–44 years, 26% 45–64 years and 24% were aged 65 and over. By ethnicity, 80% were European, 9% Māori, 4% Pacific and 8% other ethnicities. By socioeconomic NZDep quintile, 17% were quintile 1, 15% quintile 2, 19% quintile 3, 23% quintile 4 and 24% quintile 5.

Patient contact with the practice related to patient population

Twenty percent of enrolled patients in both years had contact with the practice, (491/2,499 enrolled patients in 2019 and 515/2,613 enrolled patients in 2020), as shown in Table 2. The proportion of patient contact by gender and age groups was similar in both samples.

Table 1: Data collected from patient record.

| Variable | Data collected | Details |
|-------------------|---|---|
| Contact date | Date of practice contact | Contact with specified date ranges |
| Demographics | Gender | Gender, as defined by patient |
| | Age | Age in years |
| | Ethnicity | Self reported (Māori, Pacific, European [NZ European and Other European] and other) |
| | Deprivation | NZ Deprivation Quintile; 1 (low deprivation) to 5 (high deprivation) |
| | Multimorbidity | Presence of two or more long-term classifications |
| | Mental health or alcohol and other drugs health diagnoses | Presence of one or more mental health or alcohol and other drug long term classifications |
| Mode of contact | Face-to-face | In-person consultations |
| | Virtual | Phone consultations, either booked as appointments in response to request to phone patients |
| | | Repeat prescription request through phone call to receptionist or patient portal message |
| Service provider | General practitioner | |
| | Practice nurse | |
| Nature of contact | Acute problem | Acute illness, new health need |
| | Long-term condition | Diagnosis, management or monitoring of long-term condition |
| | Prevention | Immunisation |
| | | Cervical smear |
| | | Cardiovascular risk assessment/blood pressure check |
| | | Smoking cessation support |
| | | National bowel screening consultation |
| | Minor surgery & wound care | GP special interest skin lesion clinics, minor surgery, joint injections |
| | | Wound care |
| | Accident related | Funded by Accident Compensation Corporation |
| | Investigations related | Venesection and informing patient of results |
| Other | Other services, included giving information | |
| DNA | Patient did not attend the consultation | |
| Further services | Referral to other service | Public or private specialist or allied health |
| | Investigations requested | Laboratory or radiology investigations |

Table 2: Patients having contact with the practice compared to the enrolled population.

| | | 2019 | | | 2020 | | |
|--------------|--------|------------------|-------------------|------------|------------------|-------------------|------------|
| | | Patient contacts | Enrolled patients | % (95%CI) | Patient contacts | Enrolled patients | % (95%CI) |
| Gender | Female | 262 | 1,202 | 21 (20–24) | 285 | 1,246 | 23 (21–25) |
| | Male | 229 | 1,297 | 18 (16–20) | 230 | 1,367 | 17 (15–19) |
| Age | 0–4 | 11 | 86 | 13 (6–22) | 13 | 107 | 12 (7–20) |
| | 5–14 | 27 | 250 | 11 (7–15) | 19 | 284 | 7 (4–10) |
| | 15–24 | 25 | 261 | 10 (6–14) | 32 | 286 | 11 (8–15) |
| | 25–45 | 93 | 542 | 17 (14–21) | 102 | 603 | 17 (14–20) |
| | 45–64 | 114 | 676 | 17 (14–20) | 144 | 676 | 21 (18–25) |
| | 65+ | 221 | 684 | 32 (29–36) | 205 | 657 | 31 (28–35) |
| Total | | 491 | 2,499 | 20 (18–21) | 515 | 2,613 | 20 (18–21) |

Patient contact with the practice by demographic data

Similar proportions of patients had contact with the practice by age group, gender, ethnicity and deprivation quintile in both years, as shown in Table 3. The proportions of patients with multimorbidity and mental health, alcohol or other drugs diagnoses having contact with the practice, and the pattern of number of contacts with the practice were also similar in both years.

Type and nature of patient contact with the practice

While the proportion of patients having contacts with the practice were similar in both year samples, the type of patient contact was markedly different. In 2019, 30% of patient contacts were virtual and 70% were face-to-face contacts, while in the immediate COVID-19 period studied, 79% of patient contacts were virtual and 21% were face-to-face, as shown in Table 4. The number of phone consultations increased five-fold from 57 in 2019 to 255 in 2020, and phoned or electronic requests for repeat prescriptions nearly doubled from 146 in 2019 to 269 in 2020. As noted above, the context of the practice meant that most contact with patients in 2020 was undertaken by GPs.

Similar numbers of acute consultations and accident-related consultations were undertaken in both years. More long-term condition management consultations were

seen in 2020 compared to 2019. The balance of subtypes changed from similar numbers of long-term condition reviews and repeat prescriptions without review in 2019 (140 patient contacts for long-term condition review and 146 for repeat prescriptions) to the majority being for repeat prescriptions in 2020 (60 patient contacts were for long-term condition reviews and 285 were for repeat prescriptions). Patient contacts related to prevention were similar, with most being for immunisations (85 immunisations in 2019 compared to 87 in 2020), with no cervical screening or bowel screening consultations in 2020.

In 2019, 17 patients were referred to other health services, 13 of which were for long-term condition consultations, whereas no referrals were made in 2020. In 2019, 61 laboratory and radiology investigations were ordered, (32 in acute consultations and 23 in long-term condition consultations) whereas only one investigation was ordered in 2020.

Virtual and face-to-face patient contacts

When considering the proportion of patient contacts with the practice there was no evidence of differential access to face-to-face or virtual consultations within each year sample by gender, age groups and ethnicity, as shown in Table 5. The reported proportion of face-to-face consultations experienced by patients living in quintile

Table 3: Demographics and health characteristics of patients in contact with the practice.

| | | 2019 | | 2020 | |
|--|----------------------------------|------|------------|------|------------|
| | | n | % (95%CI) | n | % (95%CI) |
| Age group | 0–4 | 11 | 2 (1–4) | 13 | 3 (1–4) |
| | 5–14 | 27 | 6 (4–8) | 19 | 4 (2–6) |
| | 15–24 | 25 | 5 (3–7) | 32 | 6 (4–9) |
| | 25–45 | 93 | 19 (16–23) | 102 | 20 (16–24) |
| | 45–64 | 114 | 23 (20–27) | 144 | 28 (24–32) |
| | 65+ | 221 | 45 (41–50) | 205 | 40 (36–44) |
| Gender | Female | 262 | 53 (49–58) | 285 | 55 (51–60) |
| | Male | 229 | 47 (42–52) | 230 | 45 (40–49) |
| Ethnicity | European | 424 | 86 (83–89) | 450 | 87 (84–90) |
| | Māori | 35 | 7 (5–10) | 31 | 6 (4–8) |
| | Pacific | 9 | 2 (1–4) | 9 | 2 (1–3) |
| | Other | 21 | 4 (3–7) | 19 | 4 (2–6) |
| | No data | 2 | 0 (0–2) | 6 | 1 (0–3) |
| Quintile (socio-economic deprivation) | 1 (low) | 74 | 15 (12–19) | 78 | 15 (12–19) |
| | 2 | 81 | 17 (13–20) | 76 | 15 (12–18) |
| | 3 | 96 | 20 (16–23) | 100 | 19 (16–23) |
| | 4 | 110 | 22 (19–26) | 112 | 22 (18–26) |
| | 5 (high) | 117 | 24 (20–28) | 140 | 27 (23–31) |
| | No data | 13 | 3 (1–5) | 9 | 2 (1–3) |
| Multimorbidity | No or one long-term condition | 222 | 45 (41–50) | 256 | 50 (45–54) |
| | Two or more long-term conditions | 269 | 55 (50–59) | 259 | 50 (46–55) |
| Mental health, alcohol or other drugs | No diagnosis | 384 | 78 (74–82) | 394 | 77 (73–80) |
| | ≥1 diagnosis | 107 | 22 (18–26) | 121 | 24 (20–27) |
| Number of contacts with practice | 1 contact | 354 | 72 (68–76) | 406 | 79 (75–82) |
| | 2 contacts | 95 | 19 (16–23) | 84 | 16 (13–20) |
| | 3 contacts | 27 | 6 (4–8) | 17 | 3 (2–5) |
| | ≥4 contacts | 15 | 3 (1–5) | 8 | 2 (1–3) |
| Total | | 491 | | 515 | |

Table 4: Comparison of patient contacts by type, provider and nature of contact, 2019 and 2020.

| | | 2019 | | 2020 | |
|-----------------------------|------------------------------|------|------------|------|--------------|
| | | n | % (95%CI) | n | % (95%CI) |
| Type of patient contact | Virtual contacts | 203 | 30 (26–33) | 524 | 79 (76–82) |
| | Face-to-face | 481 | 70 (67–73) | 136 | 21 (18–24) |
| Type of provider | GP | 481 | 70 (67–74) | 643 | 97 (96–99) |
| | Nurse | 203 | 30 (26–33) | 17 | 3 (2–4) |
| Nature of consultation | Acute | 137 | 20 (17–23) | 156 | 24 (20–27) |
| | Long-term condition | 302 | 44 (40–48) | 364 | 55 (51–59) |
| | Prevention | 100 | 15 (12–18) | 88 | 13 (11–16) |
| | Minor surgery and wound care | 40 | 6 (4–8) | 15 | 2 (1–4) |
| | Accident related | 28 | 4 (3–6) | 21 | 3 (2–5) |
| | Investigations related | 50 | 7 (6–10) | 7 | 1 (0–2) |
| | Other | 18 | 3 (2–4) | 0 | 0 (0–1) |
| | DNA | 9 | 1 (1–3) | 9 | 1 (0–3) |
| Referral for other services | Referral made | 17 | 3 (2–4) | 0 | 0 (0–1) |
| | No referral made | 667 | 98 (96–99) | 660 | 100 (99–100) |
| Investigation undertaken | Laboratory or radiology | 61 | 9 (7–11) | 1 | 0 (0–1) |
| | No investigations ordered | 623 | 91 (89–93) | 659 | 100 (99–100) |
| Total | | 684 | | 660 | |

1 and 2 (low deprivation) areas in 2020 (27% [19–37%] and 29% [20–39%] respectively) was more than double that reported for patients in quintiles 3 and 4 areas (13% [8–20%] and 12% [8–19%] respectively), with the proportion of face-to-face consultations for patients living in quintile 5 (high deprivation) areas being 24% (18–31%). While this pattern was not seen in the deprivation data in 2019, these confidence intervals mostly overlapped as numbers were small.

Consultations involving patients with one or more mental health, alcohol or other drugs diagnosis were face-to-face in 14% (9–20%) of consultations compared to 23% (19–27%) of consultations involving patients without any mental health, alcohol or other drugs diagnoses in 2020. This was in contrast to 2019, where 70% of patient contacts for patients with or without Mental health, alcohol or other drugs were face-to-face. In 2020, 17% (13–21%) of patient contact for patients with multimorbidity were face-to-face compared to 25% (20–30%) of patient contact for those without multimorbidity. This compared to 2019, where

67% (63–72%) of contacts for patients with multimorbidity were face-to-face, while 75% (69–80%) were face-to-face for those without multimorbidity.

Acute care consultations were provided in similar volumes in each year, but shifted from 93% face-to-face in 2019 to 10% in 2020. Accident-related consultations went from 96% face-to-face in 2019 to 14% in 2020. Similarly, long-term condition-related consultations went from about half face-to-face, half virtual in 2019, to nearly all (96%) virtual in 2020. In contrast, prevention-related activities were largely provided face-to-face, related to the nature of the activities, (mostly immunisations) and what was not deliberately not provided during the COVID-19 early response, such as cervical screening. Minor surgery and wound care were also not able to be provided virtually, given the nature of those consultations, as well as venesection. The rates of ‘did not attend’ appointments was steady across both years at nine episodes, with all ‘DNA’ appointments face-to-face in 2019, and eight out of nine being virtual in 2020.

Table 5: Proportion of face-to-face and virtual patient contact by sociodemographic data and nature of consultations, 2019 and 2020.

| | | 2019 | | | | | 2020 | | | | |
|---------------------------------------|------------------------|------|--------------|---------|------------|-------|------|--------------|---------|--------------|-------|
| | | F2F | % (95%CI) | Virtual | % (95%CI) | Total | F2F | % (95%CI) | Virtual | % (95%CI) | Total |
| Gender | Female | 262 | 70 (65–75) | 112 | 30 (25–35) | 374 | 78 | 22 (18–27) | 277 | 78 (73–82) | 355 |
| | Male | 219 | 71 (65–76) | 91 | 29 (24–35) | 310 | 58 | 19 (15–24) | 247 | 81 (76–85) | 305 |
| Age | 0–4 years | 11 | 92 (62–100) | 1 | 8 (0–39) | 12 | 1 | 6 (0–27) | 17 | 94 (73–100) | 18 |
| | 5–14 years | 24 | 71 (53–85) | 10 | 29 (15–48) | 34 | 5 | 23 (8–45) | 17 | 77 (55–92) | 22 |
| | 15–24 years | 22 | 67 (48–82) | 11 | 33 (18–52) | 33 | 7 | 18 (7–33) | 33 | 83 (67–93) | 40 |
| | 25–45 years | 90 | 69 (61–77) | 40 | 31 (23–40) | 130 | 14 | 11 (6–17) | 118 | 89 (83–94) | 132 |
| | 45–64 years | 93 | 63 (55–71) | 54 | 37 (29–45) | 147 | 34 | 18 (13–25) | 152 | 82 (75–87) | 186 |
| | 65 years + | 241 | 73 (68–78) | 87 | 27 (22–32) | 328 | 75 | 29 (23–35) | 187 | 71 (66–77) | 262 |
| Ethnicity | European | 406 | 70 (66–73) | 177 | 30 (27–34) | 583 | 122 | 21 (18–25) | 454 | 79 (75–82) | 576 |
| | Maori | 39 | 70 (56–81) | 17 | 30 (19–44) | 56 | 5 | 12 (4–25) | 38 | 88 (75–96) | 43 |
| | Pacific | 9 | 75 (43–95) | 3 | 25 (6–57) | 12 | 2 | 18 (2–52) | 9 | 82 (48–98) | 11 |
| | Other | 24 | 80 (61–92) | 6 | 20 (8–39) | 30 | 3 | 14 (3–35) | 19 | 86 (65–97) | 22 |
| | Missing | 3 | 100 (29–100) | 0 | 0 (0–71) | 3 | 4 | 50 (16–84) | 4 | 50 (16–84) | 8 |
| Quintile (socio-economic deprivation) | 1 (low) | 70 | 70 (60–79) | 30 | 30 (21–40) | 100 | 27 | 27 (19–37) | 73 | 73 (63–81) | 100 |
| | 2 | 76 | 75 (66–83) | 25 | 25 (17–34) | 101 | 26 | 29 (20–39) | 65 | 71 (61–81) | 91 |
| | 3 | 88 | 68 (59–76) | 41 | 32 (24–41) | 129 | 17 | 13 (8–20) | 112 | 87 (80–92) | 129 |
| | 4 | 109 | 72 (64–79) | 42 | 28 (21–36) | 151 | 18 | 12 (8–19) | 127 | 88 (81–93) | 145 |
| | 5 (high) | 119 | 68 (60–75) | 57 | 32 (26–40) | 176 | 43 | 24 (18–31) | 137 | 76 (69–82) | 180 |
| | no data | 19 | 70 (50–86) | 8 | 32 (14–50) | 27 | 5 | 33 (12–62) | 10 | 67 (38–88) | 15 |
| Multi-morbidity | ≤1 long-term condition | 211 | 75 (69–80) | 72 | 25 (21–31) | 283 | 78 | 25 (20–30) | 235 | 75 (70–80) | 313 |
| | ≥2 long-term condition | 270 | 67 (63–72) | 131 | 33 (28–38) | 401 | 58 | 17 (13–21) | 289 | 83 (79–87) | 347 |
| Mental health, alcohol or other drugs | nil | 372 | 70 (66–74) | 157 | 30 (26–34) | 529 | 113 | 23 (19–27) | 376 | 77 (73–81) | 489 |
| | ≥ 1 | 109 | 70 (63–77) | 46 | 30 (23–38) | 155 | 23 | 14 (9–20) | 148 | 87 (81–91) | 171 |
| Nature of contact | Acute | 127 | 93 (87–96) | 10 | 7 (4–13) | 137 | 15 | 10 (5–15) | 141 | 90 (85–95) | 156 |
| | Long-term condition | 155 | 51 (46–57) | 147 | 49 (43–55) | 302 | 16 | 4 (3–7) | 348 | 96 (93–98) | 364 |
| | Prevention | 100 | 100 (96–100) | 0 | 0 (0–4) | 100 | 86 | 98 (92–100) | 2 | 2 (0–8) | 88 |
| | Surgery/ wounds | 39 | 98 (87–100) | 1 | 3 (0–13) | 40 | 15 | 100 (78–100) | 0 | 0 (0–22) | 15 |
| | Accident | 27 | 96 (82–100) | 1 | 4 (0–18) | 28 | 3 | 14 (3–36) | 18 | 86 (64–97) | 21 |
| | Investigations | 18 | 36 (23–51) | 32 | 64 (49–77) | 50 | 0 | 0 (0–41) | 7 | 100 (60–100) | 7 |
| | Other | 6 | 33 (13–59) | 12 | 67 (41–87) | 18 | 0 | | 0 | | 0 |
| | Non-attendance | 9 | 100 (66–100) | 0 | 0 (0–34) | 9 | 1 | 11 (0–48) | 8 | 89 (52–100) | 9 |
| Total | | 481 | | 203 | | 684 | 136 | | 524 | | 660 |

Discussion

Summary of findings

The same proportion of patients had contact with the practice in the immediate post-COVID-19 period, compared to the same time period in 2019, with a similar number of total contacts. Contact by age, gender, ethnicity, deprivation, presence of multimorbidity or mental health diagnoses were similar in both years.

While 70% of patient contacts were face-to-face in 2019, just 21% were face-to-face in 2020, with a five-fold increase in phone consultations in 2020. Patients had more long-term condition-related contact in 2020, largely due to patients requesting repeat prescriptions of long-term medications, which was likely to reflect a desire to secure medication supply in a time of uncertainty. Most acute illness, accident-related and long-term condition-related contacts were able to be provided virtually but not prevention-related contact, such as immunisations, and other “hands-on” activities such as minor surgery.

The study findings suggest that there were no obvious patient sub-groups who missed out on being able to access services during the COVID-19-imposed constraints on the practice, although there may have been more access to face-to-face consultations for patients living in the most and least deprived areas compared to others. In addition, patients with multimorbidity and with mental health diagnoses may have had less face-to-face contact in 2020 compared to patients without these conditions.

A sharp drop in the number of referrals made and investigations ordered in 2020 was noted. Most of the referrals made in 2019 were related to long-term conditions consultations, and no referrals were made in 2020. In contrast, half of the laboratory and radiology investigations ordered in 2019 were for acute illnesses, with only one investigation ordered in the two weeks in 2020.

Strengths and limitations

A key strength of this study was its design as a manual review of the electronic primary care record for all patients seen in the practice during the sample period, as it provided granular detail on the nature of patient contact with the practice. The quality of long-term condition coding in

the notes would have influenced the prevalence of multimorbidity and mental health diagnoses, and these could have been underrepresented. Practice nurse to patient phone contact in 2019 where patients spoke directly to the nurse when phoning in were not captured by the methods used to detect patient contact with the practice. This was estimated by the lead PN to be at the most 40 contacts in the two-week period, compared to the 684 contacts detected.

The small sample size means there is imprecision in the point estimates with wide confidence intervals and the single practice study design limits the generalisability of the findings, particularly regarding Māori and Pacific patients due to low numbers. There is a need for similar research in a broader sample of general practices, including rural as well as urban settings, and in practices with larger proportions of Māori and of Pacific patients, and over a longer time period, to explore these findings further.

Comparison with existing literature

The practice population was older than the New Zealand population, with more European and less Māori, Pacific and patients of other ethnicity than the New Zealand population⁸ and with higher levels of deprivation than the New Zealand population, as nearly half of the practice population (47%) living in deprivation quintiles 4 and 5. The practice sits within the middle tertile of practice size in New Zealand.⁹ In 2014 about one quarter of all New Zealand general practices were medium-sized urban practices (263 out of 988 total practices), with an average of 3,124 patients per practice.⁹ While over 150 general practices in New Zealand are currently implementing the Health Care Home model of primary care with routine use of virtual contact between practice and patients in patient care,¹⁰ the majority of general practices in New Zealand continue with a traditional model of care based around the face-to-face patient consultation.

Our findings of the switch from face-to-face to virtual consultations during the COVID-19 initial phase are similar to the limited reported data internationally. Analysis of UK data showed that more than 70% of general practice consultations were undertaken face-to-face in the UK prior to COVID-19, whereas during their initial

'lockdown', 23% of consultations were face-to-face.¹¹ Similarly, a single geriatric primary care clinic in the US reported a change from no virtual consultations pre-COVID-19 to 91% of consultations being virtual during their 'shelter-in-place' order, with the majority being telephone calls.¹²

While there has been media¹³ and medical⁵ commentary of reductions in patient contact with practices during New Zealand's COVID-19 induced change in general practice service delivery, no published New Zealand data have quantified these impacts to date. In a survey of 170 general practice providers' views in May 2020, two months into the COVID-19 pandemic in New Zealand, 84% of respondents reported large reductions in patient volumes at their practices, although it was not clear whether virtual consultations were included, as 58% of respondents noted that they were reporting "a lot" of telephone consultations.¹⁴ One third of respondents in the survey were not doing any video consultations, which was consistent with our experience. Our study did not look at financial impact, but 11% of respondents in the survey indicated financial difficulties.¹⁴

Implications for clinical practice and health policy

This study has investigated the outcomes when a traditional New Zealand urban general practice rapidly changed its service delivery model during COVID-19 'lockdown' from one based around the face-to-face consultation to one where the large majority of patient contact was by phone. It appears that patients continued to connect with the practice despite these changes. While it is unlikely this high rate of virtual consultation will continue, the potential to provide healthcare in a different way has been shown. It is unlikely that patients¹⁵ and practices¹⁶ across New Zealand will want to completely return to the old way of doing things, although a repeat survey of general practice providers indicated that by June 2020, 90% of respondents noted that they were seeing most of their patients face-to-face.¹⁷ Ongoing evaluation of how patients engage with general practices as the 'new normal' in the post-COVID-19 context emerges will be needed. It will be important to monitor the impact of emerging models

of mixed face-to-face and virtual patient contact on patients with high health needs to ensure they have acceptable, equitable access and improved health outcomes.

Most of the referrals to other health providers made in 2019 (with none made in 2020) were for long-term conditions. These 'missing' referrals in 2020 would likely be deferrable to a later date. In contrast, half of the investigations ordered in 2019 were for acute health problems (with one only ordered in 2020). Given this large reduction in investigations ordered despite a similar number of patient contacts in 2019, it would be worth exploring if any negative (or potentially positive) impacts were observed in patient outcomes.

More patients in the post-COVID-19 time-period requested a repeat prescription rather than a long-term condition review. This could lead to deferred and delayed management of long-term condition complications and should be monitored. As practices relax the constraint on face-to-face patient contact, deferrable activities such as cervical screening, bowel cancer screening, and health promotion activities such as cardiovascular risk assessment and smoking cessation support should recommence and this also needs monitoring at population level through primary health organisation and district health board data collection.

The decision for a patient contact to be face-to-face or virtual in the immediate COVID-19 restrictions studied here was largely doctor-driven rather than patient choice and patient satisfaction was not explored here. Patients with multimorbidity and with mental health and addiction issues may have been happy not to come into the practice to maintain social distancing so as not to get sick, or due to anxiety about going out in an uncertain environment. The quality of the pre-existing relationships with patients may also have influenced doctors' decision making, and the nature of the health conditions under discussion. A recent survey of patient experience with virtual consultations during COVID-19 was generally positive and respondents wanted them to continue to be available.¹⁵ These areas warrant further investigation, including the acceptability of virtual consultations to patients.

Conclusion

This study showed that, in one practice at least, patient contact was similar pre- and post-COVID-19 changes, although the nature of patient contact with the practice was markedly different. Further investigation to confirm these findings across

multiple practices and over time is needed to inform the planning and implementation of services in the post-COVID-19 setting. Ongoing evaluation needs to explore the impact of changes on patient groups with high health needs, so that emerging models are acceptable and equitable.

Competing interests:

Nil.

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