Australian Commission on **Safety and Quality** in Health Care

Domains and Indicators Summary

Electronic Medication Management Self-Assessment

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Domain 1 – System Governance

Statement: EMM system governance ensures strong executive and clinical ownership and a commitment to continuous quality

The EMM system is an integral part of delivering patient care in health service organisations (HSOs). It is vital that the executive team actively monitor and evaluate the performance and use of the system by putting effective governance structures, management frameworks, and reporting mechanisms in place. Involvement of the executive ensures an organisation-wide view of the safety and quality of the EMM system, and its ongoing optimisation.

All aspects of the system's performance, maintenance and development should be the subject of organisational governance. The aim is to ensure that the EMM system enhances clinician workflows and delivers higher levels of quality patient care. Systematic monitoring of the EMM system by a senior governance group provides assurance that the system is run in accordance with the HSO's policies and expectations. Depending on the HSO's local requirements, a governance committee may be specifically established for the EMM system, or governance responsibilities may be incorporated into those of a pre-existing committee, such as the Drugs and Therapeutics committee

Table 1 EMMSAT indicators for Domain 1 – System Governance

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
1.1	The EMM system is monitored and evaluated by a governance committee with a system work plan approved at a regular interval by that committee	For example, an EMM-specific governance committee or the Drugs and Therapeutics Committee (or equivalent)	• Committee terms of reference and recent agendas, minutes and action items • Approval process and reporting lines for the EMM system work plan • Up-to-date EMM system work plan available and approved
1.2	The EMM system governance includes appointed senior clinicians to work as clinical champions	This includes a senior medical prescriber, a senior nurse and a senior pharmacist	• Organisational charts that show roles and responsibilities • Attendance records and minutes of relevant meetings • Documentation from interviews with senior clinicians

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
1.3	The EMM system governance includes clearly defined accountability and relationships with other HSO committees	For example: • Medication Safety • Drug and Therapeutics • Work Health and Safety • Information and Communication Technologies	• Respective meeting minutes and action items
1.4	The EMM system governance includes clearly defined accountability and relationships with the HSO executive		• Documentation from interviews with the members of the HSO executive about the organisational structure for EMM information system governance • Identify reports, meeting minutes, terms of reference and other materials that describe accountability and relationships between the executive and EMM system governance group
1.5	The HSO executive team review EMM system risks and safety issues as part of ordinary business		• Identification that feedback gathered from EMM system users is acted upon in a timely manner by the HSO executive • Feedback regarding clinician experiences with using the EMM system is circulated to HSO executive • HSO executive meeting minutes that demonstrate EMM system improvement is planned, resourced, communicated and evaluated
1.6	Ongoing clinical and technical support is prioritised and resourced by the HSO and monitored by the EMM system governance group	This includes out-of-hours technical support accessible to clinicians and resourced to readily resolve help desk tickets	• Work plans, minutes, and reports to the EMM system governance committee • EMM system work plan • Update policy and schedule • Testing schedule and escalation mechanism for unresolved issues identified during testing • Service level agreements with ICT team or other help desk

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
			• Analysis of out of hours EMM system help desk tickets • Interview confirmation from the HSO's Chief Information Officer (CIO) or delegated officer
1.7	Unavailability / down-time risk is regularly assessed and managed through EMM system governance	This includes regular assessment of unplanned downtime risks and identification of mitigating strategies and processes to manage downtime	• Papers and minutes of the EMM system governance group noting and accepting any unavailability risks • Risk management plan documented
1.8	Compliance with relevant legislation is assessed regularly by the EMM system governance committee	For example, Schedule 8 medicines and some Schedule 4 medicines are valid for prescribing, dispensing and administration only during the validity period defined by the legislation in the state or territory in which the EMM system operates; if these medicines are to continue beyond the duration defined in the legislation, the medication order should be renewed, and the date and time of the renewal recorded	• Approval from appropriate government agency • HSO policy • EMM system governance meeting minutes
1.9	The use of the EMM system to support key tasks of the National Safety and Quality Health Service (NSQHS) Standards is continually monitored and evaluated	For example (but not limited to): • Including new, suspended or changed medicines within clinical handover communication • Using a workflow that prompts for a medication review when a patient is identified as being at risk of falls • Auto-populating medication information in falls risk assessment tools • Alerting prescribers when prescribing look-alike, sound-alike and high-risk medicines	• Accreditation materials demonstrating the EMM system meets the requirements of the Standards
1.10	Compliance with patient privacy in line with the Australian Privacy Principles is continually monitored and evaluated as part of EMM governance	The principles cover: • The open and transparent management of personal information including having a privacy policy	• Confirmation from the HSO's CIO or delegated officer or from the EMM system vendor

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		• An individual having the option of transacting anonymously or using a pseudonym where practicable • The collection of solicited personal information and receipt of unsolicited personal information including giving notice about collection • How personal information can be used and disclosed (including overseas) • Maintaining the quality of personal information • Keeping personal information secure • Right for individuals to access and correct their personal information	
1.11	The HSO has processes to proactively consider and respond to announcements by the Australian Digital Health Agency in relation to any technical implications for the EMM system		• Documentation, for example, agenda papers / minutes of technical advice relating to Australian digital health standards provided to and discussed by the EMM system governance when appropriate
1.12	EMM governance ensures that the EMM system supports and utilises SNOMED CT-AU for access and use of the Australian Medicines terminology (AMT)	Where AMT is not available for example special access scheme medications, the HSO has processes to manage this	• Confirmation from the HSO's CIO or delegated officer or from the EMM system vendor
1.13	The HSO has processes to review and apply relevant national standards and guidelines to the EMM system and EMM related workflows	For example: • The Healthcare Identifiers Service • Digital supply chain solutions (access to the National Product Catalogue, use GS1 standards for the unique identification of locations and location hierarchies and integrate with Recall Health) • Secure messaging, and the exchange of clinical information such as discharge summaries, prescriptions and dispense records	• Confirmation from the HSO's CIO or delegated officer or from the EMM system vendor

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		• National Guidelines for On-Screen Display of Clinical Medicines Information • National Guidelines for On-Screen Presentation of Discharge Summaries • Australian national infrastructure and standards • National standard for medication labelling wherever the clinical information system components generate medicine labels (for example, dispensing systems or robotics) • Reporting of hospital-acquired complications (HACs)	
1.14	All prescribing, dispensing and administration records are retained for a period defined by the legislation in the state or territory in which the EMM system operates, and are made available promptly to an inspector appointed under the legislation		• HSO policy

Domain 2 – Infrastructure

Statement: The EMM system uses robust technical infrastructure that maximises the availability of the EMM system

Infrastructure is critical to the successful use of an EMM system to deliver patient care in HSOs. Infrastructure for EMM systems includes software capabilities, access to technical support, and availability of Wi-Fi and necessary hardware within the clinical areas. It is imperative that HSOs ensure that adequate infrastructure is in place not just in terms of quantity but also capability so that EMM systems function effectively and safely.

Table 2 EMMSAT indicators for Domain 2 – Infrastructure

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
2.1	The HSO has identified and implemented the required range and number of devices to access the EMM system	This includes undertaking a risk assessment to identify local device requirements in the context of system and user requirements, particularly during peak demand times such as medicines administration rounds, ward rounds and at shift handover time	• Project documentation indicating required device number calculations and user concurrency expectations • Post-implementation comparisons of predicted and actual user concurrency figures in relation to device numbers available • Interviews with EMM system users • Comparison of device numbers against EMM system user numbers during peak times
2.2	Infrastructure required to support EMM system access in all patient care areas is continually reviewed and maintained	This includes adequate infrastructure such as charging stations, spare batteries, printers, power points / outlets, etc.	• The HSO has a policy that details the minimum number of terminals required to meet the needs of clinicians in each patient care area • The HSO has mapped the work practices of each clinical area and has a plan to manage wait times in peak

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
			periods of activity or during unusual emergency circumstances
2.3	Wi-Fi performance and availability is regularly monitored and identified Wi-Fi black spots that prevent the EMM system being used are corrected or managed to ensure ongoing access to the system		• Wi-Fi performance reports • Building schematic • Interviews with EMM system users • Analysis of help desk tickets for Wi-Fi unavailability issues • Alternative arrangements such as fixed devices are available in known Wi-Fi black spots • Business Continuity Plans include consideration of Wi-Fi failures
2.4	Remote access to the EMM system is utilised by clinicians and governed by local policies and procedures		• Scope of use articulated in policy • EMM system remote access usage logs • Confirmation from the HSO's CIO or delegated officer • Interview information from senior medical staff confirming availability and functionality of remote access
2.5	The EMM system responsiveness and performance is continually regarded as satisfactory by clinicians		• Interviews with EMM system users (reflecting the different functions of prescribing, pharmacy review, administration) • Analysis of help desk tickets for performance related issues • Where performance has been an issue, results of performance analysis conducted by ICT / EMM system vendor
2.6	The EMM system capacity is monitored and maintained to ensure large volumes of clinical data do not impact on performance	For example: ensure that the performance of the EMM system is not compromised when large volumes of unverified medication orders accumulate as 'un-actioned' in the pharmacy review queue	• Results of performance analysis conducted by ICT / EMM system vendor

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
2.7	Disaster recovery capabilities are described and documented by the HSO and are regularly checked to ensure single points of failure are identified and addressed	Examples might include: • Two data centres • Server failover capabilities • Resilient telecommunications network between data centres • Resilient telecommunications within the HSO	• EMM system technical architecture diagrams indicating high-availability capabilities • EMM system technical architecture diagrams illustrating redundancy capabilities at each possible point of failure • Confirmation from the HSO's CIO or delegated officer

Domain 3 – Security of Access

Statement: Physical and electronic access to the EMM system is secure

EMM system users must be granted access in a systematic and controlled way to ensure they are able to complete tasks within their scope of practice. System accessibility must be audited to ensure timeliness of access for clinicians, and that there is no improper use. Physical security of the system is also necessary to ensure that patient information is protected.

Table 3 EMMSAT indicators for Domain 3 – Security of Access

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
3.1	Clear and current policy governs how EMM system access is granted	This includes supporting appropriate locum staff access to allow them to perform their duties	• HSO policy and policy evaluation • System application form and approvals process • User access audit reports • EMM system access policy section on locum access • Access audits that include waiting time for access to the EMM system
3.2	A catalogue of roles is clearly defined and associated with permitted tasks or functions within the EMM system, aligned to HSO policies	For example: • Prescriber • Nurse • Pharmacist In addition to this, clinicians practicing in specialty areas such as chemotherapy, paediatrics, intensive care units etc. should have user access profiles that enables them to complete actions within the system that is pertinent to their role	• User roles catalogue or matrix • HSO policy
3.3	There is a process for reporting and investigating EMM system security breaches		• HSO policy

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
3.4	Access audits to identify inappropriate use of the EMM system by clinicians are completed regularly	The following should be audited: • User identification • Time of access • Names of patient records accessed • Tasks completed during access	• User audits and reports • Evidence of actions taken in response to user audits and reports
3.5	User access rights are regularly audited to ensure they remain appropriate for each clinician and their scope of practice		• Audit schedule and reports
3.6	Individual access credentials are assigned, and secured by at least one method of authentication that identifies the clinician as an authorised user of the EMM system	For example, password or touch-on / touch-off	• HSO policy • Audit logs • Screen shots • Observation
3.7	The HSO has a 'single sign-on' solution to allow clinicians to move rapidly between disparate clinical applications without the need to supply additional login information		• HSO policy • Interviews with clinicians
3.8	Display of logged in clinician and their role is visible on all EMM system screens		• Screen shot showing visibility of user and role
3.9	The ability to modify a patient's medication record in the EMM system is limited to one clinician at a time		• Screen shot / observation of inability to modify a medication record when another user is also in the process of modifying the medication record
3.10	The HSO maintains audit log records of all EMM system transactions	Including: • All changes to medication orders and medication administration • The date and time of each transaction • The name and designation of the user undertaking each transaction	• Audit log records

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
3.11	EMM system devices in publicly accessible areas are secure so that patient identifiable data is protected without impacting on clinical workflows	This may include automatic inactivity time outs and use of blank screens or screensavers	• HSO policy • Observations on wards – note the location of desktop screens, computers on wheels and screens at bedsides • Observe ‘blank screen’ after several seconds of inactivity in areas of vulnerability

Domain 4 – Integration of Core Systems

Statement: The EMM system effectively integrates with core systems used by the HSO in maximising medication safety

Medication safety must be supported by the EMM system through ensuring that clinicians have access to all the information needed to safely prescribe, dispense and deliver medicines across multiple admission types, episodes of care, and clinical areas. This relies on building effective processes for integrating the EMM system with other clinical information systems and providing clear guidance for clinicians. Methods of accessing and displaying information from other core systems should be integrated into workflow for EMM system users. It may be necessary to develop systems and processes to specifically address common sources of patient harm, for example, systems to manage allergy and adverse drug reaction information and processes to eliminate the need for clinicians to transcribe information.

Table 4 EMMSAT indicators for Domain 4 – Integration of Core Systems

Indicator Number	Indicator Description	Additional information	Examples of Evidence
4.1	HSO clinicians understand relationships between the EMM system and other HSO systems that operate at the boundaries of the EMM system scope where hybrid implementations exist	Examples may include: • Out of scope medicines • Out of scope clinical service areas • Antimicrobial stewardship programs • Pathology systems • Dispensing systems	• Documentation in EMM system training materials • Interviews with clinicians and observations of system use • Clinician workflow / instructions • System reports that identify inappropriate use e.g., use for out of scope medicines or use in an out of scope service area
4.2	Where hybrid implementations exist and the EMM system excludes certain medications or services / settings, policies and processes support medication safety and clinician workflows	This could include: • Alerting clinicians to the existence of other electronic or paper medication charts • Printing a medication chart that provides relevant medication documentation for transfers to non-EMM settings	• EMM system scope of use policies including justifications for any exclusions • Medicines policies that clearly articulate when to use the EMM system, when not to use the EMM system and the required workflow for managing the hybrid environment

Indicator Number	Indicator Description	Additional information	Examples of Evidence
		• Suspending the electronic medication chart automatically during patient transfers • Clearly identifying any suspension periods on transfer back into a service where the electronic medication chart is reinitiated	• Screen shots illustrating the advice, guidance or help provided by the EMM system to clinicians in relation to managing the hybrid environment • Evidence that paper charts refer to the EMM system
4.3	Allergy and adverse drug reaction information is only required to be documented once within the EMM system and this is replicated safely across different systems operating in the HSO	Where hybrid environments exist either with paper documentation or non-linked electronic systems, the HSO has processes to ensure that allergy and adverse drug reaction documentation is correct in all systems	• HSO policies on managing and maintaining accurate allergy information • HSO policies defining the role of the EMM system in using and maintaining medicine allergies • Screen shots of clinician instructions / alerts
4.4	The HSO has defined diagnostic tests relevant to individual medications and the EMM system incorporates electronically generated results	For example, mercaptopurine / azathioprine and TPMT testing	• For each medicine requiring specific diagnostic test results, a check list of what is required, and what is available in the EMM system
4.5	The EMM system displays relevant clinical information where medicines are prescribed or administered	This may include: • Any diagnostic tests ordered or available results for review • Blood pressure • Pulse • Weight • Height • Body surface area • Fluid balance charts • Venous thromboembolism risk assessment • Falls risk assessment • Cognitive impairment • Delirium assessment	• Screen shots illustrating each prescribed and administered medicine that requires the display or use of specific diagnostic tests
4.6	Where required by the HSO, related clinical information is recorded in the	For example, INR for warfarin and blood glucose levels for insulin	• For each medicine requiring the recording of specific clinical information, a check list of what is

Indicator Number	Indicator Description	Additional information	Examples of Evidence
	EMM system when prescribing and administering certain medications		required, and what can be recorded in the EMM system
4.7	Electronically generated results are used by clinicians in dose calculations without the need for transcription in the EMM system	For example, if the system has a calculator for ideal body weight, the recorded height and weight should automatically be transcribed without the need for the clinician to manually input the data	• Screen shots illustrating the EMM system dose calculators using electronically generated results without transcribing the required data
4.8	The EMM system integrates with infusion devices	Integration includes recording: • Specific fluids by line • Concentration of medicines in the infusion • Concentration of additives in the infusion • Rate or throughput of the infusion line • Scheduling of a review for the infusion line Administration of an infusion based on the patient's total parenteral nutrition	• Screen shot/observation of integration of infusion devices • EMM system specifications
4.9	The EMM system exchanges structured and coded information across systems	Some HSOs operate more than one system containing medication information. Examples are HSOs with specialist systems for intensive care units or chemotherapy. Where this occurs, EMM systems should support via an interface between the different systems the import of information on entry and the export of information on transfer. Where no interface is available, other mechanisms should be utilised to display information across the different systems. For example, a window or hyperlink in the receiving system that displays the active medication orders by the sending service including the next administration time	• Screen shots showing the exchange of information across systems • Interviews with system users
4.10	The EMM system synchronises patient demographic information and episode transactions with the hospital's patient administration system		• EMM system specifications

Indicator Number	Indicator Description	Additional information	Examples of Evidence
4.11	The EMM system supports unique client / patient registration, including registrations from third party systems	Enables registration of new patients within the EMM system when, for example, there is no out-of-hours administrative support or the hospital's patient administration system is unavailable, and subsequently merge the temporary registration from the patient administration system	• HSO registration workflows / instructions and associated policies • Use of test cases that demonstrate client registration information being exchanged between the EMM system and other HSO systems
4.12	The EMM system supports episode information, including episode information from third party systems	Such as ambulatory attendances and inpatient admissions	• Use of test cases that demonstrate episode information being exchanged between the clinical information system and other HSO systems
4.13	The EMM system includes a patient's Individual Health Identifier, enabling inbound and outbound clinical information sharing		• Screen shot showing the Individual Health Identifier field in the EMM system
4.14	The EMM system supports PBS prescribing workflows	The system should ensure information required for PBS eligibility including: • Strength • Pack size (or quantity) • Authority approvals (as required). The PBS Authority Approval system should be used and optimised mapping of generic inpatient medication orders and PBS-listed products on discharge should also be available	• Approval from appropriate government agency • Screen shots of required PBS information on medication order
4.15	The EMM system supports antimicrobial stewardship workflows	This could be achieved by: • Displaying the selected antimicrobial's prescribing guidelines • Supporting antimicrobial restrictions based on the class or antimicrobial selected – that is, those requiring no approvals, those requiring automated approvals based on the prescribing	• Antimicrobial Stewardship Policy • Screen shots of approvals on medication orders

Indicator Number	Indicator Description	Additional information	Examples of Evidence
		algorithm, and those requiring approval from a microbiologist or infectious diseases specialist • Recording the indication and other clinical parameters that influence the use of the selected antimicrobial • Calculating the antimicrobial dose and duration based on the clinical parameters • For restricted antimicrobials, recording the approval number of the microbiologist or infectious diseases specialist • Facilitating the prescribing of antimicrobials by indication according to the results of microbiology sensitivity reports • Locally maintaining the content of antimicrobial prescribing guidelines • Integrating with third-party antimicrobial stewardship systems to improve prescriber workflow and compliance with antimicrobial stewardship policy	
4.16	The EMM system supports access to, and the display of, My Health Record medicines information, to assist with medication reconciliation	This includes: • Shared health summaries • Event summaries • Discharge summaries • Specialist letters • Referral notes	• Screen shots that illustrate the EMM system displaying My Health Record medicines information during medication reconciliation • Workflow / instructions for BPMH • EMM system medicines scope • EMM system specifications

Domain 5 – Medication Management

Statement: The EMM system ensures effective medication management through the support of clinician workflows and safe use of medicines through appropriate patient identification, allergy and adverse drug reaction documentation and use of high-risk medicines

Medication safety is promoted through optimised workflows for clinicians using the EMM system. Streamlined clinician workflows ensure user interaction with the EMM system is effective, efficient and appropriate to the patient's clinical needs. Medication safety is also promoted through ensuring that adequate patient identification is available within the EMM system. Similarly, documentation of allergy and adverse drug reactions is necessary to prevent patient harm through the inappropriate use of medicines. High-risk medicines have the potential to cause significant patient harm and the EMM system should facilitate processes to support the safe use of these medicines.

Table 5 EMMSAT indicators for Domain 5 – Medication Management

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
5.1	Clinician and area / service specific workflows within the scope of the EMM system are monitored and optimised to reflect clinical needs		• Workflow design or mapping documentation • Observation – work through the most common tasks for each clinician type and document discrepancies between expected workflow and actual workflow
5.2	Tasks are prioritised for clinicians in the EMM system according to their role		• Observations and screen shots demonstrating the ability of the system to prioritise tasks such as due doses for nurses, suspended orders for prescribers, out of reference range doses for pharmacists, or patients overdue for medication reconciliation
5.3	Patients are allocated to individual clinicians in the EMM system to support	This could be achieved by sorting patients in a ward into clinician work groups or sorting a clinician's tasks to match a medication administration round	• Observations and screen shots demonstrating the ability of the system

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
	clinical workflows where required in the HSO		to assign patients to individual clinicians
5.4	There is minimal need to transcribe medicines information in the EMM system however when required, policy and procedures support the process	This could be achieved through functionality that allows: • Prescribers to move validated information in a BPMH to active medicine orders • Medicine orders to be sent to pharmacy for supply • Prescribers to move active medicine orders to prescriptions or discharge summaries at the time the episode of care ends	• EMM policy and work practises • Observations and screen shots demonstrating the ability of the system to automatically transfer information
5.5	Medication review is documented in the EMM system including actions taken as a result of the review	The EMM system allows medication review to be documented by any authorised clinician	• Observations and screen shots demonstrating the documentation of medication review
5.6	Complete patient identification details are displayed prominently on each screen in the EMM system to ensure that the clinician can verify the identity of the patient for each prescribing, dispensing and administration activity	For example, at least three approved patient identifiers can be used to identify a patient when matching a patient's identity to care, medicine, therapy or services; during clinical handover or transfer; whenever discharge documentation is generated; and in specific service settings. Explicit, documented protocols and policies should also be available that outline the process of matching a patient to their intended treatment.	• Observations and screen shots of patient identification
5.7	Patients with identical or similar names are identified in the EMM system, and clinicians provide extra patient identification information when medicines are prescribed or administered		• Observations and screen shots of identification
5.8	Where multi-site EMM systems operate, multiple health record numbers for a patient are supported		• Observations and screen shots showing health record numbers linked to a patient profile

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
5.9	Patient search capabilities are available in the EMM system		• Observations and screen shots of patient search capabilities
5.10	Clinicians create and maintain an up-to-date list of patient allergies and adverse drug reactions in the EMM system		• Observations and screen shots of allergy and adverse drug reaction documentation
5.11	Where no allergy or adverse drug reaction details are recorded the EMM system prompts clinicians to record allergy and adverse drug reaction details until this is documented	This could be by documenting any relevant allergy or adverse drug reactions, recording "No Known Allergies or Adverse Drug Reactions" or recording "No Allergy or Adverse Drug Reaction Information Available" (for example when patient is unconscious)	• Observations and screen shots of prompt
5.12	Allergy and adverse drug reaction information is visible on all screens from which medicines are prescribed, reviewed, supplied or administered and is referred to by clinicians		• Observations and screen shots of allergy and adverse drug reaction documentation
5.13	Allergy and adverse drug reaction information is visible between encounters and facilities that use the same EMM system and is referred to by clinicians		• Observations and screen shots of allergy and adverse drug reaction documentation
5.14	The EMM system validates patient allergies and adverse drug reactions against a medicine's generic name, proprietary name, medicine class and list of ingredients whenever medicines are prescribed		• EMM system specification and configuration documentation
5.15	In the EMM system clinicians are prompted and record new allergy information whenever a medicine is ceased because of an allergic reaction		• Observations and screen shots of prompt
5.16	New adverse drug event information for a patient resulting from administration,		• Observations and screen shots of documentation

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
	supply or prescribing errors is recorded by the clinician in the EMM system		
5.17	When ceasing a medication due to an allergy or adverse drug reaction in the EMM system, clinicians are prompted and record details in the incident management system using electronically transmitted allergy and adverse drug reaction details		• EMM system specification and configuration documentation • Observations and screen shots of prompt
5.18	The HSO has processes to support the safe use of high-risk medicines within the EMM system	Supporting safe use of high-risk medicines could include: • Restricting dosing schedules for some medicines • Configuring some medicines to be prescribed for inpatient use only • Recording or reviewing blood glucose levels when prescribing and administering insulin • Undertaking cardiac monitoring when prescribing and administering potassium • Reviewing duplication of scheduled administration and PRN doses • Considering therapeutic duplication • Configuring administration lock-outs • Using sedation scores and pain scores when prescribing narcotics • Limiting chemotherapy medicines to appropriate clinical settings and considering cumulative lifetime doses • Reviewing biochemistry results when prescribing or administering heparin and other anticoagulants	• High-risk medicine policies • Observations and screen shots of high-risk medicines and strategies to promote safety within the EMM system • EMM system specification and configuration documentation
5.19	The HSO has processes to support the use of medicines in accordance with the	These include: • Antimicrobial Stewardship • Acute Coronary Syndromes	• Policies which reflect clinical care standards

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
	relevant clinical care standards where appropriate within the EMM system	• Acute Stroke • Colonoscopy • Delirium • Heavy Menstrual Bleeding • Hip Fracture Care • Osteoarthritis of the Knee • Venous thromboembolism prevention	• Observations and screen shots of medicines used within individual clinical care standards and strategies to promote safety within the EMM system • EMM system specification and configuration documentation • High-risk medicines question sets

Domain 6 – Medication Reconciliation

Statement: The EMM system supports effective medication reconciliation in line with recognised best practice on entry to and exit from the HSO, and wherever transfer of care occurs within the HSO

Standardising medication reconciliation processes can improve medication safety by preventing medication incidents. Medication reconciliation whereby a patient's BPMH is recorded when commencing an episode of care and reconciled against current inpatient orders minimises the risk of medication errors. It is essential that the EMM system supports medication reconciliation throughout and between episodes of care to ensure clinicians are provided with accurate and current information at the point of prescribing, dispensing and administering medicines.

Table 6 EMMSAT indicators for Domain 6 – Medication Reconciliation

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
6.1	A BPMH is documented by authorised clinicians in the EMM system in line with HSO policy	All medication that the patient is currently taking are documented in the BPMH, including non-formulary products	• HSO medication reconciliation policies • Review of EMM system data showing percentage of medication reconciliation by nurses, pharmacists, junior doctors and senior doctors
6.2	Medication from previous episodes (e.g., ambulatory and inpatient) are brought forward into the BPMH recorded in the EMM system		• Screen shots that illustrate the EMM system capabilities that enable medication to be transferred to the current BPMH from previous episodes
6.3	Medication information from all other electronic systems within the HSO is available to assist with medication reconciliation		• HSO workflows / instructions • Screen shots that illustrate the EMM system displaying medication information from other HSO systems during medication reconciliation
6.4	The BPMH is updated in the EMM system any time additional medication information becomes available after completing the initial BPMH		• Pre and post screen shots that illustrate the EMM system capabilities supporting the recording of additional

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
			medication information after the initial BPMH
6.5	Reconciled medicines are converted to medication orders by an authorised prescriber in the EMM system	This should be available for all emergency department, ambulatory, pre-admission and inpatient attendances	• HSO medication reconciliation policies for ED • ED attendance data correlated against EMM system medication reconciliation data • HSO medication reconciliation policies for ambulatory clinics • Ambulatory clinic attendance data correlated against EMM system medication reconciliation data • Pre-admission clinic data correlated against EMM system medication reconciliation data • Inpatient attendance data correlated against EMM system medication reconciliation data • Inpatient admission date and time data correlated against EMM system medication reconciliation date and time data • Review of EMM system prescribing capabilities by role • Review of EMM system data showing the conversion of BPMHs to active medication orders by role
6.6	During medication reconciliation in the EMM system, the patient's commercial product or pack-based medicines in the BPMH are automatically converted to generic, dose-based hospital medicines on admission (and vice-versa on discharge)		• Screen shot / observation of conversion from pack-based to generic • Review of EMM system prescribing capabilities that support the mapping of medicines information between the respective primary care and hospital settings

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
6.7	During medication reconciliation in the EMM system, reference to whether the medicine is ceased, withheld or to be continued, or has been changed is recorded against the patient's medications on admission		• Screen shots that demonstrate medication plan with comments
6.8	During transitions of care, the reconciled medication list is updated retrospectively in the EMM system if further medication information becomes available	A history of previous versions should also be retained and visible to clinicians	• Pre and post screen shots that illustrate the EMM system capabilities supporting the recording of additional medication information after the initial reconciliation
6.9	Medicines prescribed prior to medication reconciliation are identified in the EMM system to ensure no duplicate therapy occurs following medication reconciliation		• Screen shots that illustrate medicines prescribed prior to reconciliation only appear once in the medication record and any discharge documentation
6.10	Medication reconciliation is completed in the EMM system whenever transfer of care occurs between inpatient settings in line with HSO policy	This includes creating an accurate, up-to-date list of current medication at a point in the patient's journey: • At the pre-admission clinic • On emergency department attendance • On entry to a service • On transfer to wards or other areas • On discharge from a service • On transfer to other facilities within an organisation • Wherever medicines are transcribed	• HSO medication reconciliation policies for intra-hospital transfers • Intra-hospital transfer data correlated against EMM system medication reconciliation data
6.11	Clinicians view encounters that were provided elsewhere in a multi-campus facility that shares the same EMM system		• HSO policies that govern viewing different encounters • Screen shots showing previous encounter information
6.12	A medication chart is printed from the EMM system which incorporates all	Elements that should be present on the printed chart include:	• HSO policy for medication reconciliation where different clinical information systems are in use, or

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
	medication information to facilitate medication reconciliation when transferring patient care to sites / units not using the EMM system	• Patient demographics (family name, given name, date of birth, sex, organisation health record number, address, Medicare number, and weight and height) • Known allergies and adverse drug reactions • A list of other known medication charts • The HSO's name, provider number and previous service location (ward) • Medication taken before hospital presentation • Once-only and clinician-initiated medicine orders • Telephone orders • Variable-dose orders • Venous thromboembolism prophylaxis orders • Warfarin orders • Regular medicine orders (including limited-duration, slow release and ceased medicines) • The prescriber's name, designation and contact details • The date and time prescribed • The date and time of administration and the name and designation of the person who administered the medicines • Any missed doses and the reason for not being administered • The pharmacist's name, designation and contact details and any pharmacist instructions provided, along with the date and time of the instruction. In addition to this, medication information should be sequenced as generic medicine name, route, dose and frequency. It should also include any PBS and Repatriation PBS entitlement numbers.	when transferring patients between units where one unit uses an electronic system and the other unit uses a paper-based chart or vice-versa • HSO policy for medication reconciliation when patient care is being transferred to external facilities (such as other hospitals, aged residential care, or rehabilitation units) • Sample comparisons of the status of the BPMH from the EMM system on discharge from the outbound unit with the BPMH on admission to the inbound unit (either recorded on the paper chart or on the different clinical information system)

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
6.13	The discharge medication list is incorporated by the EMM system into the discharge summary without the re-entering / transcribing of medication information	If updated, the medication list is re-transmitted to the discharge summary capability without the re-entering / transcribing of medication information	• Comparison of sample discharge summaries from the discharge summary capability with sample discharge medication lists from the EMM system
6.14	A discharge prescription is generated by the EMM system during medication reconciliation for all medicines that require supply on discharge, including PBS eligible, non–PBS eligible and private prescriptions		• Screen shots illustrating the selected printing of discharge scripts
6.15	The discharge prescription is electronically sent to a prescription exchange service, if available, to support consumer choice or if part of the prescription is dispensed elsewhere		• Screen shots illustrating the sending of discharge prescriptions to a prescription exchange service
6.16	The discharge summary is transmitted electronically to all the recipients able to receive electronic discharge summaries		• Discharge data correlated against transmission of electronic discharge summary data
6.17	For patients with a My Health Record, the EMM system transmits prescription and dispensed notifications to My Health Record		• Screen shots of prescribed and dispensed medications appearing in patient's My Health Record
6.18	A patient discharge medication list from the EMM system that is; free from jargon, written in a font large enough to be read by the patient, in plain English, is provided to the patient	The patient discharge medication list should include: • The medicine, and its form, strength, dose, frequency and duration • The generic medicine and brand name (if dispensed by the HSO) • The indication • Directions and supplementary information to support safe use • The date and time of the last dose of the medicine given	• Sample discharge medication lists • Audit reports assessing the number of patients receiving medication lists

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		• For medicines administered weekly or monthly, the date of next due administration • Any appropriate cautions for high-risk medicines administered in the past 12-24 hours • Whether the medicine is new or unchanged • A separate list of ceased medicines, including the reason for cessation • Known allergies and adverse drug reactions • Contact details if patient follow-up is required • Medication management plans (asthma, pain etc.)	
6.19	There is a process to prescribe 'leave' medicines in a similar way to discharge medicines in the EMM system	For example: • When leave medicines are prescribed, the duration of the leave must be defined either as specified time frames or as a set number of days • The leave status should be displayed in the medication administration record so that administration entries are not required • If a patient returns early, the leave status should be removed from the administration record so that medication administration can resume	• HSO medication reconciliation policies for leave • Leave data correlated against clinical information system medication reconciliation data • Clinical information system data showing medication reconciliation on leave completed as a percentage of medication reconciliation requested

Domain 7 – Prescribing

Statement: The EMM system supports safe and effective prescribing of medicines in line with recognised best practice

Medicines are the most common treatment used in health care. Standardising processes such as prescribing can improve medication safety by preventing medication incidents. Clear prescribing also improves clinical handover which is recognised as a solution for reducing medication incidents. The EMM system must support prescribing workflows in a safe and effective manner for all clinical areas.

Table 7 EMMSAT indicators for Domain 7 – Prescribing

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
7.1	The EMM system is available for prescribing in all clinical settings	This includes: • Emergency departments • Ambulatory settings, including outpatient clinics and community-based services • Pre-admission clinics • Anaesthetics bays • Inpatient units • Procedure units, such as renal dialysis and colonoscopy • Intensive care and high-dependency units • Paediatric and neonatal units • Diagnostic services	• Clear guidelines detail the scope of the current EMM system implementation for all clinicians credentialed to practice within the HSO • Observations in all clinical areas
7.2	Medicines prescribed in advance of a planned admission (inpatient or ambulatory episode of care) become active in the EMM system through prescriber authentication at the time of admission		• EMM specification and policy • Observation of medicines being prescribed in advance of a planned admission

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
7.3	The default prescribing of medicines in the local formulary is supported, with prescribing restrictions applied in the EMM system	Prescribing restrictions could be applied according to: • Site and route • Cumulative dose • Indication • Therapeutic class of medicines • Protocol • Approval period • Prescriber role or competencies • Scope-of-practice of prescribing, such as when a nurse practitioner has their own formulary defined by their scope of practice • Location-based and unit-based prescribing	• Review the Drugs and Therapeutics committee formulary and compare it to the EMM system primary medicine library • In test environment attempt to prescribe prohibited medicines according to the local formulary
7.4	Current medications charted in the EMM system are displayed when clinicians are prescribing new medicines	This includes the status of a particular medication order (ceased, withheld, active, on admission, inpatient, for discharge etc.) being visible to clinicians	• Screen shots showing current medicines visible during prescribing
7.5	The EMM system supports the prescribing of all medication types used in HSOs	This includes: • Regular medicines • 'As needed' (PRN) medicines • Variable-dosing regimens (tapering doses, alternate day, conditional dosing, linked dosing) • Weight-based and surface area-based prescribing • Anticoagulants • Antibiotics for prophylaxis • Intravenous fluids • Anaesthetics • Chemotherapy • Insulin • Variable analgesia (such as patient-controlled and clinician-controlled analgesia) • Variable dose medicines	• HSO policies that clearly articulate when to use the EMM, when not to use the EMM system and the required workflow for managing the hybrid environment • EMM system build screen shots

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		• Once-off medicines • STAT followed by regular schedules • Intermittent medicines • Slow-release medicines • Infusions • Dietetic products, foodstuffs and other products formulated for medical use • Nutritional supplements • Medicated dressings • Wound care products • Devices • Blood products • Dialysis solutions • Contrast media • Radiopharmaceuticals • Bone cement with or without antimicrobials • Implants and intra-uterine devices • Locally manufactured medicines and products • Herbal products • Unlicensed, to be administered via unlicensed routes, or part of a clinical trial • Non-formulary medicines • Medicines with multiple routes of administration	
7.6	Prescribing in the EMM system is supported using structured drop-down menus and pre-defined medication orders		• EMM system specifications and configuration details • Observation
7.7	All information required for a medication order is entered into the EMM system before the medication order is available for administration	Required information may include: • Prescriber name, designation, date and time of order • Generic medicine name (or product or pack, if locally required) • Route • Dose	• EMM system specifications and configuration details

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		• Dose range • Frequency • Site • Form • Indication (which is selected from a structured, coded list, as well as the ability to add supplementary free text, if required) • Further instructions associated with medicines, including variable-dosing regimens; infusion times for intravenous medicines and diluents; and monitoring requirements • For line locks, recording details of the medicine; the volume of fluid to be used; the specific line; and the duration that it is to remain in place (if required) • Duration of the medication order, with a review date, if appropriate • Start date and time • Stop date and time if indicated • Reason for stopping treatment • Priority for supply • Location of the medicine • For PRN medicines, a maximum individual dose (or range); minimum interval between administration (frequency); maximum dose in 24 hours; option to limit the duration of a PRN order	
7.8	Administration times are automatically scheduled by the EMM system based on recommended administration times and can be changed when clinically required with a reason for change documented	For example, morning, night, twice a day, three times a day, four times a day, regular (six hourly), regular (eight hourly).	• EMM system specifications and configuration details • Screen shots of prescribing various administration times

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
7.9	Medicine orders with an intermittent frequency of administration are prescribed in the EMM system	For example, 1,000 mg twice a day on two days of the week only, with no doses on the remaining days of the week	• Screen shots of intermittent administration times
7.10	The medication order is immediately available for administration in the EMM system as soon as the order has been completed subject to any scheduling time lag		• Time-stamped pre and post screen shots of medication orders • System performance data
7.11	Medication orders that have reached any locally configured maximum prescribing duration do not disappear from the EMM system, but remain visible on the medication chart and are marked as requiring review		• Screen shots of medications marked as requiring review on the medication chart
7.12	Prescribing and administration can be undertaken as a single transaction in the EMM system when necessary, sometimes after or during the event	For example, allowing prescribers to prescribe and document a medication as administered retrospectively following emergency administration of a medication	• Observation / screen shot of simultaneous prescribing and administration
7.13	Prescribers suspend or discontinue medication orders, with a reason selected from a predefined list, supplemented with free text if required and the system automatically adjusts subsequent administration times		• EMM system specifications and configuration details • Screen shots of amended, suspended or discontinued medications
7.14	Previous changes to the medication order are clearly displayed within the context of the current order in the EMM system		• Screen shots showing medication changes attached to a medication order
7.15	All infusions are prescribed in the EMM system	This includes: • To replace lost fluids • To maintain fluids • To provide nutrients	• HSO policies that clearly articulate when to use the EMM system, when not to use the EMM system and the required workflow for managing the hybrid environment

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		• To deliver medicines • To deliver colloids • To deliver line patency fluids (low-dose heparin in physiological solution under pressure) • Large volume fluids	• EMM system specifications and configuration details
7.16	The required attributes for intravenous medicine orders are recorded in the EMM system	For example: • Medicine name and dose • Infusion fluid (only compatible fluids should be presented to the prescriber) • Volume of infusion and rate of infusion (constant, sliding scale - insulin, or titrating - inotropes) • Route of infusion (peripheral or central line as a minimum) • Duration and frequency • Further instructions (maximum hourly rate and daily limits)	• EMM system specifications and configuration details • Screen shots of intravenous medicine orders
7.17	The prescriber selects the carrier solution and the additives as a single prescribing transaction, and the EMM system presents the final order (or mixture) for verification before authorisation		• Screen shots of intravenous medicine orders
7.18	A single prescribing transaction in the EMM system is used to prescribe an initial bolus or loading dose, followed by a maintenance infusion rate and any final infusion		• Screen shots of intravenous bolus and loading dose medicine orders
7.19	Where supported by local policy, variable or sliding-scale infusion rates are prescribed as a single transaction in the EMM system		• Screen shots of sliding scale infusion medicine orders

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
7.20	The duration of the infusion is automatically calculated by the EMM system when a rate of infusion is prescribed		• EMM system specifications and configuration details • Screen shots of intravenous medicine orders with duration of infusion on order

Domain 8 – Medication Administration

Statement: The EMM system supports the safe and effective administration of medicines

Medication safety must be supported by the EMM system by enabling the safe administration of medicines. This includes using automated processes to streamline administration workflows and providing adequate medicines information to the clinician at the point of administration. Documentation of medication administration forms an integral part of a patient's medication record and is an important communication tool between clinicians.

Table 8 EMMSAT indicators for Domain 8 – Medication Administration

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
8.1	The clinician records the medicines administered, including witnessing and dual checking in the EMM system	This includes recording: • The clinician and clinician's designation • The date and time, dose, form, strength, route, batch and expiry (if required) • Status of the medicine due, including given, missed, delayed, withheld, and any reason for not administering the medicine	• Screen shots of medicine administration
8.2	When documenting administration in the EMM system, clinicians are alerted if witnessed administration or dual checking is required		• Screen shots showing alert
8.3	Patient wristbands and medicines are scanned at the point of medication administration		• Observation of scanning technology • EMM system specification and configuration
8.4	Required medication information is available to clinicians in the administration view of the EMM system	Example of medication information includes: • Clinical notes • Reconstitution advice • Storage and handling requirements	• Screen shots of medicine order for administration with additional medication information visible

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		• Warnings and notes • Alerts that have been overridden by the prescriber (highlighted and, if configured in this way, be available for acknowledgement by the person administering medicines)	
8.5	Previously administered medicines (and missed doses) are clearly visible to clinicians in the administration view of the EMM system	Within a timeframe appropriate to the clinical setting as determined by the HSO	• Screen shots showing medication records within the timeframe appropriate to the HSO • EMM system specification and configuration
8.6	Medication orders for all classes and types (including medical gases and specialist medicines) that are due are displayed (and can be filtered) in the EMM system	This should be possible without having to traverse multiple tabs or screens to prevent missed doses arising from EMM system design and should include: • 'As needed' (PRN) medicines • Once-only and clinician-initiated medicines • Telephone orders • Warfarin orders (only applicable if the patient has been prescribed warfarin) • All regular medicines	• Screen shots showing medication records visible in the EMM system • EMM system specification and configuration
8.7	Overdue medicines, such as overdue time-critical medicines and medicines for which the due time exceeds the locally configured time window are identified in the EMM system	This includes alerts for escalation mechanisms to the clinician work list, the nurse unit manager work list and, for some medicines, the prescriber work list	• Screen shots showing overdue alert
8.8	The clinician completes relevant clinical documentation in the EMM system at the time of administering a medicine	For example, a pain score or hourly observations. If not documented, the EMM system should alert the clinician before they leave the patient's medication administration view and add to clinician's work list for follow-up	• Screen shots showing prompt to complete clinical documentation • EMM system specification and configuration
8.9	When necessary, clinicians administer equivalent strengths and forms of a medicine that may not have been	For example, when stock variations limit the availability of the medicine that was originally prescribed	• Screen shots showing administration of alternative doses and forms in the EMM system • EMM system specification and configuration

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
	defined by the prescriber in the EMM system where HSO policy allows		
8.10	When suspending or deferring the administration of a medication in the EMM system, a reason is selected from a configured list and can be clarified using free text	These missed doses must be clearly visible on the medication administration view	• Screen shots showing suspension or deferment options
8.11	When administering a medicine with multiple linked orders for different routes in the EMM system, when one route is selected, any other route cannot be concurrently selected	For example, 'morphine, orally, 10 mg, QID PRN / morphine, IV, 1 mg QID PRN'	• Screen shots / observations showing different routes cannot be concurrently administered
8.12	When medications have associated lock-out times or are not due for administration (as defined by HSO policy), clinicians are alerted by the EMM system if the medicine administration is too early		• Screen shots showing alert
8.13	Medication administration is charted retrospectively by clinicians in the EMM system when necessary	Within an acceptable timeframe as determined by the HSO	• Screen shots / observation of retrospective documentation in the EMM system • EMM system specification and configuration
8.14	Clinicians document administration of variable or sliding-scale infusions (used where local policy allows) from the original medication order in the EMM system, without requiring any changes to the original medication order		• Screen shots / observation of administration of variable or sliding-scale infusions • EMM system specification and configuration
8.15	Administration of multiple infusion bags (which represents the total input from the prescriber) is documented against a	Clinicians should record infusion bag changes, including information associated with each extra infusion bag, such as start and stop times, infusion	• Screen shots / observation of administration of multiple infusion bags • EMM system specification and configuration

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
	single medication order in the EMM system	rates, pauses in the infusion, bolus doses, discarded fluid and (possibly) batch details	
8.16	Clinicians are prompted by the EMM system when the fluids are about to finish for patients within their work area, in line with any electronic workflow capabilities		• Screen shots / observation of reminder • EMM system specification and configuration
8.17	Clinicians record in the EMM system how much fluid has been administered and relate it to the medication order, including recording any discarded fluid		• Screen shots / observation of recording amount of fluid administered • EMM system specification and configuration
8.18	Clinicians record in the EMM system the volume of a new infusion bag and are alerted if the total fluid volume prescribed is likely to be exceeded by the volume of new infusion bag, combined with the volume of previous infusions for the medication order		• Screen shots / observation of alert • EMM system specification and configuration
8.19	There are processes to support the pausing (intermittent break in the infusion) or suspension (prolonged break) of intravenous fluids for a period of time in the EMM system		• Screen shots of paused or suspended intravenous medicine orders

Domain 9 – Dispensing

Statement: The EMM system supports effective pharmacist workflows by integrating with the dispensing system and facilitating clinical pharmacy review activities

Pharmacy workflows are directly impacted by EMM systems and effective integration is necessary to ensure medication safety. This should include two-way communication between the EMM system and the dispensing system, minimising the risk of errors in transcription and promoting timely access to medicines. Pharmacist clinical activities also need to be supported by the EMM system through ensuring functionality that enables the pharmacist to communicate information to clinicians at all stages of the medication management cycle.

Table 9 EMMSAT indicators for Domain 9 – Dispensing

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
9.1	A printed paper-based prescription can be generated by the prescriber and is used by a pharmacist for dispensing		• Observation / sample paper-based prescription
9.2	An interface connects the EMM system and the dispensing system to electronically send medication orders (avoiding transcription)	For all types of medication supply: e.g., inpatient, discharge, leave etc., the interface should: • Map dose-based medication orders to product-based medicines based on the local formulary • Pharmacist intervention should be available to manually deal with any shortfalls in converting dose-based medication orders to product-based medicines • Receive dispensing status updates for medication orders so that anyone viewing the medication chart can clearly see the status of the medication orders • Receive substitute medication information when substitutes are authorised by the prescriber and dispensed, with the substitute medicines	• EMM system specification and configuration • Observation of workflow

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		replacing the original medicines on the medication chart • Clearly display the location of the supply, recorded against each medication order (a medication supply may be from a patient's own supply, local imprest or pharmacy) • Enable non-imprest medication orders to be sent immediately to the pharmacy dispensing system for supply unless pre-approval is required by the pharmacist	
9.3	Changes to the medication order in the EMM system are automatically transmitted electronically to the pharmacy dispensing system without re-entering or transcribing		• Comparison of changed medicine orders in the EMM system with changed dispensing orders in the dispensing system
9.4	Pharmacy review of the discharge medication order (as per HSO policy), occurs through either the EMM system or the pharmacy dispensing system		• Observation of workflow • HSO policy
9.5	Pharmacist annotations to the discharge medication order are recorded through either the EMM system or the pharmacy dispensing system		• Observation of workflow
9.6	Medication orders that are awaiting pharmacy review are clearly indicated in the EMM system to clinicians		• EMM system specification and configuration • Observation of workflow / screen shot of medication order awaiting pharmacy review
9.7	Full details of the medication orders that require pharmacy review are displayed in the EMM system on a pharmacy work list, with work list filtering		• EMM system specification and configuration • Observation of workflow / screen shot of medication order awaiting pharmacy review

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
9.8	Pharmacist review is documented so it is visible to the clinician in the EMM system when administering medicines		• EMM system specification and configuration • Observation of workflow / screen shot of pharmacist verification documentation
9.9	Automated pharmacy annotations are utilised in the EMM system to improve medication safety at the time of prescribing	Such as injectable administration or 'do not crush' instructions	• EMM system specification and configuration • Observation of workflow / screen shot of pharmacy instruction
9.10	Pharmacist annotations and notes are clearly visible to clinicians in the EMM system at the time of medication administration		• EMM system specification and configuration • Observation of workflow / screen shot of pharmacy instruction
9.11	Prescriber over-ride alerts and reasons for over-rides are available to the pharmacist when reviewing medication orders in the EMM system		• EMM system specification and configuration • Observation of workflow / screen shot of over-ride alert and reason
9.12	Prescriber clarification about medication orders is facilitated by a prescriber work list in the EMM system	Including pharmacist-proposed changes to a medication order or suggestions for alternative medicines for approval	• EMM system specification and configuration • Observation of workflow
9.13	When medication orders are suspended by pharmacists while waiting on clarification from prescribers (where HSO policy permits), the reason for suspension such as when approvals are required is clearly indicated in the EMM system		• EMM system specification and configuration • Observation of workflow / screen shot of suspended medication order • HSO policy
9.14	The HSO has processes for pharmacist cancellation of medication orders with the reason for the cancellation clearly documented in the EMM system		• EMM system specification and configuration • Observation of workflow / screen shot of cancelled medication order • HSO policy

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
9.15	Medication orders can be placed on a pharmacist work list in the EMM system with a reason why they remain there	Such as: • For monitoring • Awaiting Therapeutic Goods Administration or Drug and Therapeutics committee approval • Or other reason for follow-up, including recording clinical notes	• EMM system specification and configuration • Observation of workflow / screen shot of pharmacist work list

Domain 10 – Clinical Decision Support

Statement: The EMM system has suitable resources to assist clinicians to prescribe, administer and review medicine orders in the context of each patient's clinical condition safely and accurately

Clinical decision support mechanisms should be built into EMM system software to support the safe prescribing, dispensing and administration of medicines. This includes providing access to supporting resources and references, and prompts to ensure that necessary clinical information has been considered (for example, appropriate blood test results or information about the patient's clinical status).

Table 10 EMMSAT indicators for Domain 10 – Clinical Decision Support

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
10.1	A clinical decision support system is defined by the HSO and always enabled for all system users	The clinical decision support should be available during prescribing, administering and dispensing medication	• EMM system specifications • HSO policy • Observation of clinical decision support within the EMM system
10.2	The clinical decision support automatically re-runs whenever new medicines or changed medicines are ordered for a patient		• EMM system specifications • HSO policy • Observation / screen shot of clinical decision support running when medicines are added or changed
10.3	The clinical decision support system uses clinical data from interfaced devices and systems	Including: directly connected devices (such as smart pumps) and clinical systems that interface to their own devices (such as a renal system that interfaces to haemodialysis machines)	• EMM system specifications • HSO policy • Observation
10.4	Clinicians have access to national standard resources within the EMM system	Including but not limited to: • Australian Medicines Handbook • Therapeutic Guidelines • MIMS Australia • Stockley's Interaction Checker	• EMM system specifications • Screen shots of links to resources

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
10.5	Clinicians have access to the hospitals medication management policies within the EMM system	Including but not limited to: • Special Access Scheme medicines' approval process and forms • Antimicrobial stewardship approvals process and contact details • Discharge medicines policy • Adverse drug reaction reporting policies • Off-label use of medicines approval process including non-standard dosing schedules • Clinical trials management policies • Alerts and warnings use policy	• EMM system specifications • Screen shots of links to policies
10.6	Configurable alerts and alert severity based on user credentials are used by the HSO		• EMM system specifications • Screen shots of alerts for different users
10.7	Clinical decision support system alerts are presented with a standardised format and incorporate human factor principles		• EMM system specifications • Screen shots of different alerts with standardised view
10.8	Clinical decision support system alerts are linked to further information when required	For example, to the evidence underpinning the alert	• EMM system specifications • Screen shots of links to further information
10.9	Clinicians acknowledge an alert and when over-riding by recording a reason using a configured list with space to free text additional information if needed	The reason a clinician has chosen to over-ride the alert or warning is displayed to other system users particularly to clinicians that administer medicines	• EMM system specifications • Screen shots of alert requiring acknowledgement
10.10	Clinicians do not over-ride alerts with the highest priority without a reason and an additional confirmation step		• EMM system specifications • Screen shots of prioritised alerts and additional confirmation step
10.11	For each medication prescribed, when an allergy or multiple allergies are detected, the EMM system provides a single or composite alert to the clinician	This should include cross-reactivity alerts for medicine classes	• EMM system specifications • Screen shots of allergy alert

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
10.12	The EMM system checks intravenous fluid orders and alerts for: medicine–fluid, fluid–fluid and medicine–medicine incompatibilities, and displays alternatives		• EMM system specifications • Screen shots for intravenous fluid incompatibility alert
10.13	The EMM system checks all medication orders for recorded contraindications and when detected a single or composite alert is displayed	This includes checking for contraindications within different medicine classes	• EMM system specifications • Screen shots of contraindication alert
10.14	The EMM system checks all medication orders for therapeutic duplication and where detected an alert is displayed	This includes checking for therapeutic duplication within a class of medicine however multiple route linked orders and variable dose linked orders should not generate duplication warnings	• EMM system specifications • Screen shots of therapeutic duplication alert
10.15	The EMM system checks all medication orders for drug interactions and where detected a single or composite alert is displayed	For example, interactions such as: medicine-medicine; medicine-food; medicine-alcohol; medicine-tobacco; medicine-recreational drugs	• EMM system specifications • Screen shots of drug interaction alert
10.16	The EMM system prompts clinicians to monitor test results	For example, alert clinicians to monitor INR for patient's prescribed warfarin	• EMM system specifications • Screen shots of monitoring alert
10.17	The EMM system prompts clinicians to limit the length of treatment for certain classes of medicine	For example, prompts to limit the duration of antimicrobials	• EMM system specifications • Screen shots of prompt
10.18	The EMM system prompts clinicians that STAT doses may be required when the chosen administration time defaults to a later administration time, to ensure no delay in receiving the first dose, and that subsequent regular doses may need amending	For example, when prescribing daily as the frequency medication orders may default to have the first administration being on the following day, depending on the time the order was placed	• EMM system specifications • Screen shots of alert
10.19	The EMM system provides alerts to clinicians based on patient's physical state or disease state	Such as but not limited to: • Pregnancy • Breastfeeding	• EMM system specifications • Screen shots of physical or disease state alert

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		• Diabetes • Paediatrics • Nil by mouth • Impaired renal or hepatic function • Cardiac failure	
10.20	The EMM system prompts clinicians to record episodes of counselling where an order alert has been over-ridden	For example, alerts to check and counsel about pregnancy when medicines that could be dangerous to an unborn child (for example, methotrexate) are prescribed to women of child-bearing age	• EMM system specifications • Screen shots of prompt for recording counselling episode
10.21	The EMM system provides medication substitution, where appropriate and required by the HSO formulary	Policies and processes that determine which medications can be substituted are available to clinicians and the substitution is identifiable in the EMM system monitored through regular auditing	• EMM system specifications • Screen shots of medication substitution
10.22	The EMM system prompts for parenteral to oral switch based on duration of treatment or patient status and provides appropriate dose conversion guidance		• EMM system specifications • Screen shots of parenteral to oral switch prompt
10.23	The EMM system prompts for dose adjustments based on the age of the patient when a medicine is prescribed		• EMM system specifications • Screen shots of dose adjustment prompt
10.24	The EMM system checks for patient weight and dose appropriateness and prompts the clinician when there is a mismatch between recorded weight and dose range		• EMM system specifications • Screen shots of weight and dose appropriateness prompt
10.25	The EMM system incorporates dosage calculators which are utilised by clinicians where appropriate		• EMM system specifications • Screen shots of dosage calculators
10.26	The EMM system prompts for dose reductions in patients with hepatic or renal impairment, as appropriate		• EMM system specifications • Screen shots of dose reduction prompt

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
10.27	The EMM system provides an alert if a test result falls outside the recommended limits for any given medicine	The alert should be sent to the prescriber work list, and the clinician should be alerted when reviewing the medication administration view	• EMM system specifications • Screen shots of prompt
10.28	The EMM system checks the maximum daily doses for all medicines and alerts the clinician when this will be exceeded		• EMM system specifications • Screen shots of maximum daily dose alert
10.29	The EMM system checks all medication orders for medicine-age interactions and where detected a single or composite alert is displayed		• EMM system specifications • Screen shots of medicine-age alert
10.30	The EMM system provides appropriate medicine–gender interaction alerts and where detected a single or composite alert is displayed	Such as excluding pregnancy and breastfeeding warnings on medicines prescribed to male patients	• EMM system specifications • Screen shots of medicine-gender alert
10.31	The EMM system provides guidance on dosage adjustment for patients on different types of dialysis		• EMM system specifications • Screen shots of dialysis dosage guidance
10.32	The EMM system prompts prescribing of venous thromboembolism prophylaxis for those at risk, according to HSO policy, and this assessment must be completed before prescribing non-emergency medicines		• EMM system specifications • Screen shots of venous thromboembolism risk assessment prompt
10.33	The EMM system provides dosage guidance and prompts for medicines with a narrow therapeutic index that require individual dosing	For example, intravenous aminophylline and vancomycin	• EMM system specifications • Screen shots of prompts
10.34	The EMM system alerts prescribers when routes that may not be recommended for individuals because	For example, intramuscular injection in a patient with haemophilia	• EMM system specifications • Screen shots of prompts

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
	of specific concurrent conditions are selected		

Domain 11 – Quality Improvement

Statement: The EMM system includes a system of continuous quality improvement that reflects the HSO's priorities for medication safety

A continuous quality improvement program should bring together information and data about software, hardware, and human elements of the EMM system to ensure a transparent approach to prioritising and planning improvements and ensuring medication safety.

Table 11 EMMSAT indicators for Domain 11 – Quality Improvement

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
11.1	The HSO has an annual rolling program of continuous quality improvement that is published and endorsed by the EMM governance group		• A published program endorsed by the EMM governance group • Consensus amongst interviewed stakeholders that the program reflects the priorities
11.2	The EMM system governance includes a clearly articulated plan for continuous quality improvement driven by performance data, user feedback and a review of incidents data	This may include a roadmap for EMM system development that reflects HSO priorities and eHealth developments	• Interview the CEO and CIO independently about the EMM system • Identify relevant quality improvement plans and strategy documents • Review outcomes of previous quality improvement work
11.3	The EMM system annual work plan includes an audit schedule	The audit schedule could include (but not limited to) review of: • Rates of BPMH documentation • Review of unlisted or free typed medication orders • Review of high-risk medicine usage • Review of formulary restricted medication usage • Review of missed doses	• EMM system work plan sections that show the audit schedule • Audit reports

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
11.4	The HSO uses EMM system generated medicines related data to inform the continuous quality improvement program	Either directly through EMM system provided reports, dashboards or analytics modules, or indirectly through business intelligence or data extract capabilities	• EMM system produced reports • Results of EMM queries • Screen shots of EMM dashboards or analytics modules • Medicines data available with the HSO business intelligence capability
11.5	The HSO supports the configuration, refinement and optimisation of the EMM system to address the identified priorities of the clinical services as part of the continuous quality improvement program		• EMM training and awareness materials • Change control configuration reports • Test results • Re-defined workflow / instructions • Before and after screen shots of the reconfigured EMM system
11.6	The EMM system generates routine reports which provide user data, volumetric data, timing data, usage data, and system performance data		• EMM user data – for example, usage frequency, usage duration, and transaction and audit logs • Volumetric data – for example, medicines ordered, doses administered, missed doses, alerts fired, alert overrides, pharmacy reviews and medicines reconciled • Timing data – for example, timeliness of administration of medicines, timeliness of reconciliation of medicines, time to venous thromboembolism prophylaxis and timeliness of ordering of discharge medicines • Usage data – for example, prescriber preferences for freehand prescribing or use of order sentences, off-formulary prescribing, alert override reasons, how medicine orders are changed (that is, was the medicine changed, or was it suspended, and a new medicine

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
			ordered) and how discharge medicines are selected • EMM system performance – for example, response times, user volumes and activity peaks

Domain 12 – Business Continuity

Statement: The HSO has processes in place to support medication safety during periods of system downtime

Business continuity planning is essential to ensure that patient safety is maintained during periods where the EMM system is not operating. This includes ensuring that business continuity plans are based on robust risk assessment, well-rehearsed, and that necessary equipment - such as paper charts - are available and fit for purpose. System downtimes can be planned or unplanned and HSOs should be prepared for both scenarios. Failure to have clear, recognised business continuity plans places stress on clinicians and increases the risk of patient harm during periods of downtime.

Table 12 EMMSAT indicators for Domain 12 – Business Continuity

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
12.1	Multi-scenario Business Continuity Plans (BCP) are available within the HSO and take into account each of the unavailability / down-time risks identified		• Published BCP plans • Interviews with unit managers confirming understanding of BCP arrangements
12.2	The HSO's BCPs are regularly rehearsed in real time testing and are updated or refined based upon rehearsal outcomes		• Test BCP arrangements in real time rehearsals • BCP rehearsal reports including documented findings and actions arising
12.3	Mechanisms that allow medicines to be prescribed and administered during EMM system downtime are available and known to clinicians	For example, printed charts	• Published BCP plans • Observation of downtime process • Interview clinicians

12.4	Records of current and recently ceased medication orders are available to clinicians during EMM system downtime to support medication safety	• Published BCP plans • Observation of downtime process • HSO policy • Interview clinicians
12.5	Medicine-related information, such as all medicines prescribed and administered is updated retrospectively when the EMM system returns to service	• HSO policy • EMM system specifications
12.6	The EMM system clearly reflects when a downtime has occurred when viewing medication orders	• Published BCP plans • HSO policy • Screen shot demonstrating that a downtime is identified within the system • EMM system specifications
12.7	The EMM system includes scanned paper charts that were used during the downtime	• EMM system specifications • HSO policy • Published BCP plans

Domain 13 – Paediatrics

Statement: The EMM system supports safe and quality use of medicines for paediatric patients

Paediatric patients are susceptible to adverse events through medication errors. In particular, dosage errors are one of the most common medication errors in paediatric patients. Strategies to prevent medication errors in this patient population are necessary to ensure the safe and quality use of medicines. The EMM system must be capable of incorporating additional aspects of medication management relevant to the paediatric population to ensure the safe and effective use of medicines. Failure to ensure paediatric relevant tools and information are available to clinicians increases the risk of medication errors.

Table 13 EMMSAT indicators for Domain 13 – Paediatrics

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
13.1	The HSO has appropriate management strategies in place where clinicians require access to both adult and paediatric medicines (for example, when children are managed by clinicians who also prescribe for adults)	This may include: • Defaulting to paediatric or neonatal formulary, order sets, order sentences and medicine dose ranges when prescribing medicines to children, based on the age of the child • Creating separate adult, paediatric and neonatal prescribing roles • Actively confirming the prescriber's logged-on prescribing role • Alerting the prescriber if their prescriber role is inconsistent with the age of the patient selected • Defaulting to paediatric or neonatal decision support rules, and paediatric or neonatal reference materials when prescribing medicines to children, based on the age of the child • Seeking prescriber confirmation whenever adult medicines or adult doses are selected for children, based on the age of the child	• EMM system specifications and configuration details • Screen shots of alerts

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
		• Determining whether a patient is a child or an adult based on various factors, including age, height and weight • Based on whether the patient is an adult or a child, setting the adult or child formulary, order sets, order sentences, medicine dose range, clinical decision support rules and reference material accordingly • If prescribers wish to prescribe paediatric medicines and doses for an adult patient, alerting the prescriber that the specific patient for whom paediatric medicines have been prescribed is classed as an adult	
13.2	To support clinicians, the EMM system includes hyperlinks to sources of patient and family age-appropriate education materials		• Screen shots of embedded links to patient and family age-appropriate education materials
13.3	Height and weight are both recorded and prominently displayed with date of measurement in the EMM system		• Screen shots of height and weight recorded
13.4	Clinicians are prompted when prescribing and administering medicines in the EMM system if no height, weight or age information is available or if information requires updating as per HSO policy		• Screen shots of alert
13.5	When prescribing in the EMM system, weight is compared with population percentile charts to identify outliers and the prescriber is alerted when the patient's weight is more than two standard deviations from the applicable percentile		• Screen shots of comparison to population percentile charts

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
13.6	Where appropriate, medicines prescribed for paediatric and neonatal patients have a weight-based dose calculation reference (such as mg/kg) documented in the EMM system	If the dose has been calculated, the method of calculation is displayed – for example, mg/kg, microgram/kg or unit/kg; the dose should be displayed as both dose per weight and total dose	• Screen shots of medicine order
13.7	Paediatric dose guidance in the EMM system is based on the most appropriate method for the medicine being prescribed, such as: weight, weight plus height (in calculating BSA), age		• Screen shots of medicine order
13.8	All paediatric medication orders allow independent double checking by a qualified second-checker during administration	Where required by the HSO	• HSO policy regarding second nurse witness • Screen shots of administered medicine order
13.9	Doses calculated with a weight-based dose calculation reference (such as mg/kg) and ordered in the EMM system do not exceed the maximum recommended dose for the patient		• Screen shots of medicine order
13.10	Doses are automatically rounded in the EMM system, to support measurable administration of weight-based doses		• EMM system specifications and configuration details • Screen shots of medicine order
13.11	Clinicians are prompted to review and change doses after documentation of major weight changes in the EMM system		• Screen shots of prescriber alert
13.12	Doses cannot be finalised in the EMM system when expressed as a weight-based dose if the patient has no recorded weight or their weight record is not up to date as defined by HSO		• EMM system specifications and configuration details • Observation of attempt to prescribe weight-based dose with no weight recorded

Indicator Number	Indicator Description	Additional Information	Examples of Evidence
13.13	In the EMM system, the final calculated dose is not expressed as a weight- or BSA-based dose – for example, mg/kg or mg/m^2		• EMM system specifications and configuration details • Screen shots of weight or BSA-based medication orders
13.14	Parental or guardian consent for paediatric patients on high-risk medicines or clinical trial medicines is documented in the EMM system		• Screen shots of record of consent within the EMM system

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