Medicine-related conversations with our Muslim patients during Ramadan: a hospital and Islamic secondary school collaboration	**ABDULLAH, Ayat; TAYLOR, Simone; TO, Phung; ELMI, Huda; OKUR, Hayrunnisa**	**Pharmacy**
Predict the problems before they arise: Timely occupational therapy assessment and management of upper limb spasticity in newly acquired tetraplegia.	Assetta, R., Brown, S., Shribman-Dellmann, L., Wyld, S. 2023.	Occupational Therapy
Can we ditch the fax yet? Maybe not quite...	BALESWARAN, Prasanna; RICHARDSON, Belinda; TAYLOR, Simone; TING, Christine	Pharmacy
ED Improvement: Ambulance Offload Model of Care	BEN-MEIR, Michael; MARUM, Ellyse	Emergency Department
Electronic Recording of Post Procedure Radiation Precaution: Implementation & Review	CHAPPELL, B; PATHMARAJ, K	Molecular Imaging & Therapy
Can we handle the waste? A review of the disposal of Patient Controlled Analgesia infusion bags	Chou, Terrence; Bonadio James; Baleswaran, Prasanna; Palermo Chloe; Lee, Madison; Ho, Lisa	Pharmacy
Is it time to wean midodrine? A review of midodrine use post ICU discharge	DEERY , Caitlin; Vellampel, Anjaly; Ho, Lisa; Harris, David; Wang, Colin	Pharmacy
A pilot model of care to achieve next day discharge in patients undergoing hip and knee arthroplasty.	DELAHUNT, Marisa; MCGAW, Rebekah; HARDIDGE, Andrew.	Orthopaedic Surgery
Pandemic innovation: A novel digital tool for aged care outbreak management	FIELD, Esther; SMITH, Hugh; THOMSON, Dana; HUBBLE, Adrian; POWNALL, James; OSBORNE, Aaron; JAMMALI-BLASI, Asmara; TIPPET, Emma; KENNY,	North Eastern Public Health

	Joanne; VAN DIEMEN, Annaliese	Unit
Revolutionizing and Transforming Healthcare: HITH-Enhanced Recovery After Surgery (ERAS)	HARINDAR, Angeline: NARAYANSAMY, Shanthi : PANACCIO, Daniella: CRAVEN, ALex: HORRIGAN, Mark: SULLIVAN, Angela : WALKLEY, Jarryd; POLIDORI, Laura, WONG; Geoffrey, ROSE, Morgan	Hospital in the Home
Endoscopy Waitlist Information Tool: CRM application for waitlist management	HASDO, Caroline; ANDERSON, Lauren	SAPM
Knowledge, practice and attitudes of surgical and procedural doctors towards frailty assessment and management.	HAYWOOD, Cilla; WEINBERG, Laurence; MURALIDHARAN, Vijayaragavan; GRAY, Kathleen	Surgery, Anaesthesia and Procedural Medicine
Improvements in functional autonomy for older adults who receive occupational therapy at Austin Health	Jamwal, R,; Bell, T; Gilbert, M; Nixon, A; & Dalton, E.	Occupational Therapy
Green Theatre Index: Benchmarking green theatre approaches	MA, Ronald	Medicine
A rare cause of blocked PD catheter! Beware the rogue Fallopian Tubes!	Maree Ross-Smith, Sivatha Ros	Nephrology Department
Delivery of virtual acute cardiac care: **Evaluating a pilot cardiac hospital in the home (cHITH) program.**	MARTIN, Lorelle; NAISMITH, Carolyn: AYTON, Dianne; DANIELS, Kerrie; MATHEW, Nisha; KUZMAR, Snez, SULLIVAN, Angela; WONG, Geoff; YEOH, Julian, HORRIGAN, Mark	HITH
Evaluation of a Point of Care (POC) Full Blood Examination (FBE) device for use in regional health care settings.	NALLAS,R;LAY,W;DADA,R;PAYNTER,J;KELLY,S;DAVIES,A;TAYLOR,M;SIMMANCE, A	Austin Health Pathology

Surveying Patient Journeys in a Nuclear Medicine Service using a Patient Journey Audit Tool (PJAT) developed in-house	PATHMARAJ, Kunthi; WELCH, Jessica; NG, Wesley; LEE, Danny; LEE, Sze Ting; SCOTT, Andrew	Molecular Imaging and Therapy
Emergency Department Improvement - Fast Track and Direct Access Short Stay Unit Model of Care	PETRE, Ileana; BEN-MEIR, Michael; MARUM, Ellyse	Emergency Department
Targeted nursing education programs improve confidence and develop practice as evidenced by a self-rating scale.	Schimmelbusch, K, Mercer, I.	Clinical Education Unit
The impact of a GATES trauma perioperative medical service on patient outcomes, an interventional study	SHEEN,J; XU,C; XING,G; O'DONNABHAIN,R	Perioperative Medicine
Electronic warfarin home monitoring with Hospital in the Home: Using technology to improve critical communication	SU, Elizabeth; PALMER, Connor; EYLES, Jade; MCGRATH Anne; HO, Lisa; IRWIN, Nicole; SULLIVAN, Angela	Pharmacy
A pharmacy department pharmaceutical waste audit to inform future interventions: an observational study	TAYLOR, Simone; JONES, Steph; CHEN, Yifan; GOLBAHAR, Kimia; HERATHMUDIYANSELAGE, Hasitha Bandara; HUANG, Nannan; KULLAR, Nirat Kaur	Pharmacy
Stability of intravenous oxycodone in compound sodium lactate solution	TO, TP; CHING, M; ZEGLINSKY; TRAJCESKA, L; LAU, Y; SCHIMMELBUSCH	Pharmacy

Abdullah A,[1] Taylor S,[1] To P,[1] Elmi H,[1] Okur H

Medicine-related conversations with our Muslim patients during Ramadan: a hospital and Islamic secondary school collaboration

1. Pharmacy Department, Austin Health, Heidelberg, Vic., Australia;
2. East Preston Islamic College, Preston, Vic., Australia

Aim
Ramadan is a month during which Muslims fast from dawn until sunset. In interviews conducted during Ramadan 2021, our Muslim patients asked that health-professionals be more aware of the importance of Ramadan fasting and, if patients wish to fast that we partner with them to develop a medicine plan. This project aimed to develop resources to assist health professionals to start a conversation with their patients about modifying medicine regimens during Ramadan.

Methods
A suite of resources was developed to increase staff awareness of patients' experiences and wishes, and to encourage staff to plan medicine regimens around patients' fasting wishes. A 3-minute video was developed by year 8 students attending the local Islamic secondary college, in collaboration with hospital pharmacists. Teachers were engaged to co-develop a series of student lesson plans with a careers and communication focus. The video explaining the significance of Ramadan and how it is celebrated was available on the hospital intranet and played during key hospital meetings attended by a range of doctors and other health professionals. Resources reviewing medicine management were curated on the hospital's intranet page and the "RAMCOM tool" was adapted for the Australian context.

Results
Hospital staff awareness and confidence in navigating conversations regarding medicine management during Ramadan 2023 increased. Feedback from meetings and case reports were collated, where staff used the resources to assist with partnering with Muslim patients to plan medicine management. The video was played during a college Ramadan celebration, and students demonstrated interest in health-related career opportunities beyond nursing and medicine.

Conclusion
This project highlighted the intersection of religious faith and healthcare. The students demonstrated cultural pride and generosity to teach non-Muslim health professionals about their faith. Further staff and patient surveys are planned for Ramadan 2024 to evaluate the extent to which staff are partnering with patients.

Austin HEALTH

Royal Talbot Rehabilitation Centre

Predict the problems before they arise: Timely occupational therapy assessment and management of upper limb spasticity in newly acquired tetraplegia

Introduction:
Occupational therapists work to provide goal-based rehabilitation post Spinal Cord Injury (SCI). Spasticity is prevalent following SCI and can negatively impact goal attainment and occupational performance. Assessment and management of spasticity remains inconsistent between treating therapists. A service review was conducted to understand current practice and determine strategies to improve the assessment and management of upper limb spasticity in newly acquired tetraplegia.

Methods:
Three methods were completed to address the aim:

- An audit of current OT assessment and intervention for patients with known upper limb spasticity admitted to rehabilitation between 2021-2022.
- A survey of the OT workforce explored clinicians' experience, confidence, and competence managing upper limb spasticity.
- A literature review to determine current best practice interventions to manage upper limb spasticity post SCI.

Results:
The 11 files audited showed clinicians did not consistently assess or manage upper limb spasticity in a timely, or evidence-based manner. The survey showed a motivated workforce with limited experience and confidence in managing patients with neurological conditions including spasticity. The literature review summarising 40 studies identified one pharmacological and five non-pharmacological interventions that may assist with spasticity management.

Conclusions:
The review of OT practice in upper limb spasticity identification and management has revealed inconsistency and decreased confidence from clinicians. Consequently, improvement strategies including a formalised documentation process, improved quality assurance measures, and introduction of entrustable professional activities are in development.

Assetta, R., Brown, S., Shribman-Dellmann, L., Wyld, S. 2023.
Occupational Therapists. Austin Health.

Baleswaran P,[1] Richardson B,[1] Taylor S,[1] Ting C[2]

Can we ditch the fax yet? Maybe not quite…

1. Pharmacy Department, Austin Health, Heidelberg, Vic., Australia;
2. EMR Services, Austin Health, Vic., Australia

Aim
Although facsimile (fax) machines are not used in most industries, they remain widely used within healthcare. Problems associated with fax machines include image degradation during printing and scanning, insecure fax location, user error and fax interception. This study aimed to describe the types of communication within the hospital pharmacy that still utilize fax machines, to inform future interventions to avoid faxed communication.

Methods
This prospective observational study was undertaken across three campuses of a metropolitan health service with a comprehensively implemented electronic medical record. Faxes sent or received within the pharmacy department or by pharmacy staff on the wards between 1st-7th June 2023 were included.

Results
A total of 160 pages of faxed communication occurred over the 7-day period. Most faxed pages (79%) were sent/received in the main dispensary, and three quarters were from wards requesting inpatient supplies, especially on weekends. Small numbers of faxes were related to pharmaceutical suppliers (e.g. requesting confirmation of receipt of drugs of addiction), communication of patients' hospital dispensing records to community pharmacies that have insecure email addresses (e.g. @gmail.com), and communication with home nursing and warfarin dosing services. The pharmacy was not the correct/intended recipient for two faxes.

Conclusion
This study identified the small number of scenarios where alternative communication processes are needed prior to ceasing faxed communication. Inpatient supply requests might be reduced by adding a 'medication request' function in the electronic medical record. Alternatives for communication with external providers are complex. Uploading documents to My Health Record has electronic medical record vendor integration costs and requirements and may not be accessible to health-professionals who are not AHPRA registered. Secure platforms such as Health Information Exchange may not be accessible to some private providers and secure email accounts may still result in information being sent to unintended recipients.

Michael Ben-Meir[1], Ellyse Marum[2]

Ambulance Offload Model of Care

1. Austin Health, Emergency Department, Heidelberg, Victoria
2. Austin Health, Service Improvement and Innovation, Heidelberg, Victoria

Aim

Ambulance offload (AVOL) Model of care was tested and implemented from May 2022 to June 2023 within the Austin Health Emergency Department (ED). The aim was to increase patients that are offloaded under 40 mins from arrival to 60% by December 2022.

Methods

Several iterations of an AVOL area were implemented in the ED between May 2022 to May 2023. In May 2022, a partnership with Ambulance Victoria (AV) was established to staff 4 AVOL beds. This model of care was difficult to operate due to limitations in AV staff accessing Austin Health systems, high rotation of staff and limited clinical capabilities (vital signs, toileting and feeding assistance only).

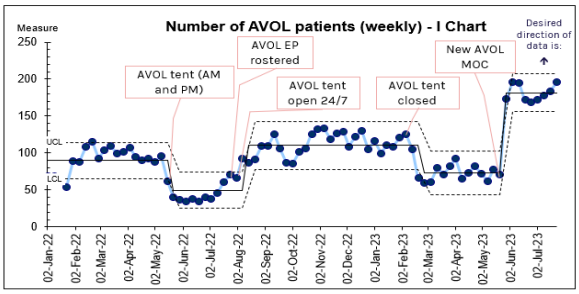
Austin's Health Improvement Framework was used to manage and deliver change. Fundamental components used were:

- Engaging clinicians and AV to develop, test and implement solutions using PDSAs
- Agreeing on a family of measures, including monitoring clinical incidents, and monitoring data over time using control charts.
- Seeking feedback from Austin staff and AV.

Results

Improvement led to more patients accessing timely quality care in the ED and AV staff being released to the community sooner. Key outcomes include:

- Increased from treating 111 patients a week in May 2022 to 188 in June 2023.
- Percentage of patients offloaded in 40 mins increased from 32% in May 2022 to 60% in July 2023.



Learnings

The new AVOL model of care implemented in May 2023 has been an improvement due to:

- The new area is staffed at a ratio of 2 patients to 1 nursing staff member and a senior decision maker is responsible for the offloaded patients care until a cubicle becomes available.
- Austin staff have access to IT systems, can initiate initial investigations, and administer medications, unlike the AV staff.
- The new AVOL area is fully integrated into Austin systems with telemetry, nurse call and duress systems.
- As a result, a broader criterion for patients are offloaded to the AVOL area.
- Clinical incidents have been reduced with the new AVOL model of care indicating safe and quality care for patients.
- Staff reported a great level of satisfaction working in the new AVOL area.

Chappell, B, [1], **Pathmaraj K**,[1,2]

Electronic Recording of Post Procedure Radiation Precaution: Implementation & Review

1. Department of Molecular Imaging & Therapy, Austin Health, Heidelberg, Vic., Australia
2. Olivia Newton John Cancer Research Institute, Heidelberg, Vic., Australia;

AIM:
Provision of accessible post-procedure radiation precaution information is long established at Austin Health, optimising patient care whilst protecting staff. Electronic Medical Records (EMR) provide an easily accessible channel for such communication. EMR recording became standard practice for all inpatients in 2021. An audit was undertaken to evaluate compliance of Nuclear Medicine Technologist (NMT) staff for EMR recording of radiation precautions; and to compare with conventional paper medical record (PMR) recording.

METHOD:
An audit of radiation precaution documentation for all inpatients presenting for Nuclear Medicine(NM) and PET for diagnostic and therapy procedures was performed.

An initial 5-week audit ran concurrently with the introduction of EMR-based radiation precautions recording processes. Additional monthly follow-up audits evaluated continued compliance across both modalities.

Study and radiation precaution-specific data was collected from department datasheets, PMR and EMR entries. Proportional analysis was performed with completion rates for EMR and PMR radiation precautions being calculated as a measure of NMT compliance.

RESULTS:
169 studies (PET=65, NM=104) were reviewed during the initial audit. 555 studies (PET=216, NM=349), median=52 studies/month (range=38-77), were audited during the 10-month follow-up. Completion rates summarised in table 1.

		Nuclear Medicine (%)		PET (%)	
		EMR	PMR	EMR	PMR
	Initial	76 CI= 68-86	82 CI= 77-92	94 CI= 86-99	92 CI= 88-100
FOLLOW UP	November	79 CI= 68-91	90 CI= 83-90	100 CI= 98-100	92 CI= 93-99
	December	92 CI= 82-103	92 CI= 82-103	100 CI= 100-100	100 CI= 100-100%
	January	95 CI= 87-102	84 CI= 82-103%	100 CI= 100-100	91 CI= 100-100
	February	100 CI= 100-100	79 CI= 61-97	100 CI= 100-100	100 CI= 100-100
	March	89 CI= 78-101	86 CI= 73-99	95 CI= 87-104	95 CI= 87-104
	April	93 CI= 89-102	76 CI= 60-87	100 CI= 100-100	95 CI= 85-105
	May	100 CI= 100-100	94 CI= 86-102	100 CI= 100-100	94 CI= 84-105
	June	100 CI= 100-100	94 CI= 85-103	95 CI= 86-104	100 CI= 100-100
	July	96 CI= 90-102	83 CI= 72-94	100 CI= 100-100	100 CI= 100-100
	August	97 CI= 92-102	95 CI= 88-102	100 CI= 100-100	100 CI= 79-106
	Combined	93 CI= 90-96	87 CI= 83-90	99 CI= 98-100	96 CI= 93-99

Table 1: EMR and PMR Completion Rates(%) & 95% Confidence Intervals(CI) for Nuclear Medicine and PET studies reviewed during initial implementation and follow-up reviews

Initial Review: During initial implementation, weekly EMR completion rates ranged: NM=63-94% and PET=77-100%. PMR ranges for the same period were NM=74-95% and PET=88-100%. These relatively comparable results indicated good take-up of EMR based procedures by NMT staff.

Follow-up: Following feedback to NMT staff to regarding the importance of EMR radiation precaution recording, EMR completion rates improved with rates above 96% in 7 of 10 months. PET completion rates were between 95-100%, with 100% completion in 7 months. Higher EMR completion rates indicate better NMT compliance with EMR based procedures.

CONCLUSION:
EMR radiation precaution recording has been successfully implemented, in addition to the standard departmental operating procedures (PMR recording), with higher measurable completion rates. These findings have supported the expansion of EMR radiation precautions recording for outpatients attending clinic and allied health appointments; further improving patient care.

Background: Drugs and Poisons legislation requires Drugs of Dependence to be rendered non-recoverable and non-identifiable prior to disposal. For partially used infusion bags, the Victorian Therapeutic Advisory Group recommends that residual liquids be emptied into pharmaceutical waste bins with absorbent capacity, prior to disposal of empty bags into the bins. The volume of fluid disposed of must not exceed the bin's absorbency limits; for the currently used pharmaceutical waste bins (Pharmasmart22) this limit is 1L.

Aim/Objective: To examine Patient Controlled Analgesia (PCA) infusion bag usage patterns and the residual fluid volume discarded from these bags.

Methods: A retrospective review of PCA infusion bags was undertaken on five high-usage wards at a metropolitan hospital between June – December 2021 (category 1 and 2 surgeries only, due to Covid restrictions) and June – December 2022 (no elective surgery restrictions). Data extracted from medical records included medication(s) administered; number of PCA bags administered; the times that each PCA bag commenced and was discarded, and residual PCA bag volume.

Results: PCA usage of 237 and 291 patients was evaluated during the first and second time periods, respectively. The median total daily volume of residual fluid discarded was 90 mL (range: 1-485 mL) during the first time period and 70 mL (range:1-381 mL) during the second. The median number of PCA bags discarded each day was 2 (range:1-12) and 1 (range:1-8) during each time period.

Discussion: Despite the larger number of patients treated during the second time period, the volume of fluid and number of bags discarded daily were similar. The currently used pharmaceutical waste bins have adequate capacity to accommodate the volume of PCA fluid disposal required on each ward. Therefore, the same waste bins have been retained. A pharmaceutical waste disposal process tailored to each patient care area is required for optimal pharmaceutical waste management.

Background: Midodrine is used off-label as an intravenous vasopressor weaning agent. Some patients continue midodrine following ICU discharge to the ward. An audit found that midodrine management on the wards was suboptimal due to inadequate weaning plan documentation in ICU. Subsequently, a guideline was developed and a pharmacy education session about optimal management was undertaken.

Aim/Objective: To evaluate whether implementation of a guideline improved midodrine management in patients discharged from ICU to the wards.

Methods: A pre/post-implementation study was undertaken over a 12-month period (July 21 to July 22) in 2021-2022 and a 3-month period (December to March 23) in 2022-2023). Patients were included if they were initiated on midodrine in ICU and discharged to the ward. Data collected in a retrospective medical record review included indication, admitting team, commencement dose, ICU discharge dose, total ~~duration~~duration, and amount (mg) used, whether a ward weaning plan was documented and whether clinical pharmacology approval was obtained.

Results: Over the pre- and post-implementation periods, 41 and 17 patients were included, respectively. Similar percentages of patients continued midodrine on their ward for more than 72 hours after ICU discharge (pre: 56% (23/41) versus post: 59% (10/17)). Likewise, the median duration of midodrine therapy on the wards was similar (pre: 7 days (range: 4 – 81 days) versus post: 6 days (range: ~~-~~1 – 27 days)). The percentage of patients with a documented ICU discharge weaning plan increased from 49% (20/41) to 88% (15/17). A clear weaning plan for patients discharged home on midodrine was observed post implementation. Cases with clinical pharmacology approval decreased from 36% (8/23) to 20% (2/10).

Discussion: The guideline and education were associated with improvements in documentation of ICU discharge midodrine weaning plans. Clinical pharmacology approval attainment has declined. Regular education sessions and involvement of pharmacists in handover from ICU could ensure continued improvement.

Delahunt M, [1,] McGaw R,[1,] Hardidge A, [2,3,]

A pilot model of care to achieve next day discharge in patients undergoing hip and knee arthroplasty in an Australian public hospital setting

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2. Orthopaedic Surgery Department, Austin Health, Vic., Australia;
3. University of Melbourne

Aim
International data suggests that hip or knee arthroplasty with a one-day length of stay (LOS) is safe and is associated with improved patient and health service outcomes. The aim of this study was to develop and pilot an Enhanced Recovery Program (ERP) achieving next-day discharge for patients undergoing lower limb arthroplasty in an Australian public hospital setting.

Methods
A multidisciplinary team consisting of a project lead and six perioperative clinical craft group leads developed an ERP protocol based on extensively researched Enhanced Recovery After Surgery (ERAS) principles. Institute for Health Care Improvement (IHI) quality improvement methodology was used to implement the ERP. A patient Navigator was put in place to be a single point of contact for patients.

Results
Forty-seven patients were included in our ERP. Eleven surgeons participated in the pilot. Mean ± standard deviation (SD) Length of Stay (LOS) was 34.7±7.2 hours with 87% of patients achieving next-day discharge. Compliance with ERAS was high (96%) with mobilisation within 12 hours occurring on 87% of occasions. No patient experienced an adverse event, re-presentation to the ED or hospital readmission. Patient satisfaction with our ERP was high.

Conclusion
In this selected cohort of patients undergoing lower limb arthroplasty, a multidisciplinary approach using an IHI framework was able to achieve next day discharge with no adverse events and high patient satisfaction. To our knowledge, these results are the first from a large Australian metropolitan public health service using a scaled-up model. Broadening the inclusion criteria will make ERP more available to patients undergoing arthroplasty, and other surgery, in the future.

Field E, Smith H, Thomson D, Hubble A, Pownall J, Osborne A, Jammali-Blasi A, Tippet E, Kenny J, Van Diemen A

Pandemic innovation: A novel digital tool for aged care outbreak management

Key words: Outbreaks, aged care, automation, digital health, quality improvement

Aim
The COVID-19 pandemic, and specifically the Omicron wave in early 2022, demonstrated the reliance on manual processes was both inefficient for Public Health Units (PHUs) and Residential Aged Care Facilities (RACFs) and led to poor data quality. The aim of this project was to enable the North Eastern Public Health Unit (NEPHU) to provide scalable, consistent, high-quality support to RACFs for effective COVID-19 outbreak management.

Methods
NEPHU developed the Outbreak Management System (OMS), a purpose-built digital solution to streamline data collection from RACFs and automate aspects of outbreak management. The OMS enables the automation of initial outbreak notification emails to RACFs and allows RACFs to log-in and report outbreak details or request outbreak clearance from NEPHU. NEPHU's OMS workflow is also highly automated: tasks are auto-populated on a planner in response to RACF submissions, including non-timely responses and case number inconsistencies. Submitted case linelists are automatically collated and emailed for bulk upload into the centralised Victorian COVID surveillance system, thus ensuring high data quality.

Results
The OMS has enabled NEPHU to support 495 outbreaks across 173 unique aged care facilities. Implementation of the OMS allowed for increased efficiency, enhanced surveillance and situational awareness. It also improved consistency, reduced error through task automation and allowed staff to focus on risk assessment, managing sites of concern and meeting individual facility needs. NEPHU staff reported an average reduction of 20 minutes to complete an initial outbreak call, and the OMS is estimated to save approximately 60-70% in overall staff time spent on outbreak management.

Conclusion
The OMS demonstrated a timely and adaptable approach to managing outbreaks in the peak of COVID-19 pandemic. The success of the OMS has led NEPHU to work towards its expansion to other settings and communicable diseases. Current developments include support for influenza and RSV in disability and supported residential services.

Abstract Title: Revolutionizing and Transforming Healthcare: HITH-Enhanced Recovery After Surgery (ERAS)

Aims

Obesity is a significant cause of morbidity, yet specialized obesity care is often lacking in public hospitals. Bariatric surgery has shown the greatest impact on morbidity and mortality, but early discharge and day case protocols have led to unacceptably high early representation rates. In response, the HITH-Enhanced Recovery After Surgery (ERAS) program for gastric bypass and gastric sleeve procedures was specifically designed to provide patients with comprehensive post-operative medical care in the comfort of their own homes.

Methods

A multidisciplinary team at a quaternary public bariatric surgery service developed a novel HITH-based recovery pathway for primary sleeve gastrectomy and gastric bypass, building upon an existing ERAS protocol. Patients are discharged home in the morning day one post-surgery with a biobeat device to enable home observation monitoring and receive home nursing visits that afternoon and the following day. At each visit an assessment of progress including pain, nausea and oral intake is undertaken, delivery of protocolled intravenous fluids titrated to oral intake as well as nursing education.

Results

To date, nine patients successfully completed the HITH-ERAS pathway. Nil readmissions or complications occurred. Average HITH-ERAS length of stay: 29.4 hours ward, 32.6 hours HITH. Study proved viability of nursing-supported, in-home recovery program following bariatric surgery, complementing previous evidence of the safety and cost-effectiveness of publicly funded bariatric surgery. Notably high rates of pathway compliance, successful patient discharge, and high patient satisfaction noted. No safety concerns noted.

Conclusions

HITH-ERAS represents innovative and patient-centred approach to healthcare delivery. Harnessing technology and virtual connectivity, this program allows patients to receive comprehensive medical care at home, enhancing comfort, reducing stress & promoting improved independence. Further development will allow day of surgery discharge for select patients. With continuous advancements and support from policymakers, programs like HITH-ERAS have the potential to revolutionize healthcare delivery, creating a more efficient & patient-focused system.

Caroline Hasdo, Lauren Anderson

Endoscopy Waitlist Information Tool: CRM application for waitlist management

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Aim

The endoscopy unit at Austin Health provides diagnostic, therapeutic and advanced endoscopic procedures for patients referred from the local community, other health services and Austin's own tertiary specialist services. The legacy systems used to manage the waitlist were complex, fragmented and lacked visibility. The entire endoscopy patient journey needed to be re-imagined as a coordinated, service-wide solution, using a Customer Relationship Management (CRM) application, to provide safe, automated, and streamlined service delivery.

Methods

There were 4 main phases undertaken as part of this program of work:

1. Mapping and understanding the current patient journey.
2. Future state re-design based on stakeholder consultation, including patients, administration, nursing, medical, and IT staff.
3. Transformational roadmap developed using appropriate governance and project methodology.
4. Phased implementation plan with sizable Hypercare support.

Results

While this body of work took close to 2 years to complete, the impact of the Endoscopy CRM has been substantial. The benefits include:

- Increased efficiency, for example 20% more referrals processed per shift.
- Increased visibility of where a patient is along their journey.
- Reduced variability of waiting times for patients to receiving results.
- No clinical incidents relating to missed referrals since go-live.
- Improved communication and clarity on handover of patient care.
- Better environmental sustainability due to transition from paper to electronic, as well as saving in print/paper costs.

	Pre-implementation	**Post-implementation**
Average time from referral to waitlisting	168 hours	13 hours
Average time from procedure to post-scope review	n/a	141 hours
% patients attending outpatient review clinic	68%	60%

Conclusion

The Endoscopy CRM solution is a unique and innovative take on coordinating the patient journey. It is integrated with existing patient databases (e.g., PAS and SMR) and has reduced administrative burden, while improving equity, clinical risk and visibility of patients waiting. With any large change, successful adoption is hinged on effective change management. Future application of this CRM solution in healthcare is endless, not only to other Austin processes or Departments, but also in how we work with other health services.

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2. *Anaesthetics, Austin Health*
3. *Surgery, Austin Health*
4. *Surgery, University of Melbourne*
5. *Critical Care, University of Melbourne*
6. *Centre for Digital Transformation of Health, University of Melbourne*

Knowledge, practice and attitudes of surgical and procedural doctors towards frailty assessment and management.

Aim

Frailty is a risk factor for poorer than expected outcomes in older surgical patients. However, preoperative screening for frailty is not routine. At Austin Health, an initiative is underway to embed frailty screening enabled by the electronic medical record (EMR). To enable this, the knowledge, practice and attitudes of proceduralists towards frailty should be elicited

Method

Procedural medical staff at Austin Health were invited to participate in a Qualtrics survey.

Results

There were 67 responses, with representation from all procedural specialties and over half coming from consultants. 95% of respondents agreed that frailty was a risk factor for postoperative morbidity and mortality. 80% agreed that frailty could be optimised prior to surgery.

96% agreed that knowing whether a patient was frail was important in pre-operative counselling. 60% of respondents were familiar with one or more tools to screen for frailty. 43% were familiar with the Clinical Frailty Scale. 24% of respondents always screened their older patients for frailty, and 15% of respondents referred frail patients for further assessment.

92% believed that screening for frailty should occur prior to consent. 67% believed that the proceduralist should be responsible for screening. Time constraints were the most prominent barrier to frailty screening. Frailty screening was considered most useful in aiding shared decision making.

Prompts in the EMR, clinical decision support and discussing frailty in multidisciplinary meetings were considered enablers for embedding frailty screening into practice.

Conclusions

Surgical doctors understand that frailty is a risk factor for poor outcome in surgery and believe that frailty should be considered during consent discussions, however their practice does not yet reflect this. Having prompts in the EMR, streamlining referral processes, and having a frailty tab on the MDM might be time-efficient ways in which busy surgical staff might address this implementation gap.

Jamwal R[1,2], Bell T[1,] Gilbert M[1], Nixon A[1] & Dalton E[1,3]

Improvements in functional autonomy for older adults who receive occupational therapy at Austin Health

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Aim
To describe the occupational performance of older adults receiving inpatient occupational therapy (OT) and compare the functional autonomy at admission and discharge from hospital.

Methods
The Functional Autonomy Measurement System (known by its French acronym, 'SMAF') was administered on admission and discharge as part of usual care OT for patients under general medicine bed cards between August 2020 and June 2023 (some administration pauses due to COVID-19 pandemic). The SMAF assessment reports a raw and adjusted score, ranging from 0 (independent) to -87 (dependence). Raw scores represent the individual's ability to perform activities of daily living autonomously, and adjusted scores represent the influence of resources (e.g., family, paid carers, equipment) on the individual's functional autonomy. Demographic data were also collected.

Results
A SMAF score was completed on 174 participants. Forty-six percent were female with a median [IQR] age of 82.5 [76.0,87.0]. Of these 174 participants, 112 had an admission and discharge SMAF score. The median [IQR] raw SMAF score was -33.5 [-41.0,-27.0] at admission and -18.0 [-28.5,-11.5] at discharge. The median [IQR] adjusted SMAF score was -22.0 [-29.6,-15.0] at admission and – 1.0 [-28.5,0.0] at discharge. The minimally clinically important difference score of 5 was achieved between admission and discharge for both the raw and adjusted scores. Differences between raw and adjusted scores highlight the importance of resources to achieve functional autonomy for this population. Data collection remains ongoing, and a larger sample will be presented.

Conclusion
The results demonstrate that the functional autonomy of older adults, seen by the OT service, can be improved in a clinically meaningful way from admission to discharge. The SMAF is a necessary usual care assessment for the OT service as it can measure the wide range of OT interventions from functional re-training, task adaptation, equipment prescription and harnessing social resources.

Ronald Ma [1]

Green Theatre Index: Benchmarking green theatre approaches

1. Department of Medicine Austin Health, University of Melbourne, Australia

Aim
Developing a single index, which represents improvements in green theatre approaches has significant potential to increase control over and to promote the climate-smart strategies.

Climate-smart strategies for operating theatres (green theatre approaches) are of significant concern around the world, because theatres contribute twenty to thirty-three percent of the hospital carbon footprint and 42% of hospital revenue (1). Theatres usually consume energy that is three to six times of other rooms (2). Despite overwhelming enthusiasm and advancements in green theatre research, benchmarking of green theatre approaches remains a challenge.

That is, this study does not stop at an inquiry about green theatre approaches but also moves a step further and explores a possible standardised outcome measure for the evolution of magnitudes, particularly in favour of the "Green Theatre Index (GTI)" to track and benchmark the effectiveness of climate-smart strategies in operating theatres using a dummy dataset and Carbonr R package.

Methods
A function called "clinical_theatre_emissions" was written within the R package "Carbonr" to calculate carbon emission (tCO2e or tonne carbon dioxide equivalent) from a dummy dataset encompassing different types of theatre waste (3). A time series emission data by theatre were consolidated as GTI using Fisher Ideal Index (4).

Results
The GTI proves a feasible and accurate consolidated outcome measure for carbon emissions to track and benchmark green theatre strategies and could be applied in the real-world settings.

Conclusion
The green theatre approaches need a single index for benchmarking. This paper demonstrates the feasibility of GTI using Carbonr R package for benchmarking to track improvements across participating green theatres.

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Ross-Smith M, [1], Ros, S,[1]

A rare cause of blocked PD catheter! Beware of the rogue Fallopian Tubes!

1. Department of Nephrology, Austin Health, Heidelberg, Vic., Australia.

Aim / Background:
This case study describes the rare clinical scenario of a female patient on Peritoneal Dialysis who presented with a complete blockage of the Peritoneal Dialysis Catheter. Routine procedures for unblocking the Peritoneal Dialysis catheter were unsuccessful in restoring catheter patency. Surgical intervention identified the catheter was 100% occluded with Fallopian tubes.

Case Report:
42-year-old female patient with a Past History of end stage kidney disease secondary to reflux nephropathy. Other relevant history includes Renal transplant (2001), Fertility medication (2015), G1P1 delivered daughter (2017), Cervical dysplasia laser treatment (2020).

Laparoscopic Insertion of Peritoneal Dialysis Catheter (December 2022) with uncomplicated routine catheter management.
Successfully commenced on Peritoneal Dialysis on Day 14 post catheter insertion. 5 weeks after commencement of Peritoneal Dialysis, she experienced multiple drain alarms with fibrin found within catheter and was successfully managed with routine procedures. She subsequently returned to successful Automated Peritoneal Dialysis without issues for the following 2 months. In March 2023 (2 months later) she then experienced uncontrolled drain alarms. Routine management of blocked catheter was unsuccessful.

Laparoscopic peritoneal dialysis catheter revision was carried out and found that the catheter was blocked with both the fallopian tubes. The fallopian tubes were manually dislodged from the side holes and tip of catheter. Additional intra-operative and early post-operative flushing attended, with early uncomplicated Automated Peritoneal Dialysis recommenced.

Conclusion:
This case highlights the need for the Peritoneal dialysis team to think more broadly about Peritoneal dialysis catheter management, when routine catheter processes are unsuccessful. Uncommon causes of blocked catheters should be considered with an awareness that Fallopian tubes can be a cause of catheter occlusion.

Delivery of virtual acute cardiac care:
Evaluating a pilot cardiac hospital in the home (cHITH) program.

Background: Addressing unprecedented bed access demand without increasing physical infrastructure is a challenge. Hospital-in-the-home, as bed substitution, is an established model, however, lacks systematic monitoring, reporting and funding to support expansion[1-2]. Digital health technologies have played key roles in delivering care during the pandemic [3] and are well-positioned, along with emerging technologies, to support dedicated virtual ward environments to targeted patient groups.

Aims: To describe and evaluate a novel virtual model of care for cardiac patients.

Methods: We recorded demographics, length of stay, mortality, 30-day representation/readmission rates, and patient experience reported as a 'net promoter score as the primary outcomes.

Model of Care: This model used a 48-hour goal of care to virtually deliver care by an expert team of advanced practice cardiac nurses, pharmacists and cardiologists. Wearable technology was utilised to monitor cardiac rhythm and vital signs in conjunction with daily virtual ward rounds to manage recognised post operative/procedural complications. Escalation pathways for clinical deterioration were designed to support patient safety. Transitional care to discharge was a key element of this model.

Key Results: Between March-November 2022, 318 patients were transferred into cHITH. This cohort included 187(58%) post cardiac surgery and 131(42%) cardiology patients. Mean age was 63 +/- 13 years, 73% were males. Median cHITH length of stay was 2.0 days, reflecting 39% of the episode of acute care delivered virtually. A total of 742 bed days were saved. Zero mortality was recorded, 30-day representation was 17(5.3%) and readmission 15(4.7%). Patient satisfaction was >90% (net promoter score) with a response rate of 42%.

Conclusion: This pilot virtual model of care has demonstrated safety efficiency and high levels of patient satisfaction. Ongoing quality and safety analysis is required to understand the broader application of this model to other patient cohorts across the hospital.

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Nallas R, Lay W, Dada R, Paynter J, Kelly S, Davies A, Taylor M, Simmance A

Evaluation of a Point of Care (POC) Full Blood Examination (FBE) device for use in regional health care settings.

Aim
The objective of this study was to compare the performance of an FBE POC device against the Laboratory FBE Instrument as a POC solution in the regional healthcare sites.

Method
FBE samples were run on the Beckman Coulter DxH900 and the Pixcell Hemoscreen. Parameters were compared using Passing-Pablok linear regression and Pearson r correlation coefficient.

Results
117 samples run show good correlation in 11/15 parameters. Refer to Table 1.
Poor Basophil correlation due to low absolute values showing a large statistical variation.
MCHC is calculated based on Hb and HCT, and calculated from RBC and MCV.
Imprecision is due to the sum of all imprecisions.
MPV is not applicable to POC setting.

Conclusion
Data collected so far demonstrates a suitable POC solution, especially with the Hb, WCC, Neutrophil and Platelet parameters, that will provide rapid results to assist patient management in the regional Point of Care sites.

Table 1: Pixcell Hemoscreen vs Beckman Coulter DxH900

Parameter	Pearson r (95% confidence interval)
RBC	0.978 (0.968 - 0.985)
HB	0.970 (0.956 - 0.979)
HCT	0.969 (0.955 - 0.978)
MCV	0.990 (0.984 - 0.993)
MCH	0.990 (0.985 - 0.993)
MCHC	0.826 (0.757 - 0.877)
RDW	0.981 (0.972 - 0.987)
PLT	0.994 (0.991 - 0.996)
MPV	0.892 (0.845 - 0.925)
WBC	0.993 (0.990 - 0.996)
NEUTS	0.967 (0.951 - 0.977)
LYMPS	0.978 (0.968 - 0.985)
MONO	0.948 (0.924 - 0.964)
EASO	0.968 (0.953 - 0.979)
BASO	0.112 (-0.080 - 0.297)

Kunthi Pathmaraj[1,2,5], Jessica Welch[1], Wesley Ng[1], Danny Lee[1], Sze Ting Lee[1,2,3,4], Andrew Scott [1,2,3,4]

Surveying Patient Journeys in a Nuclear Medicine Service using a Patient Journey Audit Tool (PJAT) developed in-house

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2 Olivia Newton-John Cancer Research Institute, Austin health;
3 School of Cancer Medicine, La Trobe University;
4 Department of Medicine, The University of Melbourne;
5 School of Molecular Sciences, La Trobe University

Aim

i)To determine the efficiency of the PJAT developed by the Department of Molecular Imaging and Therapy (MIT), to audit patient journeys in Nuclear Medicine (NM), PET and Bone Densitometry (BMD)
ii) To determine if MIT practices are compliant with the NSQHS standards

Methods

The patient journey audit tool (PJAT), was developed by MIT to conduct patient journey audits. 32 questions were formulated in the PJAT, to test compliance against the 8 NSQHS Standards by auditing processes around justification of the imaging request; triaging/booking the appointment; obtaining clinical history; obtaining patient consent; monitoring of radiopharmaceutical administration; performing the imaging procedure; management of adverse events; report generation and result dissemination. Special focus was placed on COVID-19 related governance and radiation safety compliance. Diagnostic reference levels (DRL) were reviewed to check that they were within ARPANSA regulated limits. A total of 60 patient journey audits were completed.

Results

The data was analysed and two examples are shown below.

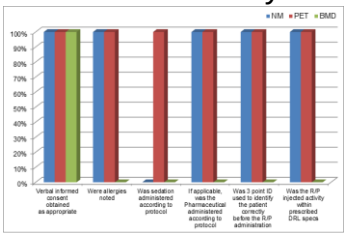


Fig 1 - monitoring of radiopharmaceutical administration and medication safety

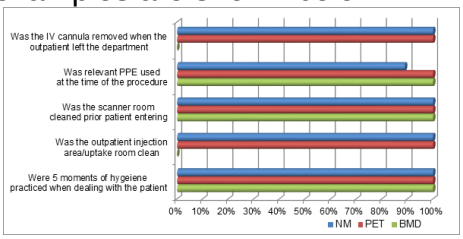


Fig 2 - prevention and control of healthcare associated infections

Conclusion

MIT has successfully developed a PJAT to test compliance against the NSQHS Standards. The results of the 60 patient journey audits show that the Department is complying with the expectations set by the NSQHS and Austin Health, and ARPANSA. Note – the PJAT developed at Austin Health was presented at a Quality Advisory meeting at the International Atomic Energy Agency (IAEA), Austria in April 2023. IAEA has adapted the Austin PJAT and formulated the IAEA-PJAT as an audit tool that can be used by international Nuclear Medicine Services to monitor and patient journeys and their quality programs.

Ileana Petre[1], Michael Ben-Meir[1], Ellyse Marum[2]

ED Fast Track and Direct Access Short Stay Unit Model of Care

1. Austin Health, Emergency Department, Heidelberg, Victoria
2. Austin Health, Service Improvement and Innovation, Heidelberg, Victoria

Aim

The Fast Track (FT) and Direct Access Short Stay (DASS) Model of care was tested and implemented from February to November 2022 within the Austin Health Emergency Department (ED). The aim was to increase patients that are discharged home in less than 4 hours (non-admitted NEAT) to 60% by July 2022.

Methods

Fast track is designed to treat lower acuity ambulant patients that present to the ED. DASS was established to complete the care for FT patients that were expected to stay longer than 4 hours in the ED pending diagnostic results or an inpatient consult. The DASS model of care was designed to remove the doctor-to-doctor referral present in the existing Short Stay model of care and streamline patient transition.

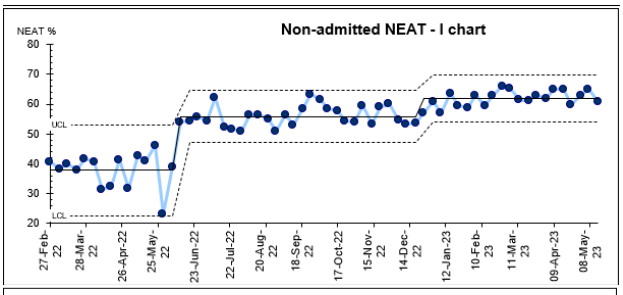
Austin Health Improvement Framework was used to manage and deliver change:

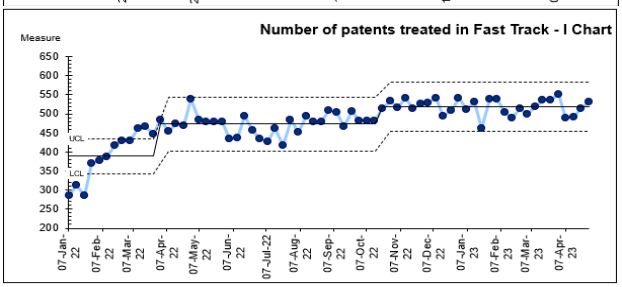
- Establishing a governance structure and a working group
- Engaging clinicians to develop, test and implement solutions using PDSAs
- Agreeing on a family of measures and monitoring data overtime using control charts
- Seeking staff and consumer feedback.

Results

Improvement led to more patients accessing timely quality care in the ED and staff are enjoying working in Fast Track and DASS. Key outcomes include:

- Increased from treating 329 patients a week to 518 (20% increasing to 27% of ED attendances).
- Non-admitted NEAT increased 16% from 40% to 59%.
- Fast Track patients rated their care as 4.2 out of 5.
- Overall staff satisfaction in November 2022 was 4 out of 5, improving from 3.4.





Learnings

- A multidisciplinary team approach to create and implement solutions is critical for success.
- A formalised improvement process and support from an improvement advisor facilitated learning.
- Access to data enabled staff to build confidence in the demonstrated improvement.
- Senior decision makers in the area facilitated increased clinical scope, and improved patient throughput.
- High staff numbers, rotating roles and a fractional workforce made change longer to embed in everyday practice and continues to contribute to variation in practice.

Schimmelbusch, K[1], Mercer, I. [1]

Targeted nursing education programs improve confidence and develop practice as evidenced by a self-rating scale.

1. Clinical Education Unit, Austin Health, Heidelberg, Vic., Australia.

Aim

Targeted education interventions are an effective method of leadership development in nurses.[1.] Multi-day education programs were designed for nursing staff working in inpatient wards in The Austin Health Division of Surgery, Anaesthesia and Procedural Medicine. Across three individual programs (*Orthopaedics/Plastics, Upper Gastrointestinal/Colorectal/Endocrine and Liver/Gastroenterology/Hepatobiliary*), 16 learners participated, with the majority (80%) having less than 4 years' clinical experience.

The 3-day programs sought to create learner friendly, interactive agendas, in learning enhancing environments.[2] In keeping with the *Austin Health Nursing Professional Practice Framework[3] (*a framework that acts as a guide for the development of practice*)*, the programs were designed to increase capability, decision making, develop skill acquisition and enhance autonomy pertinent to the clinical environment.

Methods

The participants were asked to complete a survey questionnaire prior to commencing the education program, and a follow-up survey post completion. The survey sought to evaluate and rate learners' level of knowledge and confidence in their area of specialty based on the Foundation to Expert scale and relevant Domains of Practice.

Results

All learners (16/16, 100%) reported that the knowledge gained will benefit their clinical practice and that the educational programs met their expectations.

A comparison of pre- and post-survey self-assessment demonstrated improvements were evident in all 9 categories. The most significant improvement was noted in *capability to adequately identify key components of admission diagnoses and clinical prioritisation.* During the pre-program self-rating, 56% (9/16) participants rated themselves at Foundation Level and 43% (7/16) at Intermediate Level. All participants self-rating increased as evidenced by post program levels (31% Intermediate and 69% at Expert).

When asked whether they *actively contributed to quality improvement*, pre-survey results indicated 56% (9/16) of staff felt they were at a Foundation level and 44% (7/16) at Intermediate level. Post program this increased to 50% (8/16) at self-rated Intermediate level and 50% (8/16) at self-rated Expert level.

Other categories that saw self-rated improvement included confidence in providing patient education, proactivity in seeking learning opportunities,

identifying clinical gaps, and collaborating and acting as a resource to colleagues.

Conclusion

Targeted programs with engaged learners can lead to self-evaluated development.

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Austin Health Nursing Professional Practice Framework 2020

Sheen J, [1], O'Donnabhain R, [1], Xu C, [1], Xing G,[1]

Title of abstract: The impact of a GATES trauma perioperative medical service on patient outcomes, an interventional study

1. Austin Health, Department of Perioperative Medicine

Aim

Trauma presentations to the Austin Hospital occur in a population increasingly defined by multiple medical comorbidities and frailty. This study aims to look at the impact of the recent rollout of an embedded GATES perioperative medical service in February 2023 on the efficacy of perioperative services. This is also a case for a new future model with a proactive rather than reactive approach to perioperative medical consultations for medically complex surgical patients.

Methods

The author collected data from the Perioperative audit over a period of 20 weeks between the 6th of March and the 23rd July of the year 2022 and 2023, comparing data before and after the rollout of the GATES perioperative service within the same period of the year. Several primary outcomes were collated including: Number of referrals, Number of phone advice, Number of MET calls/Codes and Number of TOC (Take Over of Care) requests including number accepted. Secondary outcomes also included LOS (Length Of Stay), Rehospitalisation within 30 days and Mortality within 30 days, of the patients who remained under GATES team care for their admission.

Results

	New referrals	Phone advice	TOC	TOC accepted	MET /Codes	LOS days (median)	LOS days (mean)	Readmit 30 days	Mortality 30 days all cause
6/3/22 - 23/7/22	219	41	177	125	34	4	4.8	6	5
6/3/23 - 23/7/23	150	49	40	23	26	7	5.8	5	3

There was an overall reduction of new referrals around 32% with a larger proportion of pre-service referrals due to TOC requests. There has also been a notable reduction in TOC requests by around 77% and MET/Codes by around 24%. Interestingly, LOS has increased since the implementation of the service but readmission and mortality rates are stable with a larger number of patients remaining under the GATES surgical team care.

Conclusion

The results show a sizeable reduction in TOC requests, overall referrals and MET/Codes with a perioperative medical service providing early proactive consultations. A larger number of patients remaining under the shared care of GATES team and Perioperative Medicine had minimal effect on mortality and readmissions. The results show improved outcomes with a model of proactive medical consultations that can be implemented for other surgical teams.

Electronic warfarin home monitoring with Hospital in the Home: Using technology to improve critical communication

(Max 15 words)

Elizabeth Su[1,2], Connor Palmer [1,2], Jade Eyles[1], Anne McGrath[2], Lisa Ho[2], Nicole Irwin[3], Angela Sullivan[3]

1. Electronic Medical Record Service, Austin Health
2. Pharmacy Department, Austin Health
3. Hospital in the Home, Austin Health

Background: Warfarin is a high-risk medicine that requires careful monitoring and dosing. Hospital in the Home (HITH) nurses visit patients at home to administer enoxaparin injections until warfarin becomes therapeutic. They use point-of-care devices to obtain international normalised ratio (INR) blood test results that are reviewed by HITH doctors to determine the warfarin dose to be taken by the patient. Clear communication between HITH clinicians is critical for safe warfarin dosing. Transferring warfarin monitoring information to the patient's general practitioner (GP) and pathology service on discharge from HITH is also critical for continuity of care.

Objective: To develop a workflow for HITH warfarin home monitoring within the electronic medical record (EMR).

Action: An electronic form was developed that allows the HITH nurse at the patient's home and the HITH doctor at the hospital to document and view INR results and warfarin doses respectively. Documented warfarin monitoring information is visible in the patient's EMR progress notes to all hospital clinicians. On discharge from HITH, an electronic warfarin discharge plan and discharge summary are sent to the patient's pathology service and GP to communicate INR results and warfarin doses received with HITH. Provision of an electronic warfarin discharge plan from HITH is a new practice to improve continuity of care.

Evaluation: Early user testing indicates this electronic workflow is intuitive and improves the visibility of warfarin monitoring information for clinicians at the patient's home and at the hospital, overcoming limitations of paper forms. Feedback from pathology services and GPs is ongoing.

Discussion: An electronic warfarin home monitoring workflow allows HITH clinicians to clearly document and communicate critical information to support safe warfarin use. Introduction of the electronic warfarin discharge plan to HITH practice broadens the hospital's existing initiative to bridge gaps in communicating warfarin-related information to community providers on discharge.

Word count = 298 (max 300 words)

Taylor S,[1] Jones S,[1] Chen Y,[2] Golbahar K,[2] Herathmudiyanselage H[2], Huang N,[2] Kullar N,[2] McMaster B,[3] Bandey S,[3]

A pharmacy department pharmaceutical waste audit to inform future interventions: an observational study

1. Pharmacy Department, Austin Health, Heidelberg, Vic., Australia;
2. Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Vic., Australia;
3. Sustainability Unit, Austin Health, Vic., Australia

Aim
Over 7% of Australia's total carbon emissions come from healthcare; hospitals and pharmaceuticals are major contributors. It is estimated that 1kg of incinerated pharmaceutical waste emits 1kg of carbon dioxide. Previous hospital waste audits have quantified pharmaceutical waste, but none have explored whether pharmaceutical waste could be reduced or diverted into alternative streams. This study aimed to develop a pharmaceutical waste audit methodology, then describe the pharmaceutical waste generated within the pharmacy department to identify potential waste diversion and/or reduction opportunities.

Methods
This observational study was undertaken in the pharmacy department across three campuses of a metropolitan health-service. All pharmaceutical waste bins were replaced with new bins and checked alternate daily. Cytotoxic suite waste was excluded. After seven days, waste was collected, bagged, and labelled. Each bag was weighed, and the volume measured before each piece of waste was sorted into one of ten categories, including waste that strictly met the pharmaceutical waste definition.

Results
A total of 88.7kg of pharmaceutical waste was collected, that could be reduced to 72.0kg following detailed sorting. The total volume of unsorted waste was 555L, which was reduced to 242L following sorting. Detailed sorting has the potential to reduce the cost of pharmaceutical waste disposal and carbon dioxide emissions, by approximately AU$10,000 and 868kg annually, (equivalent to >3500km driven by an average petrol passenger vehicle).

Conclusion
This audit is informing future interventions to reduce pharmaceutical waste including: diversion of cardboard boxes to confidential or cardboard waste streams (depending whether patient identifier labels are attached); collaboration with the drug of dependence waste bin manufacturer to find a design that takes up less space and is of a more environmentally-friendly material; developing workflows to facilitate blister pack recycling; and identify alternatives to orange tablet vials for inpatient dispensing of solid dose forms.

To TP,[1] Ching M,[1] Zeglinski,[2] Trajceska L,[1] Lau, Y,[1] Schimmelbusch, K[3]

Stability of intravenous oxycodone in compound sodium lactate solution

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2. Clinical Pharmacology Department, Heidelberg, Vic., Australia;
3. Clinical Nurse Education Department, Heidelberg, Vic, Australia

Background
It is sometimes clinically desirable to administer oxycodone concurrently with compound sodium lactate via the same intravenous line; however, there is no compatibility data for this combination.

Aim
To determine the stability of intravenous oxycodone in compound sodium lactate.

Method
Oxycodone 1 mg/mL in sodium chloride 0.9% and 1 mg/mL in compound sodium lactate stock solutions were prepared in infusion bags. The former was then used to prepare 0.5 mg/mL and 0.1 mg/mL solutions using compound sodium lactate. These lower concentration solutions and 1 mg/mL in compound sodium lactate stock solution were injected into two different types of giving set ('Pump' and 'Blood') tubings. The tubings were stored at room temperature and 37 °C and analysed in triplicate at 0, 8, 24 and 48 hours, and 4, 8, 24 and 48 hours, respectively. The infusion bags containing the stock solutions were also stored at room temperature and analysed.

Samples were analysed using HPLC and stability was determined against the European Medicines Agency limit of ± 5%[1] from baseline. At each analysis point, samples were checked for physical changes.

Results
The difference from baseline was less than 5% for all samples, except 0.1 mg/mL 'Blood' samples, which showed around 6% loss at 48 hours. A change in appearance in the samples was not detected and no additional peaks were observed in the chromatograms.

Discussion
The results suggest that oxycodone 1 mg/mL may be prepared, and stable in-line, with compound sodium lactate for up to 48 hours. The potency loss in 'Blood' 0.1 mg/mL samples at 48 hours is unlikely to be clinically significant in the ward setting since the in-line dwell time for the two agents would likely be brief and oxycodone is usually titrated to effect. Furthermore, the loss is within the ± 10% benchmark accepted by some organisations.

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