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More Clicks, Fewer Conversations: A Technical Report From Urology Registrars on the Introduction of the Epic Electronic Patient Record in a District General Hospital in England

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Abstract

Electronic patient records (EPRs) are a national priority for the National Health Service (NHS) in England, yet published accounts of the implementation of Epic, a commercially supplied EPR platform, come largely from teaching hospitals and rarely describe its effect on surgical trainees. This experience-based technical report describes the observations of urology registrars in a district general hospital (DGH) in England during the first year after Epic went live on October 2, 2025. Reported benefits included legible documentation and prescribing, remote access to results and imaging, a single trust-wide record, structured data to support audit and pathway tracking, and improved patient communication through the MyChart portal (Epic Systems Corporation, Verona, Wisconsin). However, several implementation challenges were observed. Training comprised eight hours of generic instruction without specialty-specific content, and key clinical information remained in legacy systems. On call, telephone referrals were largely replaced by electronic referral orders, frequently without a defined clinical question. During one sampled week before and one after go-live, the median number of daily calls and referrals to the on-call registrar rose from 18 (range 12-30) to 41 (range 30-60), and registrars estimated that the time needed to handle a query rose from 1-2 to 20-30 minutes. In elective practice, reduced secretarial support transferred administrative tasks to clinicians, all investigation results were directed to a single consultant in-basket, and near misses without patient harm were identified. Registrars reported that administrative work increasingly extended beyond rostered hours and that clinicians who configured personalised views and results filters worked more efficiently, suggesting that many difficulties stemmed from implementation rather than the system itself. These exploratory, single-department observations may also reflect concurrent staffing changes. Specialty-specific training, a referral standard operating procedure with triage categories built into the EPR, structured results management, and electronic tracking safeguards warrant prospective evaluation in DGHs implementing or optimising Epic.

Categories: Urology, Medical Education, Quality Improvement
Keywords: administrative burden, district general hospital, electronic health recrods, epic, epic optimization, follow-up, surgeons' workload, surgical burnout, urology, urology consults

Introduction

Digitising hospital care has been a national priority in England since the 2016 Wachter review, which concluded that successful digitisation depends as much on people, training, and clinical leadership as on technology [1]. Within the National Health Service (NHS), the Frontline Digitisation programme, launched by NHS England in 2021, aimed to put an electronic patient record (EPR) into every trust. By 2025, around 90% of trusts had one, but the Health Foundation found that many were not yet using these systems to improve care quality, staff experience, or productivity [2].

Epic (Epic Systems Corporation, Verona, Wisconsin) is a commercially supplied EPR platform used by healthcare organisations internationally, and its European record has been mixed. Early implementations in the UK and Denmark were associated with interface failures, disrupted continuity of care, and falls in performance [3]. In a survey of 151 doctors during the first three months of Epic implementation in a Northern Ireland trust, 81% reported no improvement in working efficiency, 45% felt administrative tasks were disproportionate to their clinical value, and 67% reported less time for education and training [4]. A Canadian qualitative study similarly found that Epic added clerical work and information overload, especially in outpatient-facing services such as surgery [5].

Urologists are heavy users of electronic records but ambivalent about them: in a national survey of 2,159 US urologists, only 35.8% felt their electronic record increased clinical efficiency [6]. In England, a 2025 thematic review of 63 national safety investigations by the Health Services Safety Investigations Body (HSSIB) found that EPRs continue to contribute to care being missed, delayed, or incorrect, often because of implementation, configuration, and limited user involvement rather than the software alone [7]. The British Medical Association (BMA) has also highlighted the clinical time lost to inadequate IT systems and

equipment [8]. Such problems may arise, for example, when an electronic workflow transfers information without preserving the direct clinical discussion previously used to clarify urgency and responsibility.

Apart from the Northern Ireland survey, we identified no published UK accounts of Epic implementation from the perspective of doctors in training, and none focused specifically on surgical registrars working in district general hospitals (DGHs), which provide secondary care to local populations, in contrast to the specialist and tertiary services concentrated in teaching centres. Surgical registrars are senior doctors in specialty training who undertake substantial on-call, outpatient, and administrative work; changes to referral, documentation, and results-management processes may therefore affect both service delivery and training. Consequently, there is limited evidence about how Epic implementation alters the day-to-day work, training opportunities, and administrative responsibilities of surgical registrars in DGH settings. This experience-based technical report describes the clinical and administrative changes observed in a DGH urology department during the first year after Epic implementation, compares these observations with the published evidence, and proposes practical measures for hospitals implementing or optimising an EPR.

Technical Report

Setting and implementation

The hospital is a DGH in England with approximately 550 beds, serving a population of around 500,000 and providing emergency, acute medical and surgical, maternity, paediatric, and outpatient services. The urology department comprises 10 consultants, eight registrars, one senior house officer, and one foundation year 1 doctor, and registrars participate in a 1-in-8 on-call rota. This experience-based report describes the authors' observations as urology registrars during the first year following implementation.

Epic was introduced across the trust on October 2, 2025, as a single "Go-Live" implementation. Clinical staff received eight hours of generic training, supplemented by super-users and floorwalkers during the initial two weeks; no specialty-specific training was provided. Much of Epic's efficiency depends on user-level configuration, including personalised patient lists, results filters, order panels, and documentation templates. In the absence of structured guidance, registrars and consultants configured these largely through self-directed learning, and the authors observed considerable variation in proficiency between individuals. Epic also did not fully replace existing systems. Historical records, medications, allergies, and past medical history continued to be held in the legacy clinical information systems Evolve (Kainos Group plc, Belfast, UK) and ICE (Clinisys, UK), so clinicians frequently needed to consult several platforms to obtain a complete clinical picture.

The observations reported here were drawn from three sources. First, calls, referrals, and consultations received by the on-call urology registrar were recorded during one week before go-live (September 1-7, 2025) and one week after go-live (November 2-8, 2025), as a contemporaneous tally kept by the first author while working as the on-call registrar. Each separate patient for whom urological advice was requested was counted as one referral; subsequent messages about the same patient were not counted as new referrals. Daily counts were summarised descriptively as totals, medians with interquartile ranges (IQRs), and ranges (Table *1*); no inferential statistical testing was undertaken. Second, the time required to handle a query was estimated by the authors from their own experience and was not measured directly. Third, the qualitative observations and near misses described were drawn from the authors' experience during routine clinical practice over the first year and were not collected through structured interviews or surveys.

Several benefits were apparent soon after go-live. Notes and prescriptions became legible, results and imaging could be reviewed remotely, and a single record was available to all clinical teams across the trust. Structured data also supported audit and the tracking of patients along defined pathways. These benefits were observed in routine practice but were not formally measured. MyChart, Epic's patient portal, was perceived to have substantially improved communication with patients, who could view their results, letters, and appointments and contact the urology team directly, making clinicians more accessible. However, patients were sometimes able to view significant results, such as a new diagnosis of malignancy or a rising prostate-specific antigen (PSA), before these had been discussed with a clinician, and the volume of patient messages added to the in-basket workload.

On-call work

Before implementation, colleagues seeking a urological opinion telephoned the on-call registrar directly. Most queries were resolved with a short discussion, which the authors estimate lasted 1-2 minutes. Verbal discussion allowed the clinical question to be clarified, urgency to be agreed, and patients to be prioritised in real time, which supported patient flow. Referring clinicians were generally prepared with the relevant history, examination findings, and investigation results.

Following go-live, referrals were increasingly submitted as electronic consultation orders without prior discussion (Figure *1*). During the sampled week before go-live, the on-call registrar received 136 calls, referrals, and consultations (median 18 per day, IQR 15.5-22.5, range 12-30); during the sampled week after go-live, 292 were received (median 41 per day, IQR 32.5-48, range 30-60) (Table *1*). Electronic referrals

frequently contained minimal clinical detail, often limited to "see notes", so the registrar was required to review the presenting complaint, past medical history, and investigations, often across both Epic and the legacy systems, before documenting advice. The authors estimate that resolving such a query took 20-30 minutes, although this was not formally timed. In the authors' experience, a proportion of these referrals could have been resolved with brief verbal advice, and some did not require urological input. Poorly framed referrals also generated repeated exchanges between teams: a non-specific question often received a brief electronic reply, prompting further requests for clarification before a management plan could be agreed, which was perceived to delay decisions and reduce patient flow. At times, the volume of referrals required registrars to be withdrawn from elective operating lists to support the on-call team; three theatre sessions were lost in this way, reducing operative training exposure. Lengthy notes generated by copy-forward functions and frequent interruptive alerts during prescribing and ordering added further to the time required for each review.

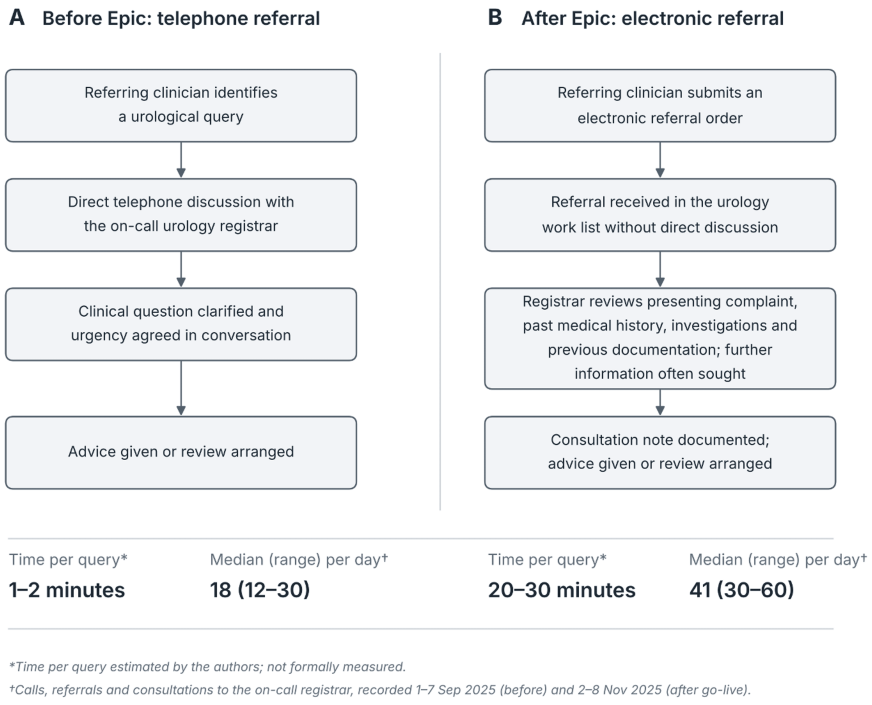


FIGURE 1: Simplified on-call urology referral pathways before and after Epic (Epic Systems Corporation, Verona, Wisconsin) implementation

(A) Before implementation, most referrals involved direct telephone discussion with the on-call registrar, allowing the clinical question and urgency to be agreed. (B) After implementation, referrals were increasingly submitted as electronic consultation orders, requiring the registrar to review the clinical record and document a response. The pathways are schematic summaries rather than complete process maps. Daily volumes were recorded during one week before (September 1–7, 2025) and one week after (November 2–8, 2025) go-live (Table 1); times per query were estimated by the authors and were not measured formally.

Day	Before go-live (September 1–7, 2025)	After go-live (November 2–8, 2025)
1	25	45
2	20	41
3	18	30
4	12	51
5	30	60
6	16	33
7	15	32
Total	136	292
Median (IQR)	18 (15.5–22.5)	41 (32.5–48)
Range	12–30	30–60

TABLE 1: Daily calls, referrals, and consultations received by the on-call urology registrar during one week before and one week after Epic go-live

Each separate patient for whom urological advice was requested was counted once; follow-up messages about the same patient were not counted.

IQR: interquartile range.

Ward-based work was also affected by the available hardware. The mobile devices provided were, in the authors' experience, too small for reviewing records or entering orders, and access to workstations was limited, which prolonged ward rounds. Newly starting doctors did not receive Epic access until approximately 36 hours after completing mandatory training, and locum doctors sometimes began work without access or with minimal training. During this period, permanent staff were required to support them with system tasks and unfamiliar workflows.

Elective work

Implementation coincided with a reduction in departmental secretarial support, which is a potential confounder for the administrative changes described. Clinicians became responsible for preparing and finalising clinic correspondence and for submitting requests for investigations, procedures, and follow-up appointments, which are subsequently arranged by booking staff. These tasks must be completed within the same clinic session, despite an increase in the number of patients booked into each clinic. Secretaries had previously acted as an informal safety net by identifying requested appointments or investigations that had not been arranged. With the loss of this safeguard, clinicians now review their own patient lists individually to confirm that planned stent removals and follow-up appointments have been scheduled.

All investigation results, including routine blood tests and imaging, are directed to a single in-basket belonging to the responsible consultant. Clinically significant findings, such as a new diagnosis of malignancy or a rising PSA, may therefore be presented alongside large numbers of normal results. Registrars remain responsible for acting on the investigations they request. Clinicians who had configured in-basket filters reported that they could identify high-priority results promptly, whereas those who had not were perceived to be at greater risk of delay. Registrars reported that a substantial proportion of this administrative work, together with preparation for clinics and operating lists, was completed outside rostered hours, reducing the time available for training and rest. When such work is reported through the exception reporting system, it also incurs a direct financial cost to the trust.

Several near misses were identified during routine clinical practice in this period, none of which resulted in patient harm. Two were selected as illustrative examples because they reflect distinct weaknesses in request tracking. In the first, a planned ureteric stent removal was requested but not scheduled. The point of failure was the booking step: several clinic codes existed for the same procedure, creating ambiguity in how the request was processed. The omission was detected when the patient contacted the on-call urology team, who arranged stent removal the same day. In the second, a cystoscopy for a patient on the urgent suspected cancer (two-week wait) pathway was requested as a follow-up rather than a new appointment. The request was therefore not prioritised, no system prompt identified the inconsistency between a routine request and an urgent cancer pathway, and the patient waited approximately three months for the procedure. The delay was identified at the time of cystoscopy, which was normal. Both events were reported through the trust's

incident-reporting system (Datix). The first was escalated to service managers to rationalise the Epic clinic codes for stent removal, and the second was escalated to service managers and the booking team so that all two-week-wait requests are grouped into a single pathway rather than separate new and follow-up pathways. The principal observations are summarised in Table 2.

Domain	Observation	Reported or potential consequence
Implementation		
Benefits	Legible notes and prescriptions; remote access to results and imaging; single trust-wide record; structured data	Improved access to information; support for audit and pathway tracking (observed, not measured)
Patient portal	MyChart patient portal	Perceived improvement in patient communication and clinician accessibility
Training	Eight hours of generic training; no specialty-specific content	Reliance on self-directed configuration; observed variation in proficiency between clinicians
Legacy systems	Continued reliance on Evolve and ICE	Several systems consulted for records, medications and allergies
On-call work		
Referral pathway	Telephone discussion largely replaced by electronic consultation orders	Loss of verbal clarification and real-time triage
Referral volume (recorded, one week each)	Calls, referrals and consultations per day, median (range): before go-live 18 (12-30); after go-live 41 (30-60)	Increased on-call workload
Referral content	Electronic referrals often with minimal information ("see notes")	Information gathering transferred to the registrar; repeated clarification exchanges
Time per query (authors' estimate, not measured)	Before go-live 1-2 minutes; after go-live 20-30 minutes	Increased time per referral
Operative training	Registrars withdrawn from theatre to support the on-call team (three sessions lost)	Reduced operative training exposure
Hardware	Small mobile devices; limited workstations	Prolonged ward rounds (perceived)
System access	Access delayed for new doctors (about 36 hours after training) and some locum doctors	Additional support required from permanent staff
Elective work		
Administrative workload	Reduced secretarial support; clinicians prepare letters and submit requests	Loss of informal safeguard against unscheduled appointments and stent removals
Results management	All results directed to a single consultant in-basket	Potential risk of delay in acting on significant results
Patient portal	Patients view results and send messages via MyChart	Significant results potentially seen before clinician discussion; additional in-basket workload
Working hours	Administrative work outside rostered hours (reported)	Reduced time for training and rest; cost of exception reporting
Patient safety	Missed stent removal; urgent cystoscopy requested as follow-up	Near misses; no patient harm; reported via Datix

TABLE 2: Reported benefits, implementation challenges and associated consequences during the first year after Epic go-live

Evolve (Kainos Group plc, Belfast, UK) and ICE (Clinisys, UK): legacy clinical information systems used alongside Epic; MyChart: Epic's patient portal. Consequences are those reported or perceived by the authors, or potential risks, and were not formally measured unless stated.

Discussion

This report describes changes observed in the work of a DGH urology department following Epic implementation, from the perspective of its registrars. The first year brought both benefits and substantial challenges; although the challenges dominated the department's early experience, the benefits observed indicate what the system can achieve when it is implemented well. EPRs have the potential to improve care quality and productivity [2], and Epic implementation was associated with improved inpatient communication and safety in a Canadian community hospital [5]. The difficulties we observed appeared to relate predominantly to training, configuration, interoperability, and workflow design rather than to the software itself, a pattern also identified in a national thematic review of EPR-related safety investigations [7]. Each is therefore potentially modifiable.

Epic is highly configurable, and much of its efficiency depends on individual users building appropriate patient lists, filters, and templates. In the authors' experience, eight hours of generic training did not equip most clinicians to do this, and the absence of specialty-specific training appeared to limit efficiency in both on-call and outpatient settings. Inadequate training was similarly identified as a barrier following Epic implementation in Northern Ireland [4], and national investigators found that EPR training often did not reflect real-world clinical use [7]. In our department, we observed marked variation in proficiency: clinicians who invested their own time in configuration reported being able to prioritise important results and work efficiently, whereas others did not. Continued reliance on legacy systems for medication, allergy, and historical information added further time and potential for error, and poor interoperability between systems is a recurrent contributor to EPR-related safety incidents [7].

The most significant change to on-call practice was the replacement of verbal discussion with electronic referral (Figure *1*). Weiner et al. described how computerised consultation systems can result in the transmission of information replacing, rather than supporting, communication between referrer and specialist [9]. Telephone discussion enabled the clinical question to be clarified, urgency to be agreed, and patient flow to be maintained; electronic referral without discussion provides none of these functions. An audit of electronic urology referrals at a large NHS teaching hospital found that 38% were inappropriate and 58% lacked important clinical information [10], findings consistent with the "see notes" referrals described here. At the volumes recorded in this report, comprehensive review of every record by a single on-call registrar is unlikely to be sustainable.

In elective practice, the principal risks relate to the loss of informal safety nets and the management of results. National investigations in England have reported limited assurance that intended follow-up appointments are booked [11] and have highlighted the need for stent tracking with human oversight to prevent delayed removal of ureteric stents [12]. The missed stent removal described here illustrates this vulnerability, while the delayed cystoscopy appears to reflect a design weakness identified nationally, in which the interface allows an incorrect option to be selected without challenge [7]. Directing all results to a single consultant in-basket increases the risk of delay in acting on significant findings. Monitored acknowledgement of critical findings has been recommended [13], and missed test results remain common in EPR-based settings, partly because of alert volume and information overload [14,15]. Clinicians override 46-96% of interruptive alerts [16], and progress notes have lengthened substantially with copy-forward functionality [17], both of which add to this burden. Patient portals introduce further considerations: the release of significant results before clinician discussion may cause distress, and patient messaging adds to the in-basket workload.

Collectively, these changes appeared to shift administrative work onto clinicians and beyond rostered hours. In an Epic-based study combining event log data with time-motion observation, primary care physicians spent 5.9 hours of an 11.4-hour working day in the EPR, including 1.4 hours after clinic hours [18], and general surgery residents in a US centre completed up to 27% of their EPR activity outside duty hours [19]. EPR-related clerical burden is associated with physician burnout [20], and the BMA has estimated that inadequate IT costs doctors in England more than 13.5 million working hours each year [8]. In our department, after-hours EPR work, where exception reported, also carries a direct financial cost, and it was perceived to displace training time, including operative experience, a particular concern in a craft specialty such as urology [4].

On the basis of these observations, we propose several measures for departments implementing or optimising Epic. First, generic training should be supplemented by specialty-specific sessions covering the configuration of patient lists, results filters, order panels, and templates. Second, a referral standard operating procedure (SOP) should require a defined clinical question, stated urgency, a brief history, and relevant investigations, with "see notes" not accepted. This could be supported within Epic by a referral function that triages requests into immediate review, non-urgent review, or virtual advice, while urgent referrals continue to be discussed by telephone. Third, results management should be redesigned so that critical results require monitored acknowledgement and routine results can be filtered or delegated. Fourth, electronic safeguards should reconcile requested and booked appointments, incorporate stent tracking, and prevent urgent suspected cancer requests from being submitted as routine follow-up. Finally, locum and rotating doctors should have system access and training before their first shift, ward devices should be suitable for clinical use, and EPR usage data, including after-hours activity, should be monitored to guide ongoing optimisation [18]. These measures were not evaluated in this report and warrant prospective evaluation.

This report has limitations. It is an experience-based account from a single department and reflects the perspective of urology registrars. Referral volumes were recorded over only one week before and one week after implementation, so the comparison may be affected by differences in staffing, demand, and stage of implementation between the two weeks; in particular, the post-implementation week fell approximately one month after go-live, when users were still adapting to the system. Times per query were estimated rather than measured, and the qualitative observations were drawn from the authors' experience rather than from structured interviews. The near misses were illustrative rather than systematically collected and cannot establish the frequency of such events, and the wider effect on training was not measured beyond the theatre sessions lost. There was no comparator site, and concurrent changes, particularly the reduction in secretarial support, may have contributed to the observations. The findings should therefore be interpreted as exploratory associations rather than estimates of the independent effect of the EPR. Nevertheless, they are consistent with national safety investigations and published evaluations of EPR implementation. A prospective evaluation using predefined measures over several weeks before and after implementation, ideally analysed as an interrupted time series, could quantify referral volume, completeness of referral information, active handling time, in-basket load, after-hours EPR activity, training exposure, and safety events, and test the effect of the proposed measures.

Conclusions

Epic provided legible documentation, remote access to information, and a single trust-wide record, and clinicians who developed personalised lists, filters, and templates reported greater efficiency. In this single-department experience, however, generic training, continued reliance on legacy systems, and the replacement of telephone discussion with electronic referral were associated with greater on-call and administrative workload. The concentration of results in a single consultant in-basket and the loss of informal administrative safeguards created potential vulnerabilities in results and request tracking. The near misses described illustrate these risks, although none resulted in patient harm and causation cannot be attributed to the EPR alone. These exploratory observations may also have been influenced by the concurrent reduction in secretarial support. Specialty-specific training, minimum information standards and triage for referrals, structured results management, and electronic tracking safeguards warrant prospective evaluation in DGH urology services.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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References

1. Wachter R: Making IT Work: Harnessing the Power of Health Information Technology to Improve Care in England. Department of Health, London, UK; 2016.
2. The Health Foundation: electronic patient records: why the NHS urgently needs a strategy to reap the

benefits. (2025). Accessed: October 15, 2026: https://www.health.org.uk/reports-and-analysis/analysis/electronic-patient-records-nhs-strategy.
3. Hertzum M, Ellingsen G: The implementation of an electronic health record: comparing preparations for Epic in Norway with experiences from the UK and Denmark. Int J Med Inform. 2019, 129:312-7. 10.1016/j.ijmedinf.2019.06.026
4. Dubois E, Waugh L, Jarabelo S, Leonard N, Kirk S: Evaluating the implementation of a new electronic healthcare system in a single Trust in Northern Ireland. Ulster Med J. 2025, 94:113-21.
5. Taneja S, Vanderhout S, Heidebrecht CL, et al.: Exploring the impact of an electronic health record implementation on user experiences across clinical programmes in a large Canadian community hospital: a qualitative study. BMJ Open. 2025, 15:e095771. 10.1136/bmjopen-2024-095771
6. Tan HJ, Chung AE, Gotz D, et al.: Electronic health record use and perceptions among urologic surgeons . Appl Clin Inform. 2023, 14:279-89. 10.1055/s-0043-1763513
7. Health Services Safety Investigations Body: patient safety issues associated with electronic patient record (EPR) systems - a thematic review. (2025). Accessed: October 15, 2026: https://www.hssib.org.uk/patient-safety-investigations/electronic-patient-record-epr-systems-thematic-review/investig....
8. British Medical Association: Building the future. Getting IT right: the case for urgent investment in safe, modern technology and data sharing in the UK's health services. (2022). Accessed: October 15, 2026: https://www.bma.org.uk/media/6578/bma-infrastructure-2-report-getting-it-right-dec-2022.pdf.
9. Weiner M, Savoy A, Barker BC: Gains, losses, and uncertainties from computerizing referrals and consultations. Appl Ergon. 2020, 89:103227. 10.1016/j.apergo.2020.103227
10. Farag A, Almedej H, Sorour M, Serag H: Evaluation of electronic urology referrals at Queen Elizabeth Hospital: assessing appropriateness, information quality, and response times. International Continence Society Annual Meeting 2025. 2025 (ed): International Continence Society, Bristol, UK;
11. Healthcare Safety Investigation Branch: outpatient appointments intended but not booked after inpatient stays. (2021). Accessed: October 15, 2026: https://www.hssib.org.uk/patient-safety-investigations/outpatient-appointments-intended-but-not-booked-after-inpatien....
12. Healthcare Safety Investigation Branch: Unplanned delayed removal of ureteric stents . (2020). Accessed: October 15, 2026: https://www.hssib.org.uk/patient-safety-investigations/unplanned-delayed-removal-of-ureteric-stents/investigation-rep....
13. Healthcare Safety Investigation Branch: Failures in communication or follow-up of unexpected significant radiological findings. (2019). Accessed: October 15, 2026: https://www.hssib.org.uk/patient-safety-investigations/failures-in-communication-or-follow-up-of-unexpected-significa....
14. Singh H, Spitzmueller C, Petersen NJ, Sawhney MK, Sittig DF: Information overload and missed test results in electronic health record-based settings. JAMA Intern Med. 2013, 173:702-4. 10.1001/2013.jamainternmed.61
15. Callen JL, Westbrook JI, Georgiou A, Li J: Failure to follow-up test results for ambulatory patients: a systematic review. J Gen Intern Med. 2012, 27:1334-48. 10.1007/s11606-011-1949-5
16. Poly TN, Islam MM, Yang HC, Li YJ: Appropriateness of overridden alerts in computerized physician order entry: systematic review. JMIR Med Inform. 2020, 8:e15653. 10.2196/15653
17. Rule A, Bedrick S, Chiang MF, Hribar MR: Length and redundancy of outpatient progress notes across a decade at an academic medical center. JAMA Netw Open. 2021, 4:e2115334. 10.1001/jamanetworkopen.2021.15334
18. Arndt BG, Beasley JW, Watkinson MD, Temte JL, Tuan WJ, Sinsky CA, Gilchrist VJ: Tethered to the EHR: primary care physician workload assessment using EHR event log data and time-motion observations. Ann Fam Med. 2017, 15:419-26. 10.1370/afm.2121
19. Cox ML, Farjat AE, Risoli TJ, Peskoe S, Goldstein BA, Turner DA, Migaly J: Documenting or operating: where is time spent in general surgery residency?. J Surg Educ. 2018, 75:e97-e106. 10.1016/j.jsurg.2018.10.010
20. Shanafelt TD, Dyrbye LN, Sinsky C, Hasan O, Satele D, Sloan J, West CP: Relationship between clerical burden and characteristics of the electronic environment with physician burnout and professional satisfaction. Mayo Clin Proc. 2016, 91:836-48. 10.1016/j.mayocp.2016.05.007