



Contents lists available at ScienceDirect

Australian Critical Care

journal homepage: www.elsevier.com/locate/aucc

Brief research report

Low prevalence of communication between intensive care unit medical staff and general practitioners: A single-centre retrospective study

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ARTICLE INFORMATION

Article history:

Received 18 November 2022

Received in revised form

1 March 2023

Accepted 2 March 2023

Keywords:

Communication

Primary care

General practice

Interdisciplinary consultations

A B S T R A C T

Background: General practitioners (GPs) have a central role in delivering care to the Australian community, which includes coordinating management of chronic diseases and treatment of patients after admission to intensive care units (ICUs). Consultations between ICUs and GPs may become increasingly relevant as patients of advancing age and chronic disease burden are admitted to ICUs. However, how frequently and for what reason such consultations occur remain unclear.

Objectives: The objective of this study was to determine the prevalence and themes of consultations between ICU medical staff and GPs.

Methods: Ten years of electronic medical records in the ICU of a regional Australian hospital were searched for patient admissions documenting the terms “gp”, “general p*”, or “primary care*” anywhere throughout the record. The proportion of ICU admissions in which a consultation between ICU staff members and GPs was documented was recorded along with the reason/s for the consultation and designation (resident, registrar, consultant) of those who communicated with the GP.

Main outcome measures: Main outcome measures included the proportion of ICU admissions with a documented consultation between ICU staff and GPs, theme of the consultation, and designation (resident, registrar, consultant) of those who communicated with the GP.

Results: Of 13 402 admissions to the ICU, 137 (1.02%) had a documented consultation between ICU medical staff and GPs. Most consultations (n = 116, 85%) were initiated by junior ICU medical staff members seeking clinical information from the GPs. Few consultations were to discuss goals of care (n = 10, 7.3%) or care following ICU discharge (n = 15, 11%).

Conclusions: Consultations between ICU medical staff and GPs were infrequent. Further research is required on how best to integrate the health care provided by ICUs and GPs.

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<https://doi.org/10.1016/j.aucc.2023.03.001>

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1. Introduction

General practitioners (GPs) have a central role in the delivery of health care to the Australian community.¹ Caring for people of all ages and diseases, they are specialists in providing longitudinal care, coordinating the management of multiple other medical

teams, and are typically a patient's first point of contact for health advice.

While the focus of many GPs is not managing patients with short-term, acute critical illness, it is likely that their insights can provide a description of a patient's background health status, help ensure intensive care unit (ICU) treatment plans align with patient-centred goals of care, enable supports for patients' families, and aid in care after hospital discharge. As critical care becomes more complex and patients of advanced age and chronic disease are referred to the ICU, the insights and consultation with a patient's GP may be increasingly relevant.^{2–4} Indeed, some critical care guidelines currently recommend communication with the patient's GP.^{5,6}

However, it is unclear how often GPs are consulted when a patient they know becomes critically unwell and gets admitted to an ICU. Survey studies conducted in France and Ireland have highlighted limited communication between ICUs and GPs.^{7,8} There have been no Australian studies reporting the interaction between intensive care and general practice.

Hence, we sought to describe the communication between ICU medical staff and GPs. Our primary objective was to determine the number and proportion of ICU admissions in which a consultation had taken place between a GP and ICU medical staff. Secondly, we sought to describe the purpose of the consultations and determine the designation of the medical staff members involved.

2. Methods

2.1. Study design

This was a single-centre retrospective study of patient admissions to the ICU at Barwon Health between 1/1/2012 and 31/12/2021 (10 y). Ethics approval was granted via the Barwon Health Research Ethics Governance and Integrity Unit (reference: HREC/86090/VICBH-2022-312257).

2.2. Study setting

Barwon Health (Geelong, Victoria, Australia) serves a regional population of approximately 400 000 people. It comprises a general hospital of 370 in-patient beds, with 17 funded ICU beds. The ICU manages a general medical–surgical case-mix, including cardiac surgery, paediatrics, and extra-corporeal life support. Medical staffing is led by intensive care specialists, with trainees (registrars) and junior medical staff (residents). All documentation by ICU staff members is performed using an in-house clinical information system (SLIC, ref). The hospital has a GP liaison department, and the ICU does not have a protocol or guideline describing the role of medical staff communicating with a patient's GP. At present, routine communication with GPs is limited to automatic notification of in-hospital deaths and hospital discharge summaries from the treating in-patient team.

2.3. Data sources

Data were obtained from the ICU clinical information system and hospital medical records. The ICU clinical information system was searched for patient admissions containing the search terms “gp”, “general p*”, and/or “primary care*” anywhere throughout the record. These admission records were reviewed by two researchers (SW, MJM), and case records were included if the medical record represented a consultation between ICU medical staff and a GP. The number of excluded records and reasons for exclusion were recorded.

Data collected from case records included patient age, gender, admission diagnosis (APACHE III-J categories), admission type

(planned, unplanned), illness severity scores (APACHE II and III), Australian and New Zealand Risk Of Death score, comorbidities (APACHE definitions), preferred language (English, other), source of ICU admission (emergency department, ward, operating theatre, other hospital, mental health facility), treatment limitations (at ICU admission, after ICU admission), length of stay in ICU, supportive treatment provided (invasive ventilation, duration of ventilation, renal replacement therapy, tracheostomy), and patient outcome (died in ICU, died in hospital, discharged home, transfer to another hospital, rehabilitation, mental health facility).

2.4. Consultation between ICU medical staff and GPs

The consultation between ICU medical staff and the GP was described by (i) the time after ICU admission that it occurred; (ii) designation of the ICU medical staff member (consultant, registrar, resident) who had the consultation with the GP; and (iii) the purpose of the documented consultation. The purpose of the consultation was determined by two researchers reading the free text of the medical record and assigning thematic categories. Each record could have more than one theme.

2.5. Statistical methods

Results for categorical data are presented as the number (%), and continuous data are presented as median (interquartile range [IQR]). Proportions are presented with 95% confidence intervals (CIs), and linear regression is used to summarise changes over time (GraphPad Prism). Subgroup analysis of admissions with an ICU length of stay of 7 or more d was conducted.

3. Results

There were 13 402 admissions to the ICU over the 10-year study period. A search term was identified in 845 admission records, of which 708 were excluded (Fig. 1). Documentation of a consultation between ICU medical staff and a GP was identified in 137 (1.0%) admission records and tended to occur more frequently over the study period ($P = 0.052$) (Fig. 2).

3.1. Patient characteristics

The median age of patients was 61 (52–70) y, 89% had a medical diagnosis, and 88% were unplanned admissions to the ICU (Table 1). Most patients presented to the ICU from the emergency department (50%) or another hospital (26%). The median length of stay in the ICU was 4.8 (2.5–8.7) d, 67% received mechanical ventilation, and 11% had renal replacement therapy. Treatment limitations had been documented for 6 (4.4%) patients on admission to the ICU and a further 24 (18%) patients during their ICU admission. A total of 30 (22%) patients died during their hospital admission.

3.2. Characteristics of the ICU–GP consultation

The median time from ICU admission to consultation with the GP was 1 (1–3) d (Table 2). GPs initiated contact with the ICU medical staff in four cases, whereas all other interactions were initiated by ICU medical staff members. Junior medical staff members (resident medical officer or registrars) in the ICU conducted 116 (85%) of the consultations with a GP. The most frequent purpose of the consultation was obtaining collateral history from the GP (80%), while discussion with the GP about patients' goals of care was documented for 10 (7.3%) patients.

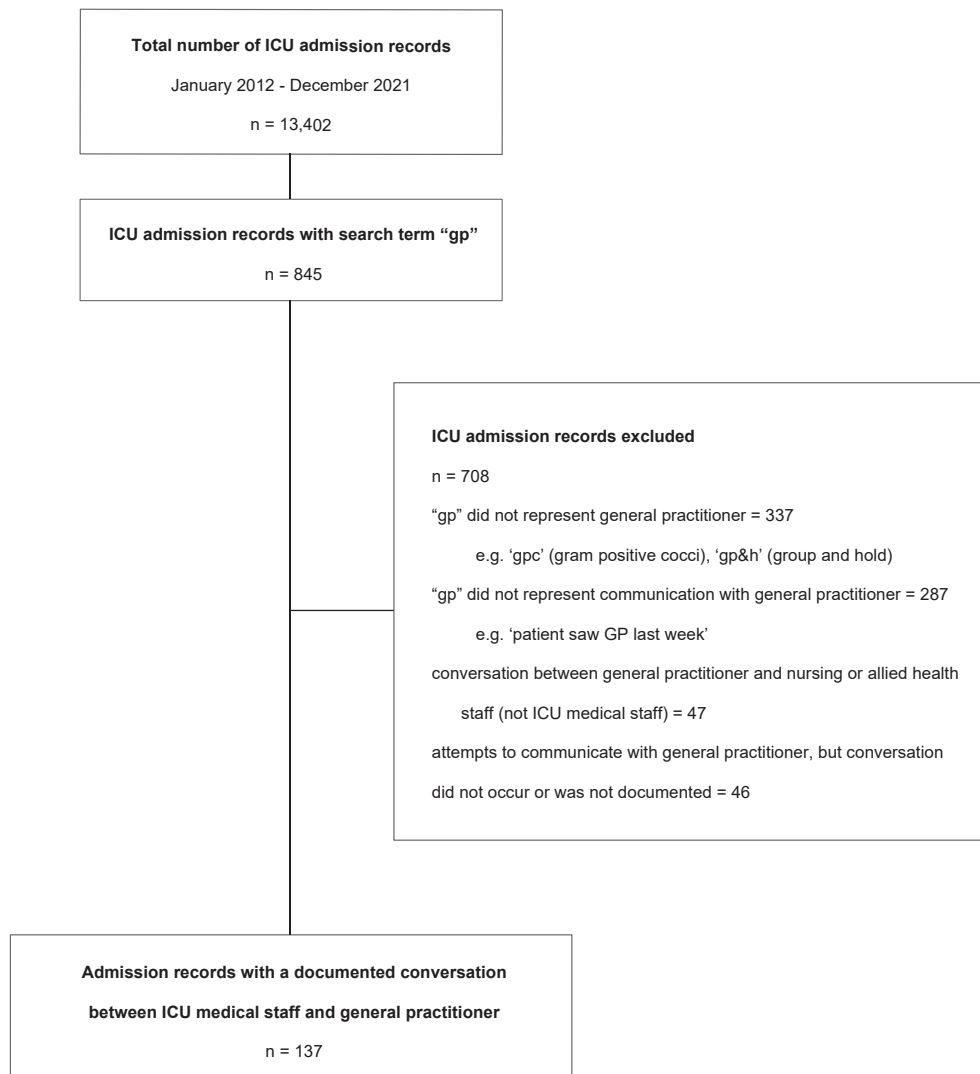


Fig. 1. Flow diagram of ICU admissions included for analysis. ICU, intensive care unit.

3.3. Subgroup analysis

There were 1182 (8.8%) admissions with a length of ICU stay of at least 7 d. A consultation between ICU medical staff and GP was documented in 45 (3.8%) cases, and the frequency did not change significantly over time ($P = 0.10$) (Supplement figure).

4. Discussion

We report that only 1% of patient admissions to the ICU over a 10-year period contained documentation of a consultation between ICU medical staff and a GP. Even in the subgroup with prolonged ICU admissions (≥ 7 d), only 4% had any record of ICU medical staff consulting with a GP. Consultations were typically junior medical staff seeking further clinical information about a patient from their GP. A minority discussed patient values and goals of care. To our knowledge, this is the first Australian study exploring consultation between ICU medical staff and GPs and highlighting an important opportunity to address integration of health care during critical illness.

Our findings are similar to those of other studies investigating communications between ICU medical staff members and GPs. A survey of French GPs reported that communication with ICU medical staff was infrequent, and despite GPs seeking to be

involved in patients' treatment decision, this rarely occurred.⁷ Similarly, a survey of Irish GPs reported infrequent clinical communication with ICU medical staff and that this usually involved the ICU seeking rather than sharing information.⁸ Both studies also noted that GPs obtained most information about the ICU admission from the patient or family.

There may be several reasons why consultation between ICU medical staff members and GPs was infrequent. Firstly, an ICU usually admits and discharges patients between hospital departments rather than directly from GPs. Communication is typically between hospital staff members, and consulting with the patient's GP may be overlooked. Segregation of the healthcare systems within which ICUs and GPs typically operate may contribute to this. Secondly, ICU medical staff members may perceive consultation with GPs to be the responsibility of other hospital staff members and to occur when the patient is approaching hospital discharge. This view has been reported in previous studies.^{7,8} For ICU medical staff members, there may be a tendency to focus on patient survival and management processes rather than a broader view of patient care. Thirdly, there may be barriers to contacting a patient's GP. We noted 38 admissions where ICU medical staff members documented they were unable to contact the GP during a patient's admission. This may reflect

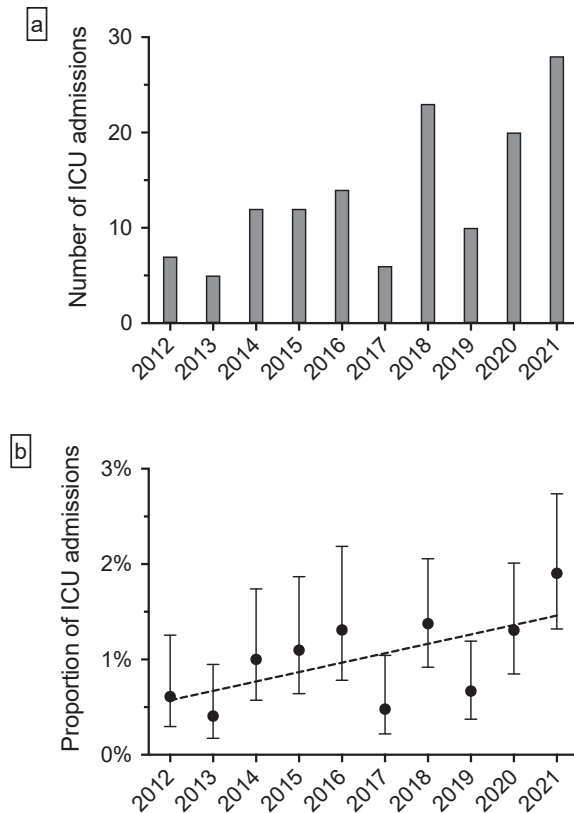


Fig. 2. The (a) number and (b) proportion of ICU admission records at Barwon Health (Geelong) that contained documentation of a consultation between ICU medical staff and a general practitioner. Proportions are presented with 95% confidence intervals and linear regression line ($P = 0.052$). ICU, intensive care unit.

change in general practice towards part-time, team-based work over multiple locations.⁹

The very low prevalence of consultation between ICU medical staff and GPs represents an opportunity to enhance coordinated and patient-centred health care. GPs typically have a unique understanding of their patient's premorbid diseases, values, goals of care, and social determinants of health.¹⁰ For some, the GP has a similar cultural and language background as their patient. These insights are important to understand when a patient becomes critically ill not only for developing patient-centred treatment plans in an ICU setting but also to enhance continuity of care when a critically ill patient recovers to leave hospital.^{3,4,11–13} Consulting with hospital medical teams alone is unlikely to provide the unique insights and longitudinal health care provided by a GP. The GP may also be a point of support for families/friends who are traumatised by the experience of watching a loved one in an ICU.¹⁴ Further research is required to understand how to best facilitate consultations between ICUs and GPs and assess the impact of this on patients, families, and carers.

The main limitation of this study is that consultations between ICU medical staff and GPs were identified only from those documented in the medical record and may not account for all consultations that occurred during the study period. However, ICU staff members typically document consultations with in-hospital specialist teams, and it would be reasonable to expect relevant clinical information from GPs to appear in patient notes accordingly. We also acknowledge this was a single-centre study, and generalisability of our findings is uncertain.

Table 1
Cohort characteristics.

Characteristic	N = 137
Age, years	
Median	61
IQR	52–70
Range	0–83
Gender, n (%)	
Female	61 (45)
Male	76 (55)
Preferred language not English, n (%)	3 (2.2%)
Chronic disease, ^a n (%)	35 (26)
Admission type, n (%)	
Planned	17 (12)
Unplanned	120 (88)
Source of ICU admission	
Emergency department	69 (50)
Other hospital	36 (26)
Ward	17 (12)
Theatre	14 (10)
Mental health	1 (0.7)
Severity of illness, ^b score, median [IQR]	
APACHE II	18 [14–24]
APACHE III	64 [48–85]
ANZROD	0.08 [0.03–0.28]
Diagnostic category, n (%)	
Medical	
Cardiovascular	15 (11)
Respiratory	34 (25)
Sepsis	28 (20)
Gastrointestinal	6 (4.4)
Neurologic	18 (13)
Metabolic	16 (12)
Renal/genitourinary	3 (2.1)
Trauma	1 (0.7)
Unknown	1 (0.7)
Surgical	
Cardiovascular	5 (3.6)
Gastrointestinal	10 (7.3)
ICU length of stay, days	
Median	4.8
IQR	2.5–8.7
Range	0.2–110.7
>7 days, n (%)	44 (32)
ICU treatments, n (%)	
Invasive ventilation	92 (67)
Duration of ventilation, days, median [IQR]	1.3 [0.0–4.8]
Renal replacement therapy	15 (11)
Tracheostomy	9 (6.6)
Treatment limitations, n (%)	
On admission to ICU	6 (4.4)
Subsequent to ICU admission	24 (18)
Patient outcome, n (%)	
Died	30 (22)
ICU	24 (18)
Ward	6 (4.4)
Survived	107 (78)
Home	63 (46)
Other hospital	21 (15)
Rehabilitation	14 (10)
Discharged against medical advice	4 (2.9)
Mental health facility	2 (1.5)
Nursing home	3 (2.2)

ANZROD, Australian and New Zealand Risk Of Death; ICU, intensive care unit.

^a Chronic disease as defined by APACHE.

^b APACHE score was available for 136 patients and ANZROD for 80 patients.

Table 2
Characteristics of conversations between ICU medical staff and GPs.

Conversation characteristic	N = 137
Duration into ICU admission when conversation occurred	
Median	1
IQR	1–3
Range	0–18
>7 days, n (%)	15 (11)
Designation of ICU medical staff that contacted GP	
Resident medical officer ^a	75 (55)
Resident medical officer and registrar	1 (0.7)
Registrar	40 (29)
Consultant	21 (15)
Reason for contacting GP ^b	
Collateral history	109 (80)
Update GP	20 (15)
Discharge planning	15 (11)
Results of investigations	11 (8.0)
Goals of care/end of life	10 (7.3)
GP able to communicate with patient/family in preferred language	1 (0.7)

GP, general practitioner; ICU, intensive care unit.

^a Two GPs were contacted twice; one by the same resident twice.

^b There may have been more than one reason why the GP was contacted.

5. Conclusion

In this single-centre study, only 1% of ICU admissions contained documentation of a consultation between ICU medical staff and GPs. Most consultations were by junior staff members seeking medical information from the GP. Very few discussed patient treatment plans, goals of care, or discharge planning. Further studies are required to understand the barriers to consultation between ICUs and GPs and whether consulting more regularly will enhance patient-centred care.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CRediT authorship contribution statement

Sophie A. Witherspoon: Conceptualisation, data curation, formal analysis, investigation, project administration, writing – original draft, writing – review and editing. Sophie A. J. Plowman: Writing – review and editing. Paul Z. Power: Writing – review and editing. Anne Mulvey: Resources, software, writing – review and editing. Kimberley J. Haines: Writing – review and editing. Matthew J. Maiden: Conceptualisation, data curation, formal

analysis, investigation, methodology, project administration, supervision, writing – review and editing.

Conflict of interest

None declared.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.aucc.2023.03.001>.

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