The Role of the Command Center in Regulating Patient Flow in General Hospital

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ABSTRACT
The Command Center system has been piloted at RSUP Prof. dr. I.G.N.G. Ngoerah for approximately one year; however, its performance has not previously been evaluated. This study aimed to assess the effectiveness and efficiency of the Command Center in regulating patient flow within the hospital. A mixed-methods design was employed and conducted from December 2024 to May 2025. Secondary data, consisting of referral volume reports and response-time records, were analyzed descriptively. Primary data were collected through in-depth interviews and focus group discussions involving seven key informants and four FGD groups, and were analyzed thematically. The findings indicate that the Command Center increased the number of accepted incoming referrals by 53%, while the proportion of unaccepted referrals decreased by 26%. The system also reduced patient congestion in the Emergency Department by enabling direct transfer of referred patients to the appropriate inpatient units based on clinical needs, bypassing the ED when necessary. Response times varied across medical staff groups, ranging from 14 to 136 minutes. However, by January 2025, approximately 93% of referrals achieved a response time of ≤60 minutes, with an average of around 20 minutes per referral. Overall, the Command Center improved the effectiveness and efficiency of the referral process, ensuring that referred patients received timely and appropriate care according to their medical condition and service requirements.
Keywords: command center; effectiveness; efficiency; patient flow

INTRODUCTION
The referral system constitutes a structured and tiered mechanism that governs the transfer of clinical responsibility across different levels of healthcare services, with the overarching aim of ensuring that patients receive care aligned with their medical needs [1]. The Indonesian Ministry of Health Regulation No. 16 of 2024 outlines several key considerations in determining whether a patient should be referred, including patient safety, effectiveness, efficiency, and geographical constraints [2]. To support these principles, the Government of Indonesia has implemented an integrated national referral platform known as the *Sistem Informasi Rujukan Terintegrasi* (SISRUTE). SISRUTE is designed as an internet-based communication and information system that facilitates individual patient referrals between healthcare facilities, thereby accelerating the referral process and improving coordination across service levels [3-11].

Despite its intended function, the implementation of SISRUTE continues to face several operational challenges. These include technical and infrastructural limitations; such as unstable internet connectivity, inadequate hardware, and lack of interoperability with existing Hospital Management Information Systems as well as human resource constraints, including limited user comprehension and insufficient dedicated personnel. Process-related issues have also been reported, such as slow data verification, limited real-time information availability, and the absence of standardized operating procedures governing SISRUTE workflows. Collectively, these barriers hinder the system's ability to function optimally and consistently across healthcare facilities [12-14].

In response to these persistent challenges, RSUP Prof. dr. I.G.N.G. Ngoerah has undertaken strategic efforts to strengthen its referral workflow by developing a hospital-level Command Center. In early 2024, the hospital launched this Command Center as a centralized communication and coordination hub for managing emergency services and patient referrals, both inbound and outbound. Operational communication within the Command Center is primarily conducted through the WhatsApp platform, enabling rapid information exchange among clinical and administrative teams. The Command Center–based referral system has been operational for approximately two years; however, the hospital has not yet conducted a formal evaluation to assess its performance, effectiveness, or efficiency.

Given this gap, the present study aimed to evaluate the effectiveness and efficiency of the Command Center system at RSUP Prof. dr. I.G.N.G. Ngoerah. The findings are expected to provide an evidence-based overview of the system's current performance and to serve as a foundation for decision-making regarding its future development and sustainability.

METHODS
This study was conducted at RSUP Prof. dr. I.G.N.G. Ngoerah, Denpasar, over a six-month period from December 2024 to May 2025, employing a combination of quantitative and qualitative approaches. The research utilized both primary and secondary data to compare referral patterns before and after the implementation of the hospital's Command Center system. The secondary data included the number of incoming and outgoing referrals, the types of services referred, and the response time required to provide referral decisions. These data were analyzed descriptively to generate an overview of the effectiveness and efficiency of the Command Center–based referral system.

To complement and enrich the descriptive findings derived from secondary data, the researchers collected primary data through in-depth interviews with seven key informants and conducted Focus Group Discussions (FGDs) with four stakeholder groups. The key informants for the in-depth interviews consisted of the Director of Medical Services, the Command Center coordinator, the nursing manager, the medical services manager, administrative personnel, the Head of the Emergency Department (ED), and the ED coordinator. Meanwhile, the FGDs were conducted with groups representing referring hospitals, resident physicians, RSUP Prof. dr. I.G.N.G. Ngoerah staff, and nursing staff. The qualitative data obtained from interviews and FGDs were subsequently analyzed using thematic analysis to identify recurring patterns, operational challenges, and perceived benefits of the Command Center system.

RESULTS
The effectiveness of a system or program can be assessed through several components, one of which is its production capacity or output performance. The transition of the referral mechanism at RSUP Prof. dr. I.G.N.G. Ngoerah from the Manager on Duty (MOD) model to a Command

Center–based system has resulted in notable changes in the volume of referrals received. Referrals processed through the Command Center are categorized into incoming and outgoing referrals. Incoming referrals refer to cases submitted by external healthcare facilities or hospitals to RSUP Prof. dr. I.G.N.G. Ngoerah, whereas outgoing referrals represent cases transferred from RSUP Prof. dr. I.G.N.G. Ngoerah to other healthcare institutions.

As illustrated in Figure 1, the number of incoming referrals increased following the implementation of the Command Center. The average monthly incoming referrals in 2023 were 931 cases, whereas in 2024 the average rose to 1,110 cases; an increase of approximately 19.23%. This quantitative trend is supported by qualitative evidence from one of the key informants. Informant quote: "*Banyak sih, karena rujukan selalu meningkat. Jumlah rujukan meningkat. SISRUTE tercapai, yang dulu SISRUTE yang 60%, sekarang 90%.*" ["There are many referrals now because the number of referrals continues to increase. The referral volume has risen. The SISRUTE target is now being achieved; previously it was only around 60%, but it has now reached 90%."] (WM_008).

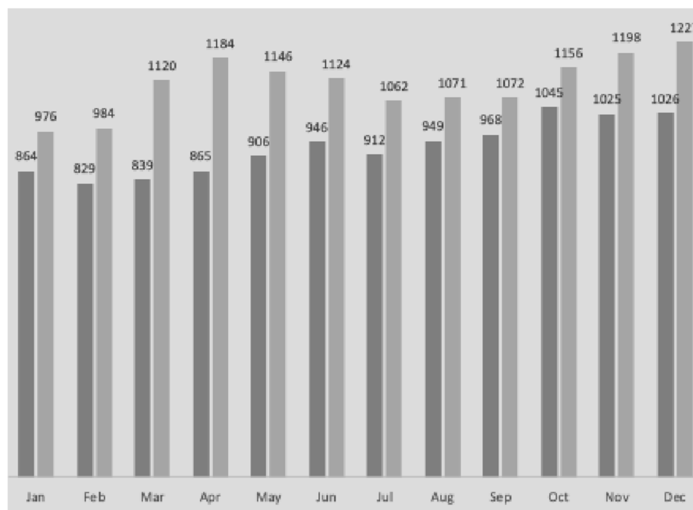
Outgoing referrals at RSUP Prof. dr. I.G.N.G. Ngoerah remain very limited. In 2023, only four outgoing referrals were recorded, and in 2024 the number decreased to three cases, representing approximately 0.02% of all referrals. This minimal proportion is likely attributable to the hospital's status as a top-tier Type A national referral center serving Bali, West Nusa Tenggara, and East Nusa Tenggara.

The effectiveness of the Command Center is also reflected in referral disposition outcomes, specifically the proportion of referrals accepted versus those declined. Figures 2 and 3 demonstrate clear differences in acceptance and rejection rates before and after the Command Center was implemented. Under the MOD-based system, the highest acceptance rate reached only 73%, while rejection rates peaked at 59%. After the Command Center became operational, the highest acceptance rate increased to 86%, and rejection rates declined to a range of 19%–43%. In total, the number of accepted incoming referrals increased from 6,056 cases in 2023 to 9,244 cases in 2024; representing a 53% rise following the adoption of the Command Center. Meanwhile, the number of incoming referrals that were not accepted decreased by 26% in 2024.

The findings from the in-depth interviews indicate a consistent view that the implementation of the Command Center has contributed to an increase in the number of incoming referrals accepted by RSUP Prof. dr. I.G.N.G. Ngoerah. This improvement is also supported by a policy directive from the Director of Medical Services, who instructed staff to accept all incoming referrals while still considering the availability of beds, equipment, and personnel according to patient needs. This policy was intended to improve the hospital's reputation, as RSUP Prof. dr. I.G.N.G. Ngoerah had previously been perceived as a facility that was difficult and slow in accepting referrals. Informant quote**:**

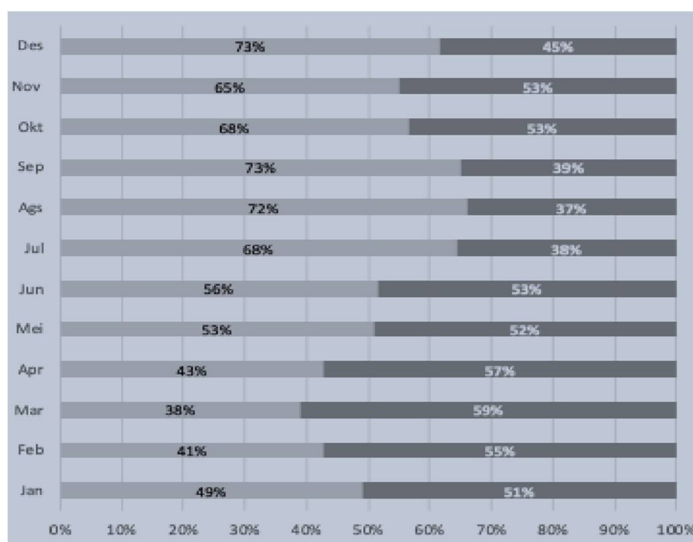
"Meningkat kita, karena kebijakan kita terima semua rujukan. cuma kita mengendalikan agak direm sedikit. Ntar ya masih ini, kita tunggu di info kembali oleh Command Center. Karena arahan dari Pak Direktur Medik juga kita harus menumbuhkan kepercayaan masyarakat. Kesannya kalau dulu kan susah sekali masuk ke RS Ngoerah." ["Our numbers have increased because our policy is to accept all referrals. We only regulate the flow slightly when needed. We wait for further information from the Command Center. The directive from the Director of Medical Services emphasizes the need to build public trust. Previously, the perception was that it was very difficult to gain admission to RS Ngoerah."] (WM_001).

The efficiency of the Command Center system is reflected in its response time, defined as the duration required to provide a decision regarding incoming or outgoing referrals. As shown in Figure 4, the Surgical Medical Staff Group (*KSM Bedah*) had the highest number of referral cases from October to December 2024, indicating a heavy workload. Despite this, the response time in the surgical unit



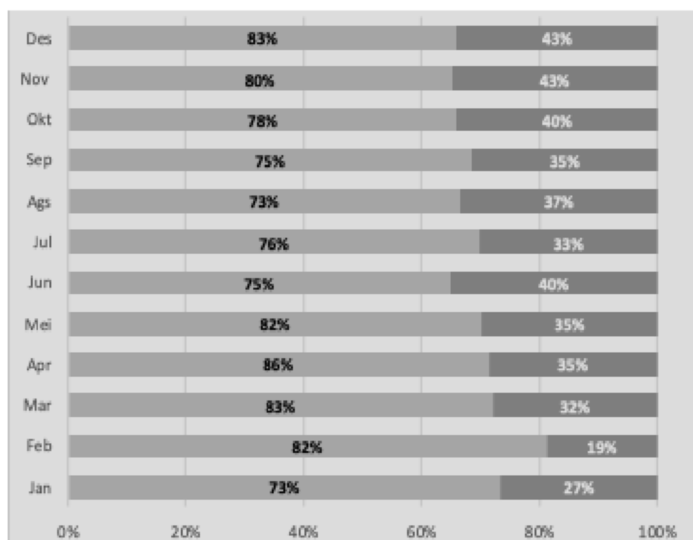
: Incoming referrals in 2023 : Incoming referrals in 2024

Figure 1. Comparison of incoming referrals before and after the implementation of the Command Center



: Accepted : Rejected

Figure 2. Comparison of accepted and rejected referrals in 2023



: Accepted : Rejected

Figure 3. Comparison of Accepted and Rejected Referrals in 2024

remained relatively stable, ranging from 64 to 73 minutes. The pediatric and neurology units showed more variation in referral volume and response time. In the pediatric unit, response time was notably high in October (203.4 minutes), increased further in November (334.8 minutes), and then decreased significantly in December (134.7 minutes). This decline may indicate improvements in referral processes despite increasing case volume. Meanwhile, the psychiatry, ENT, and dermatovenereology units had relatively fast response times, generally under 25 minutes, likely due to lower workloads and fewer referral cases. From the interviews, it was revealed that prolonged response times in the maternal and child health unit (KSM KIA) were often due to the need for specialized rooms or equipment such as ICU, NICU, PHCU, or NHCU, which were limited in availability. Informant quote:

"……yang anak yang banyak. Contoh bayi-bayi yang perlu ICU dan ruangan khusus itu ICU, NICU, PHCU, itu yang susah…. Mungkin kalau bayi khusus, mungkin ya situasi khusus. Kalau perlu PICU, PHCU, NHCU itu, jika ada tempat baru bisa diterima. Tidak berani mereka terima di UGD. Mungkin tadi kebijakan dari DPJP, jadi kalau ada tempat baru terima. Kalau tidak, tidak bisa. Mungkin ketersediaan box, mungkin ya box bayi atau suhu di UGD tidak sama dengan suhu di ruangan, itu yang kendala kami. Kami harus menyesuaikan dengan kondisi ruangan, itu saja satu, yang lain tidak ada masalah." ["The pediatric cases are the most numerous. For example, infants who require ICU or specialized rooms such as ICU, NICU, or PHCU are difficult to accommodate. For special infant cases, if PICU, PHCU, or NHCU beds are available, they can be accepted. They cannot be admitted through the ED because of DPJP policies. Admission is only possible when space is available. The availability of infant boxes or differences in room temperature between the ED and inpatient units are also challenges. We must adjust to room conditions; aside from that, there are no major issues."] (WM_001).

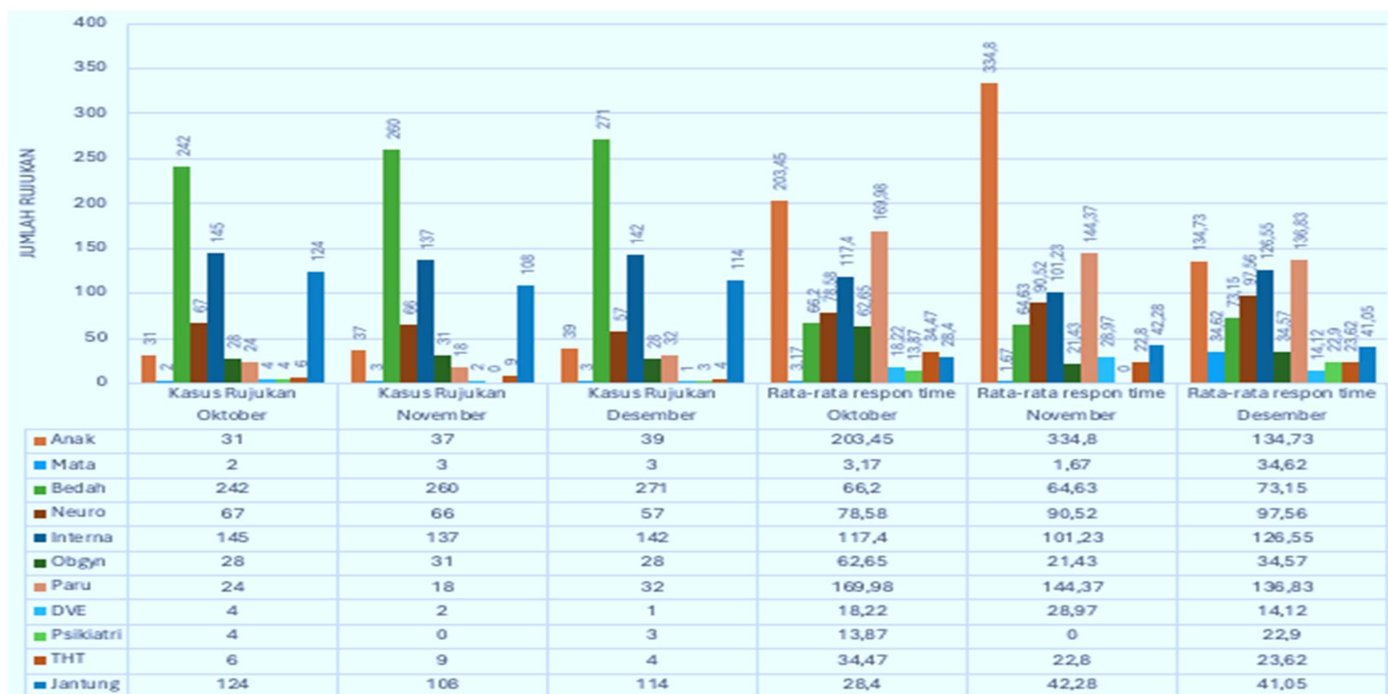
The Command Center has succeeded in providing information; although not always in real time regarding service availability and hospital readiness, thereby reducing uncertainty for referring facilities. One informant reported that in January 2025, approximately 93% of referrals had a response time of less than 60 minutes, with an average of 20 minutes per referral. This improvement was attributed to the fact that Command Center staff do not hold concurrent duties, allowing them to focus solely on referral management. Informant quotes:

"Jadi dengan demikian, apapun indikator-indikator yang harus kita capai dulu seperti misalnya respon time SISRUTE kurang dari 60 menit itu sekarang 93% tercapai untuk bulan Januari tahun kemarin ini dengan rata-rata 20 menit. Jadi jauh di bawah 60 menit respon time karena memang kita fokus untuk ngurusin rujukan-rujukan." ["Thus, indicators such as the SISRUTE response time of less than 60 minutes have now reached 93% for January last year, with an average of 20 minutes. This is far below the 60-minute threshold because we focus solely on managing referrals."] (WM_002).

"*Lebih cepat. Karena khusus megang Command Center, tidak nyambi.*" ["It is faster now because the staff handle only the Command Center and do not multitask."] (WM_001).

Several informants stated that the hospital's response time standard follows the Ministry of Health regulation, requiring responses within 60 minutes. Informant quote:

"Kita punya mutu IGD. Kurang dari 1 jam. Sudah ada Keputusan pasien diterima. Respon time, respon time kita menjawab rujukan, menjawab rujukan kurang dari 1 jam itu indikator mutu kita." ["We have an ED quality standard: less than one hour to provide a decision on patient acceptance. Our response time for answering referrals must be under one hour; this is one of our quality indicators."] (WM_008).



	Kasus Rujukan Oktober	Kasus Rujukan November	Kasus Rujukan Desember	Rata-rata respon time Oktober	Rata-rata respon time November	Rata-rata respon time Desember
Anak	31	37	39	203,45	334,8	134,73
Mata	2	3	3	3,17	1,67	34,62
Bedah	242	260	271	66,2	64,63	73,15
Neuro	67	66	57	78,58	90,52	97,56
Interna	145	137	142	117,4	101,23	126,55
Obgyn	28	31	28	62,65	21,43	34,57
Paru	24	18	32	169,98	144,37	136,83
DVE	4	2	1	18,22	28,97	14,12
Psikiatri	4	0	3	13,87	0	22,9
THT	6	9	4	34,47	22,8	23,62
Jantung	124	108	114	28,4	42,28	41,05

Note: In Indonesia version

Figure 4. Number of referral cases by Medical Staff Group (KSM) and average referral response time (October–December 2024)

Command Center staff must immediately respond to referring facilities by coordinating with the responsible specialists (DPJP). Responses may include acceptance or temporary delay due to conditions such as ED bed block or unavailable resources. Informant quote:

"Kan standarnya itu kan harus segera direspons. Mereka mengajukan rujukan, mereka harus menjawab, entah jawabannya itu adalah bisa segera dikirim, atau masih akan mengoordinasikan apakah tempat tersedia, atau mereka akan menyampaikan ditunda dulu karena UGD masih padat. Tapi respon timenya segera. Begitu mereka menelepon atau WA di nomor itu, mereka harus segera merespons." ["The standard requires an immediate response. When a referral is submitted, they must answer; either the patient can be sent immediately, coordination is needed to check

bed availability, or the referral must be delayed because the ED is full. But the response must be immediate. As soon as they call or send a message, the Command Center must respond."] (WM_001).

Before the Command Center existed, delays often caused patient congestion in the ED. With the Command Center, referral flow has become faster because coordination with each specialty unit occurs immediately. Informant quote:

"Cuma yang dulu kan jadinya otomatis jadi penumpukan karena responsenya lambat. Kalau sebelum ada Command Centre, dengan ada Command Centre otomatis flownya jadi lebih cepat. Jadi prosesnya lebih cepat, dia berkoordinasi ke KSM juga lebih cepat. Karena memang mandatnya untuk tugas itu saja." ["Previously, delays caused patient congestion in the ED. With the Command Center, the flow has become faster. The process is quicker, and coordination with the specialty units is more efficient because the Command Center is dedicated solely to this task."] (WM_003).

The Command Center also shortens referral pathways by directing patients to the appropriate unit based on clinical needs, bypassing the ED when necessary. Informant quotes:

"Command Center memperpendek alur, misalnya adalah ketika dia udah jelas sekali anak dengan ventilator, dia nggak akan ke UGD lagi. Command Center ini akan menghubungi ruangan PICU atau ruangan NICU untuk bisa diterima, diset langsung di sana." ["The Command Center shortens the pathway. For example, if a child clearly requires a ventilator, they no longer go through the ED. The Command Center contacts the PICU or NICU directly so the patient can be admitted immediately."] (WM_002).

"Iya, kalau sekarang kan cuma satu langsung ke Command Center meneruskan ke kami, ada tempat Command Center akan follow up lagi." ["Yes, now everything goes directly through the Command Center, which forwards the information to us. If a bed is available, the Command Center follows up immediately."] (WM_005).

From the perspective of referring hospitals, the Command Center has significantly accelerated the referral process due to faster communication and clearer information regarding patient condition, required equipment, and room availability. This contrasts with the previous MOD-based system, which was slower because MOD physicians had multiple clinical duties. Informant Quotes:

"Dari segi kecepatan menerima pasien, memang saya akui untuk akhir-akhir ini dengan adanya Command Centre Prof. Ngoerah ini memang lebih cepat. Dia banyak komunikasi, intinya gimana kondisi pasien, perlu ruang apa, ke triase mana. Cepat kita dapat balasan, seperti itu, dok." ["In terms of patient acceptance speed, I acknowledge that recently, with the Command Center at Prof. Ngoerah Hospital, the process has become faster. They communicate frequently; about the patient's condition, required room, and triage destination. We receive responses quickly."] (FGD Referring Hospital_015).

"Jadi kalau yang sekarang dibandingkan yang sebelumnya, jadi untuk respon jawaban pertama kali ini, jadi ketika kami menginformasikan kepada Command Centre-nya bahwa kami akan rujuk, jawabannya lebih cepat…. Dibandingkan dengan sebelumnya, mungkin kalau sebelumnya kan MOD-nya, apakah itu mobiling, apakah itu sedang handle pasien." ["Compared to before, the initial response is now much faster. When we inform the Command Center that we will refer a patient, the reply comes quickly. Previously, the MOD might have been moving around or handling patients, which delayed the response."] (FGD Referring Hospital_012).

"Jadi banyak keluhan dari rumah sakit luar kok susah sekali ya masuk ke Sanglah, kok respon timenya lama gitu… Ternyata yang menerima rujukan itu dokter umum kan. Dokter umum itu pertama dia pekerjaannya nyambi, bukan hanya menerima rujukan tapi memberi layanan." ["There used to be many complaints from external hospitals about how difficult it was to gain admission to Sanglah and how slow the response time was. It turned out that referrals were handled by general practitioners who multitasked; not only receiving referrals but also providing clinical services."] (WM_004)

DISCUSSION

The implementation of the Command Center system at RSUP Prof. dr. I.G.N.G. Ngoerah has generated a substantial positive impact on the effectiveness of the hospital's referral system. This improvement is reflected in a 53% increase in accepted incoming referrals and a 26% reduction in unaccepted referrals, demonstrating a more responsive and coordinated referral process. These achievements reinforce the hospital's position as a Type A national referral center for the regions of Bali, West Nusa Tenggara, and East Nusa Tenggara, as evidenced by the exceptionally low proportion of outgoing referrals, only 0.02% of total referrals [15,16]. Comparable outcomes have been reported internationally. For instance, Johns Hopkins Hospital documented a 46% increase in patient transfers following the establishment of a command center, while experiences in Saudi Arabia highlight how integrated command systems can enhance referral access through the synergy of streamlined processes and digital technologies. Through proactive capacity management, the Command Center at RSUP Prof. dr. I.G.N.G. Ngoerah has successfully reduced emergency department (ED) congestion by enabling referred patients to be transferred directly to the appropriate inpatient units without undergoing administrative processing in the ED [17].

One of the core objectives of establishing a command center is to facilitate patient movement from external facilities through proactive capacity oversight, allowing hospitals to increase bed occupancy rates; from 85% to 92% in some documented cases while simultaneously reducing patient delays [15]. The Saudi National Health Command Centre (NHCC) further demonstrated the potential of such systems by reducing ICU length of stay by 10%, shortening supply-chain waiting times from 60 to 25 days, decreasing surgical waiting times, expanding national bed capacity from 6,000 to 10,400 beds, and ensuring that more than 85% of emergency patients received care within four hours.

At RSUP Prof. dr. I.G.N.G. Ngoerah, the increase in accepted referrals is also influenced by a policy directive from the Director of Medical Services, who instructed staff to accept all incoming referrals while still considering available capacity. Such a policy not only improves operational responsiveness but also contributes to rebuilding the hospital's reputation, which had previously been perceived as slow and difficult in accepting referrals [18]. Regulatory and policy frameworks constitute a critical component of the organizational dimension that supports the successful implementation of referral systems. Key regulatory elements include clear referral instructions, operational guidelines, continuous process improvement, audit-based monitoring systems, and standardized referral protocols [19]. In Indonesia, the legal foundation for referral governance is outlined in the Ministry of Health Regulation No. 16 of 2024 on the Individual Health Referral System, which stipulates administrative sanctions; including written warnings and potential revocation of accreditation status for non-compliance.

The transition from the Manager on Duty (MOD) model to the Command Center has also significantly improved referral response times. Under the previous system, referral processing was often delayed because MOD officers; typically general practitioners were required to balance referral duties with clinical responsibilities. In contrast, Command Center personnel now focus exclusively on referral coordination, enabling faster communication with the Medical Staff Groups (KSM). Separating administrative referral duties from clinical tasks allows healthcare professionals to refocus on bedside care, thereby improving service quality [17]. The Command Center was established with three primary goals: reducing ED

overcrowding, facilitating patient transfers from external facilities, and optimizing operating room utilization. By January 2025, 93% of referrals achieved a response time of less than 60 minutes, with an average of approximately 20 minutes per referral. This performance meets both internal quality standards and national regulatory requirements mandating referral responses within one hour.

Despite these improvements, response times varied across KSMs due to differences in workload and resource availability. The surgical unit, despite handling the highest number of referrals, maintained stable response times between 64 and 73 minutes. In contrast, the pediatric unit experienced extreme fluctuations, reaching 334.8 minutes in November 2024. The primary challenges in maternal and child health services (KIA/Anak) stem from limited availability of specialized facilities such as ICU, NICU, PHCU, and NHCU, as well as the need for specific medical equipment such as ventilators and infant warmers. These findings underscore that the effectiveness of Command Center coordination remains highly dependent on organizational capacity and the availability of physical resources. The implementation of the Command Center also necessitated a cultural shift from siloed, sectoral practices within KSMs toward cross-departmental coordination. Its effectiveness relies heavily on the compliance of attending physicians (DPJP) with the referral pathways established by the Command Center.

Beyond operational efficiency, the Command Center has reduced information fragmentation, a common contributor to patient safety incidents during inter-facility transfers [20,21]. Evidence from the literature suggests that hospital command centers may yield modest improvements in patient safety, including reductions in mortality rates, although not always statistically significant [21]. Health information technology plays a crucial role in enhancing service quality and safety; however, healthcare organizations must be selective in choosing technologies that align with their operational needs. Overall, the findings indicate that the implementation of the Command Center has improved efficiency and strengthened integration within the regional health referral system [1]. In essence, the Command Center functions as an integrated command and coordination hub that oversees real-time operations, including referral flows, resource availability, and patient status. Its success is driven not only by the technology employed but also by managerial support and the willingness of staff to adapt to new workflows.

CONCLUSION

The implementation of the Command Center at RSUP Prof. dr. I.G.N.G. Ngoerah has significantly improved the effectiveness of referral management through more focused centralized coordination. The system strengthened communication with referring hospitals and increased referral acceptance, although limitations in specialized infrastructure continue to hinder optimal response times. Strengthening physical resources and aligning clinical policies remain essential to maximizing the performance of the Command Center.

Ethical consideration, competing interest and source of funding

-All research procedures adhered to ethical principles, including confidentiality, voluntary participation, and respect for informants' autonomy. Ethical approval was obtained prior to data collection from the appropriate institutional review board to ensure that the study met established standards for research involving human participants.

-No conflict of interest related this research.

-The source of funding is authors.

REFERENCES

1. Kemenkes RI. Pedoman teknis sistem penanggulangan gawat darurat terpadu (SPGDT). Jakarta: Kementerian Kesehatan Republik Indonesia; 2024.
2. Kemenkes RI. Keputusan Direktur Jenderal Pelayanan Kesehatan Nomor HK.02.02/D/1131/2023 tentang petunjuk teknis penggunaan aplikasi sistem informasi rujukan terintegrasi. Jakarta: Kementerian Kesehatan Republik Indonesia; 2023.
3. Pratiwi, Ilyas J, Darmawan ES. Analisis efektivitas sistem informasi rujukan terintegrasi (SISRUTE) dalam kasus Covid-19 di Semen Padang Hospital. Media Publ Promosi Kesehat Indones. 2023 Feb 3;6(2):321–35.
4. Bancin LJ, Putri NA, Rahmayani N, Kharisma R, Purba SW. Gambaran sistem rujukan terintegrasi (SISRUTE) di RSUD Dr. RM Djoelham Binjai Tahun 2019. Jurnal Ilmiah Perekam dan Informasi Kesehatan Imelda (JIPIKI). 2020 Feb 29;5(1):16–9.
5. Siregar ZM, Rangkuti ZA. Implementation of an integrated referral system (Sisrute) in improving health service referrals at Rumah Sakit Umum Pusat (RSUP) H. Adam Malik Medan. Journal of Law, Politic and Humanities. 2024 Jul 3;4(5):1285-95.
6. Mahendradhata Y, Andayani NL, Hasri ET, Arifi MD, Siahaan RG, Solikha DA, Ali PB. The capacity of the Indonesian healthcare system to respond to COVID-19. Frontiers in Public Health. 2021 Jul 7;9:649819.
7. El Muammary MR, Hartono RK. Evaluation of the use of the integrated referral system (SISRUTE) in health facilities in North Bengkulu Regency in 2023. Jurnal EduHealth. 2024 May 20;15(02):904-19.
8. Andrianto A, Sari RM. Factors affecting the implementation of SISRUTE version 2 as referral system by public health center in Kediri City. Journal of Global Research in Public Health. 2025 Jun 30;10(1):52-6.
9. Rahajeng AD, Arisyahidin A, Askafi E. Experiences of health workers in using the integrated referral system (SISRUTE): A narrative inquiry approach in Pamekasan Regency. InProsiding Seminar 2025 Jan 6 (Vol. 6, No. 1, pp. 17-28).
10. Setiawan H, Tosepu R. Constraints in the implementation of integrated information referral system (SISRUTE) in emergency department of Bahteramas Regional General Hospital. Jurnal Ilmiah Mahasiswa Kesehatan Masyarakat. 2024;9(1A).
11. Hemma H, Gaffar HD, Patarai MI. Analysis of human resource readiness in the implementation of the central health management information system (SIMPUS) and the integrated referral information system (SISRUTE). Miracle Journal of Public Health. 2025 Dec 23;8(2):152-65.
12. Coleman EA. Falling through the cracks: challenges and opportunities for improving transitional care for persons with continuous complex care needs. Journal of the American Geriatrics Society. 2003 Apr;51(4):549-55.
13. Cochrane LJ, Olson CA, Murray S, Dupuis M, Tooman T, Hayes S. Gaps between knowing and doing: understanding and assessing the barriers to optimal health care. Journal of Continuing Education in the Health Professions. 2007 Mar;27(2):94-102.
14. Amalberti R, Auroy Y, Berwick D, Barach P. Five system barriers to achieving ultrasafe health care. Annals of Internal Medicine. 2005 May 3;142(9):756-64.
15. Alharbi M, Senitan M, Ohanlon T, Smith S, Mominkhan D, Alqahtani S, et al. Healthcare in the time of a pandemic and beyond: the innovative large-scale and integrated saudi national health command centre. BMJ Leader. 2021 Nov 1;5(Suppl 1).
16. Hopkins J. Capacity command center celebrates 5 years of improving patient safety. Access. 2021;2021(1):03.

17. Kane EM, Scheulen JJ, Püttgen A, Martinez D, Levin S, Bush BA, et al. Use of systems engineering to design a hospital command center. The Joint Commission Journal on Quality and Patient Safety. 2019 May 1;45(5):370–9.
18. Seyed-Nezhad M, Ahmadi B, Akbari-Sari A. Factors affecting the successful implementation of the referral system: A scoping review. J Family Med Prim Care. 2021;10(12):4364.
19. Kemenkes RI. Peraturan Menteri Kesehatan RI Nomor 16 Tahun 2024 tentang sistem rujukan pelayanan kesehatan perseorangan. Jakarta: Kementerian Kesehatan Republik Indonesia; 2024.
20. Mebrahtu TF, McInerney CD, Benn J, McCrorie C, Granger J, Lawton T, et al. Effect of a hospital command centre on patient safety: an interrupted time series study. BMJ Health Care Inform. 2023 Jan 25;30(1):e100653.
21. Alotaibi YK, Federico F. The impact of health information technology on patient safety. Saudi Med J. 2017 Dec;38(12):1173–80.