

ePrescribing Functional Specification for NHS Trusts

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Reviewers:

This document must be reviewed by the following. Indicate any delegation for sign off.

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Related Documents:

These documents will provide additional information.

Ref no	Doc Reference Number	Title	Version
1	NPFIT-SHR-QMS-PRP-0015	Glossary of Terms Consolidated.doc	V12
2	NPFIT-FNT-TO-IG-WRKP-0059.03	WP4.1 NPfIT Security Audit Trails - Guiding Principles Security Audit Work Package	V1.0
3	NPFIT-EP-DB-0003.01	Guidelines for the design and display of medication elements	V0.5
4	NPFIT-FNT-TO-DSD-0087.01	Dm+d Implementation Guidance (Secondary Care)	V1.0
5	NPFIT-EP-DB-0007.03	Representation in EPR of allergic reactions, adverse reaction and intolerance to pharmaceutical products	V1.2
6	NPFIT-ETP-EDB-0025.11	Prescribing systems compliance (for EPS)	V11
7	NPFIT-ETP-EDB-0024.16	Dispensing system compliance (for EPS)	V16
8	NPFIT-FNT-TO-DPM-0431.02	Implementation of Dm+d & Compliance Guide	V1.2
9	http://www.dmd.nhs.uk/documentat ion	Dose syntax guidance documentation	

Glossary of Terms:

The glossary for medicines management terms has been newly constructed and is not yet filed for use throughout NHS CFH. Comments on any of the included definitions would be welcomed.

Term	Acronym	Definition
Active ingredients		The constituents contained in any formula that give the desired pharmacological effect
Active medicines		Medicines that are being taken/ administered that should currently be exerting a pharmacological effect, or for which there is intent to take/ administer in the future
Actual Medicinal Product	AMP	An Actual Medicinal Product (AMP) is a single dose unit of a finished dose form (unless the product is presented as a continuous dosage form), attributable to an identified supplier that contains a specified amount of an ingredient substance. Examples of single dose units of a finished dose form include tablets, capsules, suppositories, pessaries, sachets - this category covers discrete entities that have a consistent physically measurable dose. Examples of continuous dose forms include creams, ointments, gels, pastes, foams, liquids - this category covers those products where a consistent physically measurable dose cannot be defined. This term is employed within dm+d
Actual Medicinal Product Pack	AMPP	The packaged product that is supplied for direct patient use or from which AMPs are supplied for direct patient use. It may contain multiple components each of which may or may not be an AMP in their own right. This term is employed within dm+d
Acute (<i>meds</i>)		A medicine for managing an acute symptom/condition. An acute symptom/condition is of recent onset and limited duration
Administration		Administration is the act of giving a dose of a medicine to a patient in a managed care environment
Administration history		The timing and other details of a single patient's past medicine administrations
Administration instructions		Instructions that detail a prescribers directions as to how medicine is to be given/taken
Administration plan		The schedule and other details of a single patient's further medicine administrations
Adverse drug reaction	ADR	A response to a pharmaceutical product which is noxious and unintended and which occurs at doses normally used in man for prophylaxis, diagnosis, or therapy of disease or for modification of physiological function
AHP		See entry for <i>Allied Health Professional</i>

Allergy		<p>A response to a pharmaceutical product to which an individual has become sensitised, in which histamine, serotonin and other vasoactive substances are released in response to an immune system-mediated reaction. This causes systemic symptoms which can include pruritus, erythema, flushing, urticaria, angio-oedema, nausea, diarrhoea, vomiting, laryngeal oedema, bronchospasm, hypotension, cardiovascular collapse and death.</p> <p>Sensitivity/ Hypersensitivity</p> <p>Although it is recognised that the terms 'sensitivity' and 'hypersensitivity' are used by clinicians to describe allergic phenomena, it is felt that this terminology is used inconsistently and is therefore, to be deprecated</p>
Allied Health Professional	AHP	A healthcare professional (other than a medical doctor, nurse or psychologist) who works as part of a clinical team in a hospital, Primary Care or Community Care setting (such as a laboratory technician) for example in chiropody, podiatry, audiology, radiography, occupational therapy and physiotherapy
AMP		See entry for <i>Actual Medicinal Product</i>
AMPP		See entry for <i>Actual Medicinal Product Pack</i>
Authorisation		The act of a prescriber giving permission to administer or supply a medicine other than by a verbal order
Black triangle		The Black Triangle scheme is used by the Medicines and Healthcare products Regulatory Agency (MHRA) to monitor medicines containing new active ingredients. Further information is available at http://www.mhra.gov.uk/home/idcplg?IdcService=SS_GET_PAGE&nodId=748
Blood products		Any therapeutic product derived from human whole blood or plasma donations
BNF		See entry for <i>British National Formulary</i>
British National Formulary	BNF	A reference publication that provides information about the use of medicines in the UK. It aims to provide key information on the selection, prescribing, dispensing and administration of medicines generally prescribed in the UK. Those considered less suitable for prescribing are clearly identified
Care setting		The environment in which a patient receives care
Clinical Decision Support System	CDSS	Clinical Decision Support Systems are "active knowledge systems which use two or more items of patient data to generate case-specific advice"
Clinical effect		This is the effect of a medicine or treatment on a patient. It includes the beneficial effect(s) and may include side effects or allergies
Clinical Management Plan	PMP CMP	A plan delegating responsibility from an Independent Prescriber to a Supplementary Prescriber for prescribing for a specific condition in relation to a specific patient. Created in agreement with the patient and containing; the patient's name, DOB etc, the condition to be treated, the range of medicines to be used, the reasons for referral back to the Independent prescriber, review date, Independent Prescribers name and Supplementary Prescribers name
Clinical trial		A scientific study to evaluate the clinical effect of a medicine or treatment on patients or volunteers
Clinician		A healthcare professional who is involved in the clinical care of an individual

Compliance		The extent to which a patient takes the treatment in accordance with the advice of a prescriber
Composite packaged product		A product that consists of two or more separate products in the same box. (Not to be confused with combination products which contain more than one ingredient in the same dose form)
Composite or combination medicines		A product that contains more than one active ingredient in the same formulation
Concordance		The agreement between a patient and a prescriber on the desired health outcomes and the strategy for achieving them
Condition (<i>patient</i>)		Illness, diagnosis or health state of a patient
Confirmation (<i>meds</i>)		The final action of electronically reviewing and thus authorising a course of medicine to be dispensed or administered, and committing it to a patient records system
Continuous (<i>medicine(s)</i>)		A continuous infusion is one that is started and scheduled to continue until review. A continuous medicine is one that is started with a view to long term use at least until the next scheduled review
Contra-indication		A clinical reason not to give a medicine
Controlled drug		A medicine that may not be prescribed, supplied or administered other than within the restrictions of the Misuse of Drugs Regulations 2001
Countersign		The act of adding a second "signature" to indicate that an act has been witnessed or authorised. This may for example be for good practice requirements or because the person administering the medicine requires supervision (e.g. because he/she is a student)
Course		A period of treatment that consists of giving the drugs over a defined period of time that may or may not be repeated in a pattern known as a cycle
Course definition		The details of a course of treatment for a single medicine
Course status		The current state of a course of medicine within its overall lifecycle. Can be one of: * Not fully specified * Awaiting confirmation * Authorised for supply or administration * Verified * Suspended * Discontinued * Completed
Current medicines		A medicine or course of a medicine that a patient is receiving or is intended to receive in their treatment
Cycle		A periodically repeated sequence of events within a course of treatment
Day Case		A patient admitted electively during the course of a day with the intention of receiving care who does not require the use of a hospital bed overnight and who returns home as scheduled

Device		An instrument, apparatus, appliance, material or other article, whether used alone or in combination together with any accessories or software necessary for its proper functioning, intended by the manufacturer to be used for human beings in the: diagnosis, prevention, monitoring, treatment or alleviation of disease or injury; investigation, replacement or modification of the anatomy or of a physiological process; control of conception; and which does not achieve its principal intended action by pharmacological, chemical, immunological or metabolic means, but which may be assisted in its function by such means
Discharge medicines		Medicines that are prescribed and authorised for the patient to take home from hospital following an inpatient or daycase stay
Discharge prescriptions	TTH, TTO	An order, created by an authorised practitioner, for the preparation, supply and administration of a medicine, therapeutic regimen, assistive or corrective device, or other treatment for the patient to take home with them
Discontinuation condition		A logical expression about a patient which states when an intervention should be discontinued
Discontinued medicines		Treatments that have been withdrawn from patient care for reason(s) that should have been specified
Dispense		The act of preparing and issuing medicine(s) by pharmacy staff following a check to ensure that the prescription complies with legal requirements and is safe
Dispensing history		A record of past dispensing events for a single medicine for a single patient
Dictionary of Medicines & Devices	dm+d	The dm+d is the NHS standard for medicines and device identification, enabling clinical system interoperability between diverse clinical systems (see www.dmd.nhs.uk)
dm+d		See Dictionary of Medicines and Devices
Dosage or dose		A specified quantity of a therapeutic agent, such as a drug, prescribed to be taken at one time or at stated intervals
Dose range		The minimum and maximum range of a dose of medicine
Drug (or medicine) class		A classification of drugs into categories useful for navigation purposes. These may be mixed in their classification dimension e.g. 'Opiate' is a drug class by chemical structure whereas 'Antidepressant' is a class by intended effect
Drug (or medicine) classification		The listing of medicines according to different attributes e.g. according their effect on the body
Drug name		The text string agreed as an unambiguous name for a concept in dm+d, according to the dm+d editorial policy
Drug reference file		The computerised drug file that is utilised within a system to define those elements of individual medicines that will be required to support system functionality
DSS		See entry for <i>Decision Support System</i>

Duration condition		A logical expression about the patient which must hold true while an intervention continues
Electronic Prescriptions Service	EPS	The Electronic Prescription Service will enable electronic prescriptions to be generated, transmitted, received and, once dispensed, sent to the reimbursement agency for payment
Electronic Transfer of Prescriptions programme	ETP	NHS Connecting for Health's Electronic Transmission of Prescriptions programme is delivering the Electronic Prescription Service and integrating it with the NHS Care Records Service
End date		Date of end of a course/ treatment
Expiry date		Date after which a preparation should not be used
Extemporaneous medicine		A medicine created either by dilution of an existing product, or by the admixture of components to a special formula as requested by a prescriber
Filter (<i>meds display</i>)		A mechanism for displaying a list of medicines that only meet specified criteria
Fluids		Liquids given to a patient either enterally or parenterally with the aim of maintaining or improving the level of hydration or circulatory volume
Form (<i>medicine</i>)		The description of the presentation of a medicine e.g. tablet, injection, suspension etc
Formulary		A list (often a limited list) of pharmaceutical products formulations which may also contain information about their formulas, uses and methods of preparation/ administration
Formulation		The compounding of a medicinal product into a form suitable for administration to a patient
Frequency		The number of occurrences of a periodic or recurrent process per unit time
General Sales List medicine	GSL	A medicine that may be sold or supplied without the supervision of a pharmacist
Generic drug name		The chemical or approved name of a product as opposed to the proprietary name often used by the brand originator
Half-life		The time required for half the quantity of a drug or other substance deposited in a living organism to be eliminated by normal biological processes. Also called biological or elimination half-life
HCP		See entry for <i>Healthcare Professional</i>
Health issue (for an individual)		A health condition that an individual experiences that impacts (or has the potential to impact) on their day-to-day life or future health
Healthcare Professional	HCP	Anybody involved in the provision of healthcare or social care that is regulated by a professional body
Independent prescriber		Person with legal authority to prescribe medicines for any condition
Indication		a) The condition a patient has for which a drug is being prescribed and/or b) the verb and clinical condition for which a drug may be used e.g. "Alleviate" + "vomiting" - prochlorperazine; "Induction" + "vomiting" = ipecacuanha
Indicators (<i>display</i>)		Symbols used in a clinical application that are associated with a medicine, device or course of a medicine, that are designed to quickly appraise a user of key items of information

Infusion		A medicine that is given parenterally at a rate controlled by a mechanical device
Ingredient		A substance present in a medicinal product that may or may not be pharmacologically active
Inpatient		The status of a patient in secondary care when they are admitted to hospital (see also Day Case)
Intolerance		A preference reported by a patient where a drug treatment or specific formulation causes discomfort (in its widest sense) or unwanted effects leading a patient to express a desire not to take the medicine. This should be differentiated from an 'allergy' where there is an immune response
Issue date		Date that a prescription is written for a patient. (An order for supply). This is not the same as the supply date (when the patient received the actual medicine supply)
Justification		An explanation of the thinking behind a decision to initiate, modify or discontinue an intervention. May be supplied by a human agent or a decision support system
Knowledge support		Knowledge support - when knowledge is delivered to clinicians and patients at the point of knowledge need, either in the form of facts or in guidelines or protocols, or embedded in a pathway. In knowledge support one variable in the patient's condition, for example the diagnosis, is used to alert or remind the clinician and if possible the patient about the existence of relevant knowledge
Labels (<i>display</i>)		Annotations used in a clinical application that indicate the meaning of the values displayed
Linked indication		A patient's health issue that is associated with a course of a medicine
Local		This represents the concept of the locality of a natural clinical network whether it be at Trust, network or regional level
Local formulary		A formulary which includes a list of pharmaceutical products that has been customised to meet the needs of clinicians within a specified area
Local protocol		Locally defined plan for a course of treatment, or policy
Local regimen		A set of rules outlining treatment that has been drawn up to meet the needs within a specified area
Managed Care		A care environment in which HCPs are responsible for administering a patient's medicines
Medication or medicine		A substance given to cure, heal, prevent or relieve the symptoms of a disease
Nomination		A term used within the Electronic Prescriptions Service (EPS) that defines the process by which a patient specifies a dispenser, for example allowing pre-preparation of the patient's medication prior to his/her arrival
Non-compliance		Failure to take a medicine as directed
Non-concordance		The non-agreement between a patient and a prescriber on the desired health outcomes and the strategy for achieving them
Non-formulary		A pharmaceutical product or formulation not contained within a formulary
Number of authorised repeats		Number of time-limited prescriptions a patient may request before a medication review is required
Number of issued repeats		Number of authorised repeat prescriptions that have been issued since the initial authorisation, or since the

		review where reauthorised
Observations		Physical signs seen on inspection of a patient or physiological measurements carried out on a regular basis such as temperature, pulse, blood pressure, oxygen saturations, respiratory rate, MMSE (mini-mental state examination) etc
Order (<i>for medicines for an individual patient</i>)		A request from an authorised practitioner for the supply or administration of a medicine(s)
Order set		A predefined list of orders normally containing complete information to allow the authorisation of the supply or administration of a medicine
OTC		See entry for <i>Over the counter</i>
Outcome		An observation which is deemed to meet the criterion of a goal
Outpatient		An attendance at which a patient is seen by a consultant, a member of the consultant firm or locum
Over the counter	OTC	Medicines that can legally be purchased without a prescription
Past medicines		Pharmaceutical products that have been taken or administered historically
Patient		The Department of Health definition of a patient is: 'a PERSON, which includes neonates (babies aged 28 days or less), who use a hospital bed in order to receive clinical care/treatment or someone attending a clinic, day care facility etc. It will also include people in the community receiving care under a specific NHS Service Agreements forming part of 'nursing care in the community'
Patient Group Direction	PGD	A written direction relating to the supply and/or administration of a medicine by certain classes of healthcare professionals to a predefined group of patients. The direction must be signed by a doctor or dentist and a pharmacist and approved locally
Patient instructions		The definition of how much of the medicine to take, how often and for how long by what method including any special administration instructions and warnings. This information may, for example, be included on a label or specific patient information sheet
Patient record		An electronic record of a patient's care and treatment.
Patient's own medicines		Medicines brought into a hospital by a patient that have been previously prescribed and dispensed for the patient either in primary or secondary care or purchased over the counter
PGD		See entry for <i>Patient Group Direction</i>
Pharmacy Medicines	P	Medicines that may only be sold under the supervision of a pharmacist
PMP		See entry for <i>Patient Management Plan</i>
Post condition		A logical expression about a patient which must hold true once the intervention is complete
Pre condition		A logical expression about a patient which must hold true before an intervention is started
Pre-built regimen		A regimen that is pre-defined within software
Preparation		The act of preparing medicines for administration
Prescription	Rx	An order, created by an authorised practitioner, for the preparation, supply and administration of a medicine, therapeutic regimen, assistive or corrective device, or other treatment
Prescription		This is the length of time for which the supply/

duration		administration on a prescription is authorised
Prescription Only Medicines	POM	Medicines which may only be sold or supplied from pharmacies in accordance with a prescription given by an appropriate practitioner
Primary Care		Services provided by family doctors, dentists, pharmacists, optometrists and ophthalmic medical practitioners, together with district nurses, health visitors and community AHPs
PRN medicines		A medicine to be taken on an 'as required' basis as determined by a patient within specific guidelines to treat specific symptoms
Problem (<i>patient</i>)		A clinical condition that an individual experiences that impacts (or has potential to impact) on his/her day to day life or future health
Protocol		A predefined list of treatments to be administered at specified times normally at specified doses (which may be individualised for patients). They differ from regimens as they may include several different regimens and have associated non-medicine orders or requirements
Rate		A quantity measured with respect to time e.g. the speed at which a medicine is administered over time
Read Codes		A therapeutic and diagnostic coding system designed for use in primary care
Recommendation		A communication from one health care agent to another recommending a care strategy. In the case of medicines, this may be a recommendation to start, modify or discontinue a medicine
Referral		The process by which one care professional refers a patient or service user to another. This will usually include the transfer of clinical information about the patient, and may be undertaken before or after the booking takes place
Regime		A deprecated alternative to <i>Regimen</i>
Regimen		A set of rules outlining treatment that is to be prescribed or ordered
Regular		A medicine that is taken or administered on a recurring basis, as opposed to 'as required' or 'once only'
Repeat prescription		A prescription (both an order to supply for a pharmacist and instructions to a patient on how to administer) which is authorised so that the patient may at intervals obtain another copy without a doctor consultation. After the authorised number (or a set duration) has been reached, a new prescription must be obtained which may require that the patient attend for a medication review
Resume medicines		The authorised restart of a single medicine or course of a medicine after its suspension
Review date		The latest date at which a patient's medicine(s) should next be reviewed. Must not be longer than one year from authorisation of a repeat prescription
Radio frequency identification	RFID	This is a type of autoidentification code that can be used to uniquely identify products. For further information refer to www.rfidc.com

Route		a) Licensed routes - the routes by which a drug is licensed for administration to a patient b) Route of administration - the actual route of administration for a given dose of a drug i.e. this describes which route the administered medication should take to get into the body or into contact with the body and constitutes part of the "where" (the other part being site). It is the "way in" or the course the medication must take to get to its destination
Rx		See entry for <i>Prescription</i>
Schedule		The specific time(s) or frequency at which a medicine is to be administered. This may be associated with a duration identifying a number of times per day/ week etc when the medicine should be administered
Script		Shortened term for prescription – see entry for <i>Prescription</i>
Secondary Care		Specialist care traditionally provided from a hospital setting in support of the primary care team e.g. surgery or specialist medical services, including old age medicine and mental health services. Also exists in other settings; e.g. in mental health and community settings
Site		This describes the specific area of the body "where" the medication is to be administered. The site can be seen as the particular anatomic location where an administration activity happens (or has happened). It can be stated specifically, for example laterality (e.g. apply to the right eye; inject into the left antecubital fossa vein) or stated more generally (e.g. apply to the affected area(s))
SNOMED-CT		SNOMED Clinical Terms® (SNOMED CT®) is a comprehensive clinical terminology that provides clinical content and expressivity for clinical documentation and reporting. It can be used to code, retrieve, and analyse clinical data. SNOMED CT® resulted from the merge of SNOMED® Reference Terminology (SNOMED® RT) developed by the College of American Pathologists (CAP) and Clinical Terms Version 3 (CTV3) developed by the National Health Service (NHS) of the United Kingdom. The terminology is comprised of concepts, terms and relationships with the objective of precisely representing clinical information across the scope of health care
Sort order		The order in which medicines are listed on the screen
Special		See unlicensed medicine
Start date		The intended date/ time when a medicine should start being administered to a patient. Not necessarily the same as the prescribing date
STAT		An instruction to give a medicine immediately
Stop condition		A logical expression about a patient which states when an intervention should be discontinued
Stop date		The date/ time when an intervention was/ should be ceased

Strength		The quantity of an active pharmaceutical product contained within a measured volume or dose unit
Supplementary Prescribing		Process by which an independent prescriber (usually a doctor) and a nurse/pharmacist/AHP who has undergone additional training to become a registered supplementary prescriber, agree with a patient to create a Clinical Management Plan. The supplementary prescriber is then able to prescribe for that condition up to the agreed review date within defined parameters
Suspended medicine(s)		A single medicine or course of a medicine that is not to be administered over a given period of time but which is expected to be resumed at a later date
Test results		The results of blood or other tests used to monitor for response to medicine or for side effects or drug levels
Tests		Blood or other tests carried out. In this context, to look for the response to treatment, for side effects or for drug levels
Therapeutic effect		The degree of healing, relief or cure achieved
Total Parenteral Nutrition	TPN	An intravenous preparation which contains fluids, calories, protein, minerals and vitamins sufficient to cover some or all a patient's requirements for a period of time when enteral nutrition is not possible. The term parenteral nutrition may also be used, particularly when all nutritional requirements are not contained within the one preparation
Tallman	TALLman	The utilisation of upper and lowercase text within a word to highlight a specific syllable
TPN		See entry for <i>Total Parenteral Nutrition</i>
To take home	TTH	See entry for <i>Discharge Prescriptions</i>
To take out	TTO	See entry for <i>Discharge Prescriptions</i>
Unit		The quantification of the amount of a pharmaceutical product or other agent necessary to produce a specific effect
Unlicensed medicine		A drug or formulation that is not covered by a product licence issued by the Medicines Health Regulatory Authority. (This is different to a licensed medicine that is used for an unlicensed indication and is often called 'unlicensed use')
Unlimited		Having no restrictions or control
Unmanaged care		A care environment in which a patient is responsible for administering his/her prescribed medicines
Verified		An order or prescription that has been confirmed as safe to supply or administer usually by a pharmacist
Verify		To undertake the action of confirmation that an order is safe to supply or administer. Usually undertaken by a pharmacist
Views		A list of courses of medicines with a particular set of attributes, filters and sorts. In addition, each view will have a default filter and sort
Virtual Medicinal Product	VMP	An abstract concept representing the properties of one or more clinically equivalent Actual Medicinal Products, where clinical is defined as relating to the course of a disease. This term is employed within dm+d
Virtual Medicinal Product Pack	VMPP	An abstract concept representing the properties of one or more quantitatively equivalent AMPPs. This term is employed within dm+d

Virtual Therapeutic Moiety	VTM	The abstract representation of the substance(s), formulated as a medicinal product, intended by an authorising health care professional for use in the treatment of a patient. This term is employed within dm+d
Volume		The specified volume is a measure of the liquid capacity of a container or dose unit
VMP		See entry for <i>Virtual Medicinal Product</i>
VMPP		See entry for <i>Virtual Medicinal Product Pack</i>
VTM		See entry for <i>Virtual Therapeutic Moiety</i>
Withdrawn		A medicine that is no longer available
Witnessing		A second person who views or watches something happening - here usually the act of preparation or the administration of a medicine and records the act

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1 Summary

This document contains a set of functional requirements for electronic prescribing (ePrescribing) systems to be used primarily within acute care settings (while recognising that the boundaries for care are becoming increasingly flexible) in the NHS in England. It outlines requirements for the immediate, medium and long term and is intended to inform the immediate and longer term development of systems.

It therefore provides a future vision for ePrescribing as well as identifying the essential functions that are required for systems being built in the near future.

The Functional Specification provides clarification of the ePrescribing requirements as outlined in the OBS (output based specification) developed by the National Programme for IT (NPfIT) in 2003. The detail around these requirements was identified at a national series of clinical engagement workshops. The requirements were then refined further once stakeholders – including professional bodies, Trusts, individual healthcare professionals and suppliers – had commented on an early draft.

This document has now been base-lined. It will, however, be updated as required in order to ensure that future changes in policy and practice are incorporated. As with this base-lined version of the Functional Specification, such updates will be undertaken only after a comprehensive process of stakeholder engagement.

The document is organised so that there is an overall requirements section that contains functionality common to all specialties, plus sections covering individual specialty-specific requirements. Decision support is covered separately and there is a specific section for paediatrics which has some significantly unique requirements.

The ePrescribing programme within NHS Connecting for Health is now working with Local Service Providers (LSP's) to deliver systems that meet these requirements in the short and longer term.

2 About this Document

2.1 Purpose

This document outlines the immediate, medium and long term functional requirements for ePrescribing systems.

These requirements were first identified in the original OBS in 2003. A stakeholder engagement process was then initiated by the ePrescribing programme within NHS CFH in order to ensure that the requirements were sufficiently detailed as to provide a robust platform for the development and delivery of ePrescribing systems.

A series of clinical engagement workshops for prescribing and medicines management were then held in May and June 2006, attended by 472 people representing 115 different organisations, from a range of clinical specialties and professions. Any previous work undertaken at cluster level was also reflected, as far as possible.

Following the workshops a draft Functional Specification was published on the ePrescribing pages of the NHS CFH website. A consensus-building exercise was then undertaken, with a range of organisations and individuals actively invited to comment. 105 feedback submissions were then received and after these were reviewed in detail the Functional Specification has been revised and base-lined.

It is important to emphasise that the role of the Functional Specification is to clarify the requirements outlined in the OBS, not necessarily to expand on them.

It is also necessary to emphasise that the document will be regularly updated in the future to ensure that changes in policy and practice are reflected. All such updates will be undertaken following engagement with practising healthcare professionals, professional bodies and other stakeholders.

The document is intended to identify the minimum functionality that will be required for ePrescribing systems now, as well as representing a vision as to where systems should be in the future. Each of the requirements has a priority level assigned to it outlining its clinical priority.

The Functional Specification will now be used to guide software development by NHS CFH's LSP's. It is not envisaged that all of the functionality will be available on day one, rather that systems will be developed and delivered incrementally over time.

2.2 Definition

ePrescribing within the programme is defined as:

“the utilisation of electronic systems to facilitate and enhance the communication of a prescription or medicine order, aiding the choice, administration and supply of a medicine through knowledge and decision support and providing a robust audit trail for the entire medicines use process”

2.3 Audience

The Functional Specification is intended to guide software development and implementation by NHS CFH's LSP's.

The Functional Specification will be of interest to all stakeholders interested in the development of electronic prescribing with the NHS in England, including:

- Local Service Providers to NHS Connecting for Health.
- Clinicians including doctors, nurses and midwives, pharmacists and allied health professionals.
- NHS Trusts.
- SHAs.
- Department of Health.
- NHS IT community.
- NHS agencies, including NPSA.
- Professional bodies.
- Specialty-focused societies and associations.
- Other NHS Connecting for Health programmes, workstreams and functions.
- Suppliers of ePrescribing/medicines management solutions.
- Academics with an interest in electronic prescribing.
- Healthcare media

This list is not intended to be exhaustive.

3 Introduction

Although General Practitioners have used computers for prescribing for some time, electronic prescribing has not been widely implemented within the acute sector in the UK. There are many reasons for this but one is the complexity of the functionality required to meet different clinical specialty requirements. Without this complexity it is likely that systems will not meet clinical need and thus not support clinical practice.

However, ePrescribing is associated with a number of benefits that would facilitate better care and better use of healthcare resources, indeed the root cause of 27% of medication errors is poor information availability" (Building a safer NHS for patients: Improving Medication Safety, DH, January 2004). Consequently many clinicians feel it is important to introduce ePrescribing as soon as practicable.

It is important that systems deployed nationally contain all the necessary functions to allow their use in daily clinical practice as well as delivering additional benefits to support patient care. It is equally important that they are delivered to consistent standards of content and functionality. The functional specification contains many features that will not be available in the short term and should not be seen as defining a system in which clinical practice will be constrained. It seeks to identify how functionality may evolve but does not dictate how it will be used in practice. A degree of local configuration will be important in determining to what extent the functionality is utilised in specific areas.

The initial OBS produced by NPfIT in 2003 focused on identifying the high level requirements for ePrescribing systems. To ensure that system development meets clinical needs this document aims to identify and describe in more detail the functional requirements for ePrescribing systems.

As ePrescribing promises much in terms of reduction in clinical risk and process change, it is important that the views of healthcare professionals are reflected in system design. We have incorporated the comments of a wide range of healthcare professionals made at workshops and during the subsequent consensus building process into this specification.

The functional specification is designed to facilitate the delivery on an electronic prescribing medicines administration and medication management system by LSP's. This specification provides greater clarity around the clinical requirements to support the development of this functionality than is provided with the OBS. The scope of the functionality encompassed by this specification will facilitate the creation of electronic prescriptions in the managed service for inpatients, outpatients, daycase attendees, attendees at Accident and Emergency departments and other situations where a prescription of the supply of a medicine needs to be communicated.

The specification also supports the development of the administration of medicines and the management of medicines from the perspective of review and supply and also clinical audit and management reporting purposes. The specification facilitates the development of systems to support care in all sectors of healthcare including mental health, community services, acute hospitals and specialist care settings such as cancer networks.

The document outlines areas of desired functionality for both the short and longer term. The delivery of ePrescribing may be best achieved in a 'phased approach' allowing users to gain experience with system functionality before introducing 'smart functionality' and advanced decision support. Similarly, as users gain more experience with ePrescribing systems their requirements will evolve and this specification will need to reflect these evolving requirements in future releases.

The priorities will also change as clinical practice and policy develop and as processes change following the introduction of technology. Thus it is intended that this baselined document will be updated on a regular basis. All such updates will be undertaken following input from practising healthcare professionals.

3.1 Risks

It is recognised that for all the potential benefits, like any new clinical IT system ePrescribing could also create new areas of risk. Such risks will be identified and addressed as part of the programme.

The functional specification may not reflect a comprehensive set of requirements although best efforts have been made to ensure that it reflects the requirements laid out in the OBS and current clinical opinion.

The NHS CFH clinical safety group has implemented a clinical safety requirement that all LSPs need to comply with. This aims to reduce the risks associated with the introduction of these new systems but such risks cannot be wholly eliminated.

3.2 Next Steps

The ePrescribing programme will work closely with the LSP's and stakeholders at every stage of the design, build, test and implementation of ePrescribing systems. The programme will ensure that systems meet the requirements set out in the Functional Specification in the short and longer term.

Although the Functional Specification indicates prioritisation of requirements, it should be noted that this prioritisation reflects the views of the clinicians who have had input to the Specification. It is recognised that planned delivery schedules may not match these priorities. The expectation is that attempts will be made to meet the priorities indicated in the Functional Specification wherever possible. However, there is no presumption that major changes to

planned delivery schedules will be made to accommodate the priorities in the Functional Specification.

Consistent with the above, it is not intended that the Functional Specification should disrupt planned deliveries. There may however be instances where clinical safety issues indicate the need to change delivery plans and this will be discussed with each of the Local Service Providers.

It is likely that requirements will change over time as clinical practice and policy develop but also as processes change following the introduction of technology. Thus it is intended that this Functional Specification will be updated on a regular basis. Such updates will only be undertaken following engagement with practising healthcare professionals and other stakeholders.

Feedback on suggested changes or updates should be sent to eprescribing@nhs.net

3.3 Scope

The specification includes details of the functional requirements for ePrescribing identified for systems utilised largely within acute/ community and mental health settings. It does not specifically address the requirements of general practice although there will be areas of overlap.

This document will be updated as required in order to ensure that future changes in policy and practice are incorporated. Input from healthcare professionals and other stakeholders will be sought before such updates are finalised.

3.4 Out of Scope

The document does not address:

- The implementation and system roll-out requirements that are necessary as part of any IT-enabled change programme.
- The technical requirements for a system of this type.
- The testing required.

All of the above are being, or will be, covered in other NHS CFH documents.

It is assumed that all the demographic and other supporting information pertaining to prescribing and medicines management including diagnosis will be met within the system or via interfacing with other clinical or PAS (Patient Administration System) related systems. The detailed specification for these lies outside the scope of this document but that does not mean that they are not required as part of the overall functionality.

4 Key Features

There were some key features that were identified at all the workshops that must underpin any systems that are developed/ utilised for ePrescribing.

These are that systems must be:

- safe
- secure
- accessible – both in terms of location and access to hardware
- flexible
- intuitive
- fast

It must also be possible to retrieve data from the system quickly and easily to facilitate clinical audit and more general reporting.

5 Overarching Principles and Requirements

There are some overarching requirements for all electronic systems that were identified as being required. These are perhaps more important within ePrescribing given the diversity of location in which prescribing is undertaken and the potential risk associated with holding medicines records electronically.

The majority of these requirements will be covered in technical requirements documents for the National Programme as a whole. They are listed in Appendix 1 for completeness and to reinforce the importance that are attached to them in this area of functionality.

6 General System Requirements

This section includes functional requirements that will be necessary for all clinical specialities

General Requirements – Overall Summary		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
Summary		
GEN.OS.001	<p>All types of prescribing must be supported including inpatient, discharge (TTH) (including day or short leave), day case and outpatient and all prescriber types. Inpatient and day case prescribing must automatically schedule a medicine to be given at specified times. Administration of medicines in all locations e.g. clinics, wards, outreach clinics etc must be supported such that paper-free administration should be possible if required. Prescribing prior to admission within, for example preadmission clinics must also be supported.</p> <p>Specialty and specific requirements within these overall areas must also be supported including, for example: A&E prescribing, administration and supply, which may all occur as a single process; anaesthetic practice, which utilises medical gases and will require prescription and administration recording as one process; anticoagulant prescribing, which needs to reflect pathology results as well as indication; insulin, which has complex requirements that involves dosing based on blood sugar levels; and patient-controlled analgesia, which has specific requirements for lock-outs and administration recording, IV infusions, paediatric practice etc.</p>	1-2
Overarching Principles		
GEN.OS.002	The system must comply with all legislative requirements pertaining to medicines as well as other Department of Health or NPSA guidance that may be issued pertaining to medicines and related devices both current and in the future.	1
GEN.OS.003	All actions performed within the system must be date-, time- and user-stamped and be auditable.	1
GEN.OS.004	Prescribers should be able to access the system from remote places as agreed locally and according to security requirements.	1
GEN.OS.005	The identification of the patient for whom medicine(s) are being prescribed and/ or administered must be clear and consistent to prevent errors, and visible at all times while medicines pathways are being accessed.	1

GEN.OS.006	If there are patients on the ward or in the hospital/clinic with the same name or surname then the system must warn users about this and suggest additional checks during prescribing and administration e.g. date of birth, address etc.	1
GEN.OS.007	Private patients must be distinguished from NHS patients for prescribing purposes and for costings. Other groupings will be as defined in specifications relating to patient administration functions. It must also be possible to identify where medicines may be routinely provided under private prescription arrangements, e.g. fertility treatment, Sildenafil, i.e. where the remaining care is provided under the auspices of the NHS but the provision of specific medicines is not and the prescription type generated must reflect this.	1
GEN.OS.008	Both adult and paediatric services must be provided within the same system. There must be clear separation of the prescribing functionality using a combination of access controls and decision support to ensure that prescribing is undertaken using the right pathway i.e. the system should default to a paediatric/ neonatal formulary when prescribing for children to avoid prescribers being presented with adult drugs and doses when prescribing for children. There must be an option for prescribers to decide whether to treat adolescents with paediatric or adult doses/ regimens.	1
GEN.OS.009	Complex specialty requirements must also be provided within the same system e.g. anaesthetics, oncology etc. In addition to the above there must be clear separation of the prescribing functionality in these areas using a similar combination of access controls and decision support. This must be locally flexible to allow for cross-specialty working and training requirements.	1-2
GEN.OS.010	The system must support the continued prescription and administration of medicines (mainly drugs given by continuous infusion) that have been started by anaesthetists or other prescribers in other clinical areas when a patient is transferred between wards.	1
GEN.OS.011	The ability to record a patient's weight and height must be available as should the ability to update it. This should be date-/ time-stamped and should state whether the measurement was actual or estimated. It must be possible to enter the information in either imperial or metric measures; imperial measurements being converted to metric. Weight entered should be checked against standard nomograms in paediatric patients to ensure that it is sensible - see paediatric section It should be possible to set automatic reminders to add or update weight at specific times: <ul style="list-style-type: none"> • on admission; • after n days/ weeks; • before x treatment is authorised e.g. chemotherapy 	1

	<p>regimens.</p> <p>Where weight or height is used to calculate doses the date that it was recorded must be clearly visible at the prescribing stage.</p> <p>The body surface area (BSA) should be calculated and displayed within the prescribing pathways using the Dubois & Dubois formula and routinely updated with alterations to the height and weight. Other formulae for BSA may be required within specific specialties e.g. the Mosteller formula – access to this information must be possible if required for specific medicines.</p> <p>The Body Mass Index (BMI) and lean body weight (LBW) should be calculated by the system and be available for retrieval or dose calculation when required.</p>	
GEN.OS.012	<p>Allergies and intolerance to medicines must be recorded and link to decision support to generate reminders and alerts should similar medicines be selected in future. A patient's allergy status should be visible at all times as part of the patient banner or equivalent.</p> <p>In summary representation of medicines related adverse clinical events (including allergic drug reactions, adverse drug reactions and drug intolerance) must be represented in a consistent manner.</p> <p>The capture and/or update/confirmation of allergy status must occur before any prescribing takes place on the system. It should be confirmed at each admission so that any subsequent prescribing can be supported for allergy/intolerance checking. If it is not possible to capture this on admission the system must continue to alert to users accessing the medicines pathways until allergy information has been entered.</p> <p>A positive entry of 'no allergy known' must also be possible and updateable.</p> <p>The information captured must be coded (both the medicines and other clinical entities) to ensure that the information can be transferred between systems in a safe and consistent manner and be available for reporting purposes.</p> <p>The minimum information required for recording will include:</p> <ul style="list-style-type: none"> • the clinical manifestation/ type of reaction, e.g. a rash • the categorisation of the reaction, e.g. an adverse drug reaction • the medicine suspected to have caused the reaction • the evidence to support the type of reaction that has occurred e.g. immunological results, lab tests etc <p>Detail as to who entered the information and when must be retrievable in real time.</p> <p>Further detail as to the information to be recorded can be found in a related document listed above.</p>	1

Assessment		
GEN.OS.013	<p>It must be easy to see which medicines a patient has been prescribed and given in the past (this and previous admissions where information is available) and the reasons why a medicine was started, amended and/ or stopped (if available). It must be possible for users to look at specific dates/admissions or to look at the whole record more generally.</p> <p>It is accepted that this information will have to build up over time given that there is unlikely to be a full electronic history available initially.</p>	1
GEN.OS.014	<p>A complete list of the medicine(s) that a patient is being prescribed prior to admission should be visible within the system from current primary care records or previous hospital if an inter-hospital transfer has taken place.</p> <p>This should include the name of the drug, form, strength, dose and administration instructions, the date it was started and by whom and the dates of supply. If an indication is available this should also be included.</p> <p>This should be visible as soon as the central patient record is available. Once this record is coded the system must support the translation of the central record into the admission drug history and subsequent initial inpatient prescription with line by line authorisation of the individual components.</p>	2
GEN.OS.015	<p>There must be the facility to enter an admission patient medication history which stands alone but can be linked to the initial prescription if required and sufficiently complete.</p> <p>The record should allow the recording of full medicine details should they be available (see GEN.OS.042) or should allow for minimal information e.g. drug name alone. If possible coded information should be entered utilising the main drug file but if the information cannot be supported by this, free text information must also be possible. It is expected that this will be initially populated by a nationally held patient medication record as it becomes available with local edits or clarification being added.</p> <p>The system must support the use of local access controls for this functionality. The person entering the drug history should be clearly identified.</p> <p>The source of a patient's medication history should be recorded either for the whole history or line by line if different sources are accessed and such a detailed record is required i.e. the use of this functionality should be optional for users. Sources selectable should be limited to:</p> <ul style="list-style-type: none"> • Patient • Carer • Community pharmacist • GP records – electronic • GP records – paper copy of repeat prescription with date • MAR (Medicines Administration Record) sheet • Care home record • Patients own medicines 	2

GEN.OS.020	<p>If a patient is pregnant or breast feeding then this information should be visible each time a new medicine is prescribed or medicines pathways entered and should be linked to decision support to highlight any medicines that may be contra-indicated or carry a warning - see decision support section</p> <p>There must checks within the system to ensure that the recording of pregnancy/breast feeding is questioned/removed when no longer valid.</p>	1
Viewing		
GEN.OS.021	<p>It must be possible to access/ view all current and previous prescriptions for a particular patient be it for inpatient, discharge or outpatient medicines: there must be clear differentiation between the differing 'types'. For the current admission it must be possible to easily view the current medicines list, all dose changes, medicines stopped and started with dates, the reasons why and the prescriber details.</p> <p>Access may be required from any area of a patient's electronic health record.</p>	1
GEN.OS.022	<p>Differing views of the medicine(s) record must be available but should always be derived from the current complete medicine(s) list (unless a specific pathway to review historical information is directly accessed which cannot then be used to prescribe new medicine) to ensure that medicines are not missed by system users.</p> <p>The different views of medicine(s) that must be supported with differing sorts include but should not be limited to:</p> <ul style="list-style-type: none"> • the current medicines according to prescriber • current medicines with administration history visible including given and not given doses • medicines being taken on admission • medicines stopped in admission • medicines prescribed for discharge • medicines newly prescribed in hospital • medicines prescribed during previous admissions by episode or according to indication • medicines recently discontinued <p>The system must be sufficiently flexible to allow different displays of active medicine(s) to be generated that meet the varying needs of different roles, user types and activities i.e. it should be possible to sort on any attribute and/or over a timeline. For example the view for drug administration will be different to an overall summary screen.</p> <p>Examples of sorts that will be required for viewing medicine(s) lists include:</p> <ul style="list-style-type: none"> • Chronological and reverse chronological order of start date. • Formulation e.g. liquids, tablets, infusions/injections, eye drops, topical medicines etc. 	1-2

	<ul style="list-style-type: none"> • Route e.g. oral, parenteral, topical. • Specialist e.g. insulin, warfarin etc. • Short courses vs. long term vs. one off vs. 'when required' vs. repeat prescriptions. • Therapeutic category e.g. antibiotics. • Formulary status. • Diagnosis/ indication. • Controlled drug status. • Prescribed according to speciality. • Drugs due at a particular time of day. • Drugs missed on previous drug round. • Drugs with alerts generated against them. • Discontinued medicines. • Unlicensed medicines. • Storage location e.g. ward stock, fridge. • Source of initiation i.e. primary care vs. hospital. • Medicines modified. <p>It must be possible to request the display of additional information with specific sorts e.g. the addition of sensitivity results with antibiotics, INRs with warfarin, blood sugar results with insulin etc. and to generate trend results in relation to prescriptions over a period of time.</p>	
Prescribing		
GEN.OS.023	<p>Prescribers should be easily identifiable for every prescription written.</p> <p>The display of their contact details and job role/ team must be supported on the system so that if there is a query with the prescription they can be contacted. This should be locally maintained and updated on a regular basis.</p>	<p>1</p> <p>2</p>

GEN.OS.024	<p>Supplementary prescribing by all authorised professional groups must be supported as must any future changes to allow extended prescribing or administration.</p> <p>When the system is used by a supplementary prescriber it must be clear that the prescription has been written under the supplementary prescribing regulations.</p> <p>There must be the facility to enter specific clinical management plans for individual patients and/ or to refer to the source of the specific plan. Entry and the content of these plans should be kept as simple as possible with referral to other entries within the patient record where necessary.</p> <p>There must be the facility to generate, validate and store central clinical management plans that can be utilised and/or referred to by supplementary prescribers. It must be possible to limit access to the generation and maintenance of these plans, record authorisation of them, limit access for use to individuals, specialties, sites or user types or a combination of the above.</p> <p>Where prescribers may be working in different roles to prescribe medicines this role must be clearly identifiable e.g. supplementary versus independent vs. other clinical role.</p>	<p>1</p> <p>1</p> <p>2-3</p> <p>2-3</p> <p>1</p>
GEN.OS.025	<p>The system must support the use of Patient Group Directions for all groups of healthcare professionals that may legally utilise them e.g. occupational therapists, physiotherapists etc. When a drug is supplied or administered using this facility it must be clearly identifiable as such within the records and on any displays.</p> <p>It must identify the individual for whom a specific direction is applicable and manage access to allow the supply or administration to be recorded when a PGD is employed. Links to decision support should be in place to facilitate checking of the request against any other medicines being taken by the patient.</p> <p>Details of the actual PGD should be accessed via links to local documentation.</p> <p>Where local agreement requires that only medicines available under PGD can be accessed by HCPs a locally-derived limited formulary list should be utilised to facilitate this.</p>	<p>1</p> <p>2-3</p>
GEN.OS.026	<p>The system must support the generation of suspended medicines. This functionality must be available for use in two ways.</p> <p>1. There must be the ability to create suspended prescriptions for 'new' medicines that can then be activated by an independent prescriber at a later time according to local policy. For example medical students as part of their training need to be able to prescribe medicine in the hospital setting. Legally these prescriptions must then be authorised by a qualified doctor who is mentoring them. This functionality may also be used in preadmission clinics where initial admission prescriptions may be written in suspended form pending admission to hospital.</p> <p>Suspended medicines must be clearly identified to warn prescribers accessing the patient's medication record that there are suspended medicines that require authorisation. The system must also support</p>	<p>1</p>

	<p>the generation of reminders to appropriate locally-identified prescribers should authorisation not be completed within a specified and locally-set time period which may be as simple as the planned start date.</p> <p>Suspended medicines generated in this manner must not be available for administration until such time as they have been authorised</p> <p>2. It must also be possible to suspend medicines or regimens for a period of time. The period of suspension may be for a limited number of dose(s), a specified period of time or indefinitely. Removal of the suspension may be automatic or require action by a prescriber in which case reminders should be generated with escalation according to local definition. Suspended medicines must not be scheduled for administration during the period of suspension.</p> <p>The presence of suspended medicines should also be visible to all system users that access the medicine(s) record with clear distinction being made between these medicines and those that are current.</p>	
GEN.OS.027	<p>The prescription and administration of drugs in one action must be possible either in real time or after the event. Suitable access controls should be in place to allow use only within certain user roles.</p> <p>The system must support the recording of either the actual times the drugs were administered or utilise the time of entry of the information as part of this process.</p> <p>This functionality must also be available for the design of order sets with suitable access controls as above.</p>	1
GEN.OS.028	<p>The facility to place an order that has been given verbally with prompts being generated to the prescriber that require completion must be supported. The record must contain the information as to who took the verbal order and recorded it as well as the person giving it. There must also be the facility to allow for a second person to record the order to ensure that it has been understood correctly and to record this fact. The records must clearly show that the order was initially a verbal one.</p> <p>It must be possible to restrict access to this functionality according to staff type, grade and location. However as this practice is deprecated in some areas it should be locally switchable so that it can be turned off completely according to local Trust policy.</p>	2

	<p>to locally-named individuals the longer the balance remains unchecked. The alert should be cancelled once the balance has been confirmed as correct. This function should be switchable at a local level as being available or not for all or a selection of wards, departments etc.</p> <p>It must be possible to define the minimum number of times a balance must be checked on a local basis and to vary this according to the location. For example a daily check and record of balances with an accompanying signature must be possible using electronic records.</p> <p>A running balance should be kept for each drug which is visible at all times when the system is accessed to manage controlled drugs.</p> <p>It must be possible to allow running balances to be adjusted to allow for overage, measuring loss, error or other reason by authorised individuals with register entry to indicate the reason for alteration. Witnessing should also be required.</p> <p>It is expected that there will be alterations to controlled drug requirements in the near future which systems must adhere to.</p>	
GEN.OS.032	<p>The system must support the prescription of dressings and allow the specification of the size and quantity required.</p> <p>It must be possible to incorporate these into specific order pathways that facilitate correct dressing selection according to wound type, location etc.</p>	1
GEN.OS.033	<p>The system must support the prescription and administration of clinical trial medicines including any trial names utilised for medicines within a trial. These medicines must be clearly marked as being part of a clinical trial with details of the investigator to contact being accessible.</p> <p>In relation to the medicines prescribed it must be possible to record a patient's trial number, support randomisations, both the type and timing and allow for the tracking of trial-specific tests and investigations (including the generation of reminders where necessary).</p> <p>It must also be possible to generate reports to support the reporting required for the trial - see also oncology and haematology section</p>	1 2-3
GEN.OS.034	<p>Unlicensed medicines (i.e. those with no product license) should be visibly identified as such during the act of prescribing (where possible) so that the prescriber is aware of the status. They should also be visibly identified, as above, so that people reviewing or administering the medicine are aware once it they have been prescribed.</p> <p>Access to prescribe unlicensed medicines should be locally flexible to allow for individuals, specialties or specific levels of staff or a combination of the above to have the authority to prescribe if required.</p> <p>The act of prescribing an unlicensed medicine should offer the opportunity to record consent if required (see below) and also to record that written information has been given to the patient. The written information must be accessible for reporting or viewing by</p>	1 1 2

	<p>others using the system during future prescribing or review of a patient's medicine(s) history. This functionality (i.e. the recording of consent) may be desirable for other prescribed medicines and must be supported for use in other locally defined medicines, therapeutic groups and or in specialtie(s) as defined locally. It must be possible to pass this information to a central shared record in the future.</p> <p>Drugs prescribed for unlicensed indications or via unlicensed routes - 'off license'- should be highlighted if an indication or unlicensed route is selected. They system must support similar recording of consent should it be required. It must be possible to tailor the highlighting according to clinical specialty according to local governance e.g. paediatrics, intensive care have high use and may wish to manage in other ways.</p> <p>The record of consent should be locally tailored to allow for specialty use or not, individual user access or not or system-wide use.</p>	<p>2</p> <p>2</p>
GEN.OS.035	<p>Radiopharmacy products must be prescribable on the system and include the ability to have them incorporated into regimens etc.</p> <p>Control of access to prescribe radiopharmaceuticals is limited to doctors and dentists according to regulation 2 of the Medicines (Administration of Radioactive Substances) Regulations 1978 (MARS Regulations 1978) which requires that any doctor or dentist who wishes to administer radioactive medicinal products to humans should hold a certificate issued by Health Ministers. The system must support this restriction.</p> <p>Further requirements in this area will need to be ascertained in detail with ARSAC such that further guidance will be made available outlining full functional requirements in this area.</p>	2-3
GEN.OS.036	<p>The system must support the prescription of blood products. The specialised requirements for these will be defined elsewhere.</p>	2
GEN.OS.037	<p>The system must support the prescription of medical gases and vapours (volatile anaesthetics).</p> <p>Oxygen prescribing for patients in the hospital and in the community must be supported.</p> <p>Prescription must include the mode of administration (device), the concentration or flow rate as applicable, target saturation if required and humidification if required.</p> <p>For vapours it must be possible to record the MAC value.</p> <p>The facility to complete a HOOF (Home Oxygen Order Form) or current ordering requirement on discharge or in outpatients must be available which may be sent to the appropriate local contractor electronically.</p> <p>An HOCF (Home Oxygen Consent Form) must also currently be printed-off and signed by the patient to give their consent for their details to be released to the outside oxygen contractor. In the future it is envisaged that an electronic confirmation of this consent should be recorded.</p>	1

GEN.OS.038	<p>The system must support the prescribing of nebulised medicines. Prescriptions should incorporate a suitable carrier i.e. oxygen or air.</p> <p>The system must also allow the carrier to be adjusted.</p>	<p>1</p> <p>1</p>
GEN.OS.039	<p>The system must support free text prescribing to allow for the entry of medicines that are not listed within the drug file. Access to free text prescribing should be 'more difficult' than standard prescribing routes to ensure the functionality is used only when absolutely necessary.</p> <p>Any prescriptions written using this format should be identified as such to all system users to make them aware that decision support functions will not have been invoked.</p> <p>These prescriptions should be highlighted for priority verification by pharmacy staff both centrally i.e. all scripts of this type listed in one place to cater for out-of-hours cover, and by ward or team to ensure that they have been correctly prescribed.</p> <p>Entry into this area of functionality should carry with it warnings to the prescriber about the increased level of vigilance required when using this functionality.</p> <p>There should be local flexibility to report on the use of this functionality, enabling:</p> <ul style="list-style-type: none"> • Daily or immediate review of scripts via a pre-identified route e.g. to an individual, department etc to allow for individual follow-up • A summary report by entry type, user, specialty or time of entry available over a period of time to support clinical governance processes. This report may be generated on an ad hoc or routine basis – the system must support both routes with standard access requirements for generation being available. <p>Access to prescribe 'free text' medicines should be locally flexible to allow for individuals, specialties or specific levels of staff or a combination of the above to have prescribing rights.</p> <p>When a free text entry has been utilised and verified the system must support the generation of a report that can be sent electronically to the dm+d team as required by a local system manager.</p>	<p>1</p> <p>2-3</p>
GEN.OS.040	<p>The system must support the selection of a treatment option by:</p> <ul style="list-style-type: none"> • By drug name (either generic or proprietary name or synonym). • Diagnosis/ indication (likely to be locally derived order sets or indications in the short term). • According to pre-defined regimens. • And/ or by locally defined limited list (see also formulary requirement entry). <p>It must be possible to locally define the default method of selection but all must be available to system users. This must also be locally customisable by user, group of users, specialty or location.</p>	<p>1</p>

	<p>The selected drug should then be displayed to the prescriber and other users as the generic name with the brand name only included if clinically indicated.</p> <p>When a drug has been selected the prescriber should be faced with the smallest selection of options possible. This is potentially a problem with drugs that come in a variety of doses and formulations such as Furosemide and Morphine. To make it safer for the prescriber after selection of a drug, they should then generally have to select a route which would narrow the range of options available for the particular medication.</p> <p>Primary lists for the selection of drugs must not include anything other than medicines i.e. pathology tests, other orders and requests MUST NOT be visible, so as to limit the opportunity of mis-selection.</p> <p>Diagnosis and treatment options could be provided in, for example, pop-up/ drop-down menus which are populated using the first few letters of the diagnosis or treatment with a predictive text search limiting the list progressively the more letters that are typed in. Consideration to having a minimum number of letters typed in before displaying any results should be given to reduce the potential for mis-selection. It is envisaged that local order sets could form a part of this type of selection.</p>	
GEN.OS.041	Where more than one strength of a formulation is available reminders should be in place to help avoid mis-selection when a formulation is to be selected. For example depot injections would commonly utilise the lowest volume injection which may not display first in a list.	1-2
GEN.OS.042	<p>Prescriptions must include those parameters relevant to the type of medicine prescribed. All parameters must be coded (i.e. SNOMED CT). These include:</p> <ul style="list-style-type: none"> • start date/ time (defaulted to the time of entry with allowable edit for alternatives which may be in the past or future). • drug name (VTM equivalent): <ul style="list-style-type: none"> ○ generic name with proprietary name should be utilised where this is a therapeutic requirement e.g. modified release preparations. ○ dm+d descriptions should be used. • form (including details of liquid formulations where possible e.g. syrup strength x mg in 5 mL, injection strength etc). This does not necessarily mean that a preparation has to be selected i.e. Furosemide 60mg tablet may be prescribed. • drug dose and/ or concentration/ strength (see note below): <ul style="list-style-type: none"> ○ dose may be a range e.g. 1 or 2 tablets, 500mg to 1g, 5 to 10 units etc ○ may be to a predicted target dose or concentration e.g. up to n mg per min 	1

	<ul style="list-style-type: none"> • frequency (where required and may not be time specific e.g. two hours before theatre or maybe target driven e.g. three times a day according to blood results). • route: <ul style="list-style-type: none"> ○ may need to be prescribe more than one route where dosing for different products is similar e.g. antiemetics may need to be oral/IV (this must link to the administration pathway to allow the route used to be recorded). • site. <ul style="list-style-type: none"> ○ e.g. left eye. • duration (where required). May include duration of treatment e.g. length of time a drip runs for or may be duration of therapy e.g. for 7 days. • review date (where required). • additional instructions: <ul style="list-style-type: none"> ○ including administration reminders or directions e.g. to remove creams after a period of time, to monitor a pain score, to remove a patch after a period of time, total number of doses in 24 hours, apply sparingly etc ○ monitoring requirements • prescriber details. • stop date/ time if needed - see GEN.OS.48. <p>When selecting a drug, once a dosage form has been selected then only those routes that are appropriate to the formulation should be displayed to the prescriber. The converse is also true depending upon the selection process followed.</p> <p>The frequency selected must be appropriate for the medicine selected and where required not allow alteration other than in locally defined circumstances e.g. may be for a named prescriber. The frequency must also be linked to a schedule for administration that automatically prompts administration of the medicine for inpatient prescriptions.</p> <p>The dose/concentration/strength must link to the appropriate unit of measure for the drug to ensure that an inappropriate dose cannot be selected.</p> <p>The display of all of the elements within a prescription must preclude the use of abbreviations as far as possible. A nationally approved list of abbreviations for display must be utilised.</p> <p>Prescriptions will normally utilise the dose rather than the strength of a preparation. For example a 60mg dose of Furosemide would be prescribed as Furosemide 60mg tablets and not as its component parts e.g. Furosemide 20mg tablets take three tablets etc.</p>	
GEN.OS.043	When required (PRN) drugs must have an indicative frequency incorporated in to the prescription and/or a maximum dose or frequency. There must also be qualification of the circumstances as to when it is required e.g. pain, nausea etc.	1

	The system should calculate the doses actually administered and display information within the administration process of how many doses have been administered within the last 24 hours. If the maximum cumulative dose or frequency of the active ingredient is reached the medicine must not be available for administration with information displayed detailing why.	2
GEN.OS.044	The system must facilitate the prescribing of variable dose schedules in a simple manner. This includes loading courses of for example amiodarone or reducing courses of steroids. It should be possible to enter these complex prescriptions as a single process without having to enter multiple separate orders and should automatically calculate the relevant dates that dose changes apply.	1
GEN.OS.045	The system must be able to calculate medicine doses according to the age and weight of the patient or other parameters relevant to the medicine e.g. body surface area. These doses should be displayed to prescribers as the default dose but it must be possible to override it.	1
GEN.OS.046	It must be possible to round doses such that dosing is relevant to both product and strength with practical doses (such that the margin for error in measuring is minimised) and volumes are suggested i.e. dose/volume rounding. Calculated doses should reflect the products available. Over-riding dose rounding must be the maximum dose that has been defined for a product over and above which a dose may not be calculated e.g. 2mg vincristine. Different types of dose rounding may be required according to the medicine, medicine preparations available, regimen and/or patient type (including age) or specialty.	1
GEN.OS.047	There must be the ability to state the length of a course based on: <ul style="list-style-type: none"> • number of days; • number of doses; • dependent on investigation results; • dependent on monitoring results. 	1
GEN.OS.048	The system must support the ability to specify a review and/ or stop date for medicines prescribed. This must be supported for the setting of automatic stop and/or review requirements for all prescribers or selected groups or locations for <ul style="list-style-type: none"> • individual prescribers to set on a per prescription basis • local identification of named medicines or groups of medicines • specific indications <p>When these dates are reached the system must highlight to prescribers that a review is required or that the stop date is about to be reached within time periods defined at a local level e.g. 24 hours beforehand.</p>	1-2
GEN.OS.049	The system must support the cross taper of medicines that are stopping with the starting of others so that it is apparent that they are linked.	2

GEN.OS.054	<p>There must be the ability to limit the schedules selected for certain medicines. For example Methotrexate should only be prescribed as part of a restricted chemotherapy regimen or limited to weekly according to the indication selected.</p> <p>There must the ability for these to be centrally (nationally or regionally – including indications where these are unavailable via third party databases) defined and maintained as well as locally (Trust) customizable where specific problems have been identified.</p>	1
GEN.OS.055	<p>The system should display a reminder about black triangle medicines i.e. a black triangle should be displayed against the name.</p> <p>The system should support the ‘translation’ of what black triangle means such that a definition of this can be accessed – namely “black triangle medicines are newer medicines that are subject to more intense monitoring by the MHRA. All adverse drug reactions associated with these medicines should be reported to via the Yellow Card Scheme.”</p>	2-3
GEN.OS.056	<p>Newly initiated medicines should link to an appropriately coded indication for selection and inclusion as part of the prescription ‘writing’ process – this may list both licensed and unlicensed indications for the medicines selected (unlicensed indications for licensed medicines should be highlighted as being so). It must be possible to select more than one indication and it must also be possible to make this mandatory for locally determined individual medicines.</p> <p>Coupled with this lists displayed should preferentially display those indications most commonly accessed or used according to the medicine selected.</p> <p>When an indication has been selected the default dose of the drug displayed should reflect that required for the indication as far as possible.</p>	2
GEN.OS.057	<p>Drugs may have different doses for different indications. The system must populate with an appropriate dose if an indication has been selected or that most that most frequently utilised according to the age and weight of the patient if not. It must be possible for these doses to be overwritten.</p>	1
GEN.OS.058	<p>The system should have the ability to link prescribed medicines with specific information resources including shared care/local/national guidelines. It must be possible to communicate this information on discharge.</p>	2
GEN.OS.059	<p>If a medicines order cannot be completed because some information is not known at the time of writing e.g. dose, brand, frequency or any of the other requirements for a prescription it must be possible to indicate this on the system and highlight it the next time a prescriber for that patient logs on until the order is complete.</p>	2

GEN.OS.060	Prompts should be generated reminding of the need for routine blood tests for those medicines that need renal or liver function tests or other blood tests taken regularly to monitor for possible toxicity. If levels come back which are 'out of range' then there should be links to decision support to set triggers for alerts or to refer to pharmacy (or other locally defined location/individual) for further advice (triggers to communicate a normal set of results may also be required at a local level) - see also decision support section .	2
GEN.OS.061	Prescriptions and amendments to prescriptions that require a supply to be made must be communicated electronically to the pharmacy department stock control system once they have been verified by a pharmacist. There must also be a reorder facility (that automatically shows supplies (and the full details) of requests made for the medicine to date) to support ongoing supply requirements.	1
GEN.OS.062	<p>There should be the ability to assign limited, specific routes of administration to patients that have reduced or unusual requirements e.g. patients that can only be given medicine by a certain route such as NG, IV.</p> <p>This information should be highlighted each time a new drug is prescribed and where possible linked to decision support</p> <p>Prescribing by other routes must still be allowed with reminders/warnings being triggered.</p>	2-3
GEN.OS.063	<p>There should be the facility to identify that a patient is currently nil by mouth (NBM) and to identify the reason i.e. pre-operative or swallowing difficulties.</p> <p>It must be possible to locally predefine which medicines should still be administered in patients nil by mouth pre-operatively and link this to administration pathways prompting the continued administration.</p> <p>There should also be prompts within prescribing pathways to remind prescribers that oral medicines may not be suitable.</p> <p>Definition of the medicines that should continue to be administered should be sufficiently flexible to allow variation between specialties, locations and/or in future procedures.</p>	2
GEN.OS.064	It must be possible to record a patient's preference for specific medicine formulations. Reminders within prescribing/administration pathways should guide towards the preferred formulations.	2-3
GEN.OS.065	The system must support patient preference for route of administration of medicines to be defined where a preference (e.g. rectal or oral medicines) is expressed. This should highlight to prescribers if alternative routes are selected.	3

Parenteral medicines		
GEN.OS.066	<p>Prescriptions for IV fluids should include the period of time over which they are to be given, ideally with start and approximate end times. Equally the time period may be calculated should a rate be prescribed. The system must also support the pausing or suspension of fluids over a period of time.</p> <p>Reminders to nursing staff should trigger when logging on to the system or administration pathways warning when the fluids are about to finish within their work area/ward according to the prescribed time. There must also be the ability to allow timing to be adjusted at any stage during the administration to reflect the actual period of running as fluids rarely run exactly to time with guidance if altered to ensure that rate settings are not inappropriate.</p> <p>A patient's fluid balance (in and out) should be recorded and volume administered calculated and linked to the scheduling of the next prescribed IV infusions. In this way the next infusion is rescheduled if the original infusion is running slowly. This does not mean that any subsequent infusions should be speeded up but rather that delayed infusions are rescheduled and are not started in combination with existing fluids.</p> <p>Where infusion pumps can directly feed data into the system the ability to capture the 'in' flow of fluid should be supported and inform the system as to how much fluid has been administered and relate it to the prescription similarly to the manual recoding outlined above.</p> <p>It should be possible to record when giving sets are setup and remind within administration pathways when they require replacement.</p>	<p>1</p> <p>3</p> <p>3</p> <p>3</p> <p>3</p>
GEN.OS.067	<p>Medicines that are given intravenously often need to be reconstituted and given in a certain volume of fluid over a specified period of time. Whilst the information about initial reconstitution may not be selected/defined by the prescriber this information must be available for staff actually making up the medicine should they wish to access it. Once the constituents have been put into the infusion the system must handle the final infusion as a single entity.</p> <p>The information that must be included within the prescription includes:</p> <ul style="list-style-type: none"> • drug name(s) (dm+d description) if required. • drug dose(s) and/ or concentration(s) if required. • infusion fluid (only those that are compatible with the drug should be presented for selection). • volume of infusion. • rate of infusion: <ul style="list-style-type: none"> ○ which may relate to fluid balance e.g. hourly urine output plus n mL or; ○ may need to be prescribed as a range to allow for adjustment according to specific parameters and; ○ should default to the most appropriate rate for 	1

	<p>the product</p> <ul style="list-style-type: none"> ○ should not allow unsafe rates to be prescribed in specific medicines with known errors e.g. vancomycin <ul style="list-style-type: none"> • route. • line (if required). • duration which may specify the period over which a single dose/ infusion is given and/ or the duration of treatment. • frequency. • additional instructions. <p>It should be possible to display both the rate of administration (e.g. mcg/hour) and the actual dose (e.g. mcg/kg/min).</p> <p>Default fluids and volumes must be pre-populated and/or guidance available during the selection process to facilitate correct selection.</p> <p>It must be possible to link to pumps and/or rate settings to facilitate the administration and recording of the infusion(s).</p> <p>Links to decision support for compatibilities must be supported - see also decision support section</p>	<p>1</p> <p>2</p> <p>3</p>
GEN.OS.068	<p>Prescriptions for IV infusions should have the option of specifying the route in conjunction with the type of and/ or specific line that is to be used with differing levels of detail. This includes specifying. Peripheral vs. central line or Y line versus multi-lumen lines. This should preferably be specified by the prescriber and/or recorded as part of the administration record.</p> <p>It must also be possible to represent the location of the line pictorially</p>	<p>2</p> <p>3</p>
GEN.OS.069	<p>The system should prompt for the inclusion of a route that indicates whether a peripheral or central line should be utilised for IV infusions when specific medicine require this level of definition.</p> <p>Where this is critical the default should ensure that warnings to this effect are displayed. The definition of these defaults must be possible at a national or local level and may require further customisation according to specialty or location.</p>	1-2
GEN.OS.070	<p>The system should support the display of guidance that links specialist administration mechanisms such as specific giving sets with individual medicines.</p>	3

GEN.OS.077	<p>The system must support the prescription and administration of parenteral nutrition (TPN or total parenteral nutrition)</p> <p>It must be possible to link parenteral nutrition prescribing to appropriate supply routes according to local requirements i.e. links to aseptic worksheet/compounding software and/or stock control systems</p> <p>The prescription of individual components required utilising local proformas must be supported with the actual display name for the product being described according to local definition. It must be possible to predefine a set of predefined formulae that can then be customised to meet patient need on an individual basis. The carry over of formulae from day to day must also be feasible to reduce the incidence of double entry.</p> <p>Pharmacist verification of the individual components or the overall product must be possible as described elsewhere.</p> <p>Prescribers must be able to prescribe a 'generic' TPN product that can have the actual formulation attached to it as above by other system users.</p> <p>Checking of the compatability of the individual components itemised within the formulation must be supported in the longer term.</p>	1
Prescription Modification		
GEN.OS.078	<p>Access to allow adjustment (including discontinuation) to prescriptions as a specific task must be supported for different user types and be fully auditable.</p> <p>All prescriptions must be available for access in future i.e. they must remain available within the database at all times.</p>	1
GEN.OS.079	<p>Systems must allow modifications to individual, existing medicines orders. (Actually the system must record the change as a discontinuation of the original order and the initiation of a new prescription but the two orders must remain linked to allow for reporting etc.) There should be the opportunity for a reason to be recorded for the 'discontinuation' which should link to the reasons outlined below</p> <p>When a modification is undertaken the system should assume that updated order has the same indication/ diagnosis linked to it as that recorded when the medicine was started unless the prescriber actively wants to alter it.</p> <p>The act of modifying an order must be managed as a separate activity for system access requirements so that individuals, user types or classes may modify orders according to local policy e.g. pharmacists. It must also be possible to allow for modification of specific types of order by product type, source or location so that modification may additionally be limited e.g. dietetics staff may modify foods or related products alone.</p>	1

GEN.OS.080	<p>Any changes to medicine(s) must be visible but the current medication view must be as clear and uncluttered as possible (see later).</p> <p>All changes made to prescriptions should have the reason stated. Simple dose changes should automatically be recorded as dose change without the need for a prescriber to enter a reason. Where a reason is required these should be nationally defined to allow for consistency and should include:</p> <ol style="list-style-type: none"> 1. No Longer Clinically Indicated The following terminology should be utilised to outline that a medicine is no longer required. When required the following may be used in addition; <ul style="list-style-type: none"> • <i>Course Complete</i>: should be used when an automatic stop is used as part of a course of treatment, e.g. a 5 day course of antibiotics is finished. • <i>Achieved Goal</i>: should be used when a medicine has been effective and is therefore, no longer required, e.g. dressing is not needed as a wound had healed. 2. Allergy/ Adverse Reaction/ Intolerance This should automatically link to decision support and record that the patient has the problem as part of the allergy/ adverse reaction/ intolerance record that is required as part of the overall patient record. 3. Inadequate Clinical Response When it has been decided that a treatment has been stopped in order to try an alternative, possibly more effective treatment, e.g. a patient has tried proton pump inhibitors, but it was found that after no effect, another related product is required instead. 4. Patient Choice When a patient prefers to stop taking a medicine, or prefers a particular brand of medicine, e.g. a patient does not like the taste of a particular brand of medicine. 5. Patient Difficulty When a patient cannot cope (physically or mentally) with the challenge of using a medicine or device, e.g. a patient is struggling to use a particular type of inhaler effectively or swallow a tablet. 6. Medicine Form/Strength/Route Changed Where a system allows for the modification to a form/strength/route. This may be recorded as the discontinuation of the original order and the initiation of a new prescription within the system but should retain links to ensure association between the first and subsequent prescriptions, e.g. an injection is prescribed instead of an oral preparation. If a formal course length has been defined this should be used to derive the course length for the subsequent prescription with checks to ensure that this is still current. 7. Formulary Substitution A medicine is changed to reflect local formulary choice. 	1
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	<p>8. Prescribed in Error A medicine has been prescribed by mistake by a system user.</p> <p>9. Product Unavailable A medicine is not available. This could include a medicine being;</p> <ul style="list-style-type: none"> • discontinued; • withdrawn; • no longer stocked; • out of stock. <p>10. Suspend Medicine A medicine needs to be continued in the long term, but is not required or appropriate to be taken/ administered for a short period of time due to a variety of reasons. The period of suspension may be for:</p> <ul style="list-style-type: none"> • a limited number of doses; • a specified period of time e.g. patient pregnant; • indefinitely. <p>These reasons must be available for viewing/access when modified prescriptions are accessed.</p> <p>The system must support the addition a free text note to describe any additional information that may be required.</p> <p>It is accepted that this list may need to alter as systems are used. User feedback will be used to update and refine the list in the light of experience.</p>	
GEN.OS.081	The system should present relevant laboratory results automatically to aid dose adjustment as needed.	1
Formulary and Order Sets		
GEN.OS.082	<p>The system must support the ordering of medicines in approved local (Trust level) formulary lists which are locally determined and may be locally specialty-specific. These medicines should always list in preference to others and when text searches result in direct matches should only list the formulary available medicines.</p> <p>There should be an allowable locally-defined hierarchy such that displayed lists of formulary items clearly list the first choice at the top of the list.</p> <p>When medicine lists are displayed it must be clear which are contained within the local formulary and those which are not by means of a clear indicator.</p> <p>Formularies for other organisations may be visible to prescribers if requested but must not be routinely so.</p> <p>This functionality must allow not only the creation of local formularies but also the creation of lists of medicines that are commonly prescribed within a specialty and which may be formulated as pre-populated order sets.</p> <p>This functionality must not allow individual favourite lists to be produced by individual users without their being updateable centrally should a formulary alteration affect them.</p>	1

	<p>Medicines that are not included in the formulary but are in the overall drug file utilised may also require restriction so that prescriber choice is not unduly large causing possible confusion. Thus it must be possible to limit the overall medicines list from which formulary items are drawn to those that are likely to be required on a local basis.</p> <p>Formulary medicines may be specific for all users, specific groups of users, individuals, specialty or location. They may also be defined for specific defined groups of patients.</p>	
GEN.OS.083	<p>It must also be possible to link formulary status to the indication (should it be included) for which the drug is being prescribed e.g. lactulose may be available for paediatrics or for encephalopathy but in no other routine practice.</p> <p>It must be possible to restrict prescribing of a non-formulary drug completely such that it may not be prescribed, and limit this to specific users, grades, specialties or locations or a combination of these on a local basis. Where this is the case there must be the facility to include screen available information to support this restriction: this should be customised on a local basis.</p> <p>It must also be possible to offer alternative formulary suggestions when non-formulary drugs are selected on a specialty or location basis according to local policy. This may take the form of either guidance/suggestion or may force acceptance of the alternative according to local policy.</p> <p>Maintenance of local formulary status must be limited via user access control.</p> <p>Update and maintenance of local formulary lists must be easy with reminders to ensure that medicines incorporated into order sets are update as well. All amendments to a formulary must be auditable.</p> <p>The system should identify medicines being re-prescribed that have been removed from the formulary subsequent to the initial prescription to allow for review.</p> <p>The system must support the generation of reports to highlight patients taking non-formulary medicines by prescriber, specialty and/or location. A standard set of reports to identify the percentage of formulary compliance and to identify common non-formulary choices or non-formulary prescribers must also be available.</p>	1
GEN.OS.084	<p>Local control and flexibility to limit access to the prescription of certain drugs must be available.</p> <p>This should include local access controls to limit certain drugs or groups of drugs to be prescribed by named individuals, individual or groups of specialties or specific levels of staff or a combination of the above.</p>	1

GEN.OS.085	It must be possible to locally predefine specific medicines or groups of medicines that should be limited to initial prescription by individual specialties alone e.g. a restriction in the use of steroid eye drops to ophthalmologists. It must be possible to allow these medicines to be continued by other prescribers if already initiated with simple checks at the prescribing stage to question whether the medicine is newly-commenced or being continued. It must be possible to link the 'checks' to locally derived decision support rules that guide prescribers accordingly.	2
GEN.OS.086	<p>There must be the ability to enter indication or disease specific regimens (or order sets) into the system that can facilitate the prescribing of a mixed list of medicines e.g. treatment of pneumonia.</p> <p>These should be selectable by either:</p> <ul style="list-style-type: none"> • a regimen name; • the indication/ disease state; • and should be identified as being available if one of the individual components is viewed during the prescribing selection process. <p>Entry and maintenance of regimens must be carried out locally (on a Trust, network or regional basis according to local agreement) rather than by individual clinicians.</p> <p>Regimens should be locally (trust or network) tailored to allow access to be limited to individuals, specialty groups, specific staff grades or groups and a combination of the above. This should be reflected in the pick lists generated as above when only those regimens available to individuals are selectable.</p> <p>Where more than one regimen is available pick lists should reflect those most commonly utilised by the individual to speed selection</p> <p>Where there are a number of medicines within a regimen each individual medicine must be selected (or not) during the prescribing act. It must NOT be possible to routinely select more than one item with one action i.e. confirm the whole list in one mouse click.</p> <p>Individual components or attributes e.g. course lengths must also be adjustable within a regimen during the prescribing process. Any alterations made must comply with normal prescribing rules so that inappropriate alterations are not made (e.g. a route change alone may be insufficient if the original dose is inappropriate for the new route) or formulary requirements bypassed.</p> <p>A full audit trail of input of or changes to regimens must be available for reporting and include details of the changes made, the date made available and who can access them to prescribe.</p> <p>Chemotherapy regimen requirements (the functionality for which may be utilised in other areas) can be extremely complex; further detail is outlined in the oncology/haematology section.</p> <p>The system must support the definition of specific decision support elements to be included as part of regimen definition, e.g. requesting of lab tests, viewing of results, checks on dose.</p> <p>Access to the source of the regimen including the details content</p>	<p>1</p> <p>1</p> <p>1</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p>

	must be facilitated where required, e.g. access to BTS guidance, local guidelines etc.	
GEN.OS.087	It must be possible to incorporate medicines within predefined care pathways but where this is the case the individual medicines included must be authorised individually as part of the process i.e. they may not be selected as a whole and not individually reviewed.	2
GEN.OS.088	The ability to predefine drugs used (i.e. prescribed and administered) as part of a procedure must be supported. These should be recorded in a patient's record in such a way as to allow near automatic recording once the procedure is recorded as completed, i.e. each item is displayed for confirmation (or not).	2
GEN.OS.089	<p>The system should facilitate the empirical prescription of antibiotics by indication according to the results of microbiology sensitivity reports in conjunction with the local formulary.</p> <p>The sensitivities for an individual organism, when available, should display and prompt and facilitate the prescription of an appropriate antibiotic. The system must support both the choice of antibiotic (with reference to local formulary requirements) plus doses and course lengths.</p> <p>The system should prompt prescribers to review IV to oral switches according to local policy and definition.</p> <p>If an antibiotic has had to be prescribed empirically when the sensitivities become available a reminder should be generated prompting a review if another antibiotic has been prescribed.</p> <p>In the longer term there should be continued update of system-prompted choices for indications based on current sensitivity reports so that empirical treatment choices can be based on the latest patterns.</p> <p>Specific reminders should be generated if the entry of a diagnosis or procedure (e.g. splenectomy) indicates that a vaccination review would be appropriate.</p>	<p>1-2</p> <p>1</p> <p>2</p> <p>3</p> <p>3</p>
GEN.OS.090	<p>The system should support the specification of medicine(s) that should only be prescribed whilst the patient is an inpatient e.g. benzodiazepines. This definition should be setup locally and may be applied to individual medicines, groups of medicines and may be active for a specialty, ward, department or location.</p> <p>These medicines should be highlighted during the discharge writing process as not being routinely available and should require a reason to be entered should the prescriber wish to continue them on discharge. The text to support such reminders should be locally-defined.</p>	1
GEN.OS.091	<p>It must be possible to highlight medicines that are not allowable under payment by results, offering alternatives or outlining the approval mechanism required.</p> <p>It must be possible to define these medicines locally.</p>	3

GEN.OS.092	<p>The prescription of cytotoxics in non-oncology specialties must be supported with local restrictions (by user, user type, specialty and/or location) as to who can prescribe them.</p> <p>It must be possible to pre-define the regimen to be used and the detail as to how the dose(s) are to be calculated. The system must calculate the dose and offer this for acceptance and also allow for this to be over-ridden before acceptance - see also oncology section.</p>	1
GEN.OS.093	<p>The system must highlight during prescribing for both inpatient and discharge prescriptions, medicines selected that are not be available on NHS prescriptions.</p> <p>In the longer term it must be possible for an alternative product to be defined and offered for selection as defined at a local Trust level.</p>	2
GEN.OS.094	<p>Where there are known high risks identified for certain medicines these must be specifically addressed within the system over and above the other safety requirements described elsewhere. Examples mandated include:</p> <ul style="list-style-type: none"> • Limiting administration route choice for vinca alkaloids such that there is no possible way for intrathecal to be selected. • Supporting intrathecal registers so that only authorised prescribers and administration staff can access prescribing or administration for intrathecal medicines • Ensuring that the NPSA Methotrexate requirements are met • Ensuring that the selection of known drugs that can be mis-selected is avoided as far as possible - penicillamine (e.g. utilise indication as part of selection process), oral hypoglycaemics. • The use of TALLman lettering to support the reduction in mis-selection of medicines (Guidance is listed in the referenced documents section above.) <p>Further work will be undertaken to identify the major areas of decision support that should be addressed in any system being deployed.</p>	1

Reporting		
GEN.OS.095	<p>The system must be sufficiently flexible to enable full reporting for both clinical and management requirements with both bespoke reports being available as well as the tools to locally tailor data output.</p> <p>The system must support the facility to create reports either from templates, or ad hoc using a report writer, using a data dictionary and any field. It must be possible to save template reports for multiple or single user use. Reporting must be achievable by non-IT qualified staff and must not be technically onerous i.e. report generation must be possible without the need to attend programming courses or training greater than one day.</p> <p>Examples that must be supplied include activity: reports on any medication-related activity, financial reports on drug usage down to the individual patient level and to identify all patients on particular medication for audit or monitoring purposes. Other requirements are outlined within the overall document.</p>	1
GEN.OS.096	The execution of reports must not prevent continued use of the system from the PC on which the report is being generated nor cause any diminution of system response times.	1
GEN.OS.097	It must be possible to execute report functions in batch and at pre-determined times, for example to run weekly reports overnight on a specified day.	1
GEN.OS.098	It must be possible to view and print report summary statistics (file size, parameters etc) and select print options from a menu, including numbers of copies and the option not to run and not to print reports. It must also be possible to export data to common desk top packages.	1
GEN.OS.099	<p>It must be possible to produce comparative data reports, trends and projections reports utilising graphing if required.</p> <p>It must be possible to locally define and generate reports relating to diagnosis, treatment types, outcomes etc. using all data fields to support clinical care and/or audit and/or research.</p>	1

General Requirements - Administration		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
GEN.AD.001	<p>The system must link decision support to administration together with any local information available to ensure that all warnings and notes are available at the time the medicine is to be given.</p> <p>Alerts that have been over-ridden by the prescriber should be highlighted and be available for acknowledgement by staff administering medicines.</p>	1
GEN.AD.002	<p>Administration of medicines must be scheduled by the system and recorded (including date, time and user identification). This should be undertaken in such a way as to allow for administration with or preferably without paper. Real time update of changes to prescriptions must be available within administration pathways</p> <p>Locally defined time windows must be defined to allow for the actual administration time recorded being flexible. The definition of time windows must be possible by Trust, ward, medicine round time, frequency of administration (e.g. once daily medicines have a six hour window, four times daily medicines have a two hour window), by individual medicine or by therapeutic group. This should link to warnings identifying overdue medicines, as described later.</p> <p>It must not be possible to undertake administration without viewing all of the current medicines prescribed.</p>	1
GEN.AD.003	<p>There should be the facility within the system to allow for different schedules for administration to be determined according to ward, specialty or individual medicine (e.g. oral hypoglycaemics and insulin to be given at meal times etc).</p>	1
GEN.AD.004	<p>It must be possible to highlight medicines that must be administered at critical times i.e. outside scheduled medicine round times.</p> <p>It must be possible to define local (Trust based) rules to generate reminders or alerts when timing rules are breached.</p>	1-2
GEN.AD.005	<p>The system must support the administration of alternative forms of medicine which may or may not have been defined within the prescription. The system should support users in making an appropriate choice of alternative according to local authorisation to do so - see also decision support section</p>	2

GEN.AD.006	<p>The use of barcodes/machine readable codes to facilitate the safe administration of medicines must be supported.</p> <p>This should allow auto-id codes to be read from both the medicine and the patient with machine matching to ensure that the correct medicine and quantity is to be administered and warnings generated if not. This should also be used to facilitate the recording of administration such that scanning the medicine at the time of administration automatically records the medicines as given unless otherwise stated.</p>	1-2
GEN.AD.007	<p>The system must allow the recording of each dose that has been administered and, when administration is incomplete, the reason for this. The actual detail recorded will vary according to the type of preparation. For instance infusions will require a start and stop time and will not be counted as given until the stop time has been entered; in the intervening time it will be 'in progress'.</p> <p>The type of administration must be recorded namely :</p> <ul style="list-style-type: none"> • given; • not given; • in progress; • self-administered (which should be a subset of 'given'). <p>These should be chosen from a choice of options related to an individual medicine at a given time.</p> <p>If a patient is not given a medicine it could be due to a number of options which should be limited to:</p> <ul style="list-style-type: none"> • patient unavailable (should link to deferred administration to allow for late administration if patient becomes available); • medicine unavailable (should link to deferred administration to allow late administration if supply becomes available); • patient refused, - (should link to deferred administration as patient may refuse a medicine but then may take later); • nil by mouth; • medicine free interval; • clinical reason; • deferred administration. <p><u>Deferred administration</u> This reason for 'not given' allows for possible later administration. There must be a facility to set local time-out limits which will allow later recording of administration or automatically populate with not given once these limits are exceeded.</p> <p><u>Medicine unavailable</u> If this reason is selected more than once continuously for a given medicine, there must be prompts generated that remind that supply must be sourced. There should be quick links to request a supply of the medicine if this selection is made, with information available as part of the</p>	1

	<p>process as to when the last request was made.</p> <p>Where this reason continues to be selected, escalated alerts to nursing and pharmacy staff must be supported for use on a locally determined basis.</p> <p>Automatic reporting of unavailable medicines must be available for generation by ward, location, or department over a specified period of time for viewing, printing or electronic transfer to stock control systems.</p> <p>Where administration is incomplete it must be possible to add a qualifier of 'incomplete' to the given status, e.g. if an IV tissue, is stopped early and is not to be recommenced.</p> <p>It must also be possible for the administration status to be altered at a later time, e.g. 'given' to 'not given' (may be required if a late discovery is made that a patient has not actually taken a medicine, with a full audit trail supporting the change and the reason for 'not given' being recorded as above.</p>	
GEN.AD.008	<p>The system must support the self (or carer) administration of medicines. It must be possible to record individual medicines as being self-administered by a patient or all medicines prescribed for them. The system must additionally then support selection to</p> <ul style="list-style-type: none"> • allow for the automatic completion of a given (self-administered) record for all or individual medicines for the patient (unsupervised medicine administration); or • prompt for a manual self administered given record to be attached by supervising staff. <p>It must be possible to over-ride the self-administration default for individual dose administration when required. Thus the different levels of self medication are commonly undertaken:</p> <ul style="list-style-type: none"> • The patient is left to determine when they take their drugs and no checking or record is made by healthcare staff (unsupervised self administration). This should automatically complete the administration recording that the drug has been self-administered. • The patient, although self administering, is supervised by a member of healthcare staff and a record of that supervision is made (supervised self administration) i.e. there is manual self-administration 'given' record attached to a medicine. <p>The system must also support the local highlighting of medicines that may not be self-administered under any circumstances and thus not allow these to be defined as above.</p>	1
GEN.AD.009	<p>The different views available for medicines administration must support both overall ward management requirements, i.e. high level summary views, as well as supporting the recording of actual patient administration. However, as safety is paramount during the administration process there must be no opportunity for more than one patient record to be accessed at any one time for actual preparation or administration of medicines. It must also not be possible to access administration recording pathways for medicines that are not scheduled.</p>	1

	<p>Summary reporting of medicines due to be administered must be by a variety of means – e.g. by patient, by ward/ bay/ bed, consultant, by time of medicine(s) due etc - so that staff can generate the most appropriate summary list to support administration in their area of work.</p> <p>Paper reports detailing which patients have medicines due must be available if required. Controls must be possible to prevent these being used in place of the electronic system should they be required.</p> <p>The use of mobile technology is likely to be more prevalent to support medicines administration: systems must support this trend.</p> <p>The system must support the recording of medicines administered (as described above) to individual patients. Recording must be by individual patient and at no point must it be possible to access more than one patient record at a time to avoid the possibility of mis-charting as far as possible.</p> <p>There should also be the flexibility to allow users to view medicines for individual patients with different sorts and/or properties within the above 'views' including:</p> <ul style="list-style-type: none"> • due to be administered now, later or tomorrow with specified selectable time frames; • all of the oral medicines due within a specific time frame; • all of the parenteral medicines due within a specific time frame; • all of the controlled drugs due within a specific time frame; • which medicines are due in relation to meals or scheduled procedures; • which medicines have been missed or are overdue (and any reasons listed to support the delay); • blood products due to be administered; • all patients due to receive a selected medicine (where the choice is made by the system user) within a specified time frame (also selected to generate the view). <p>Additional information that may be required as part of the views may include:</p> <ul style="list-style-type: none"> • which medicines should not be administered together e.g. antacids with tetracyclines; • which medicines due are verified (or the converse – are not verified); • which medicines due have been adjusted since the last administration; • which medicines due have specific 'conditions' that have to be met before they are administered e.g. pulse rate above nn beats per minutes. 	
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GEN.AD.010	<p>Overdue medicines (including stat medicines) must generate reminders for the most appropriate healthcare professional as defined locally with escalation procedures for un-acknowledged reminders. Time-outs should be in place as in GEN.AD.007 to override alerts with a record of not given if not acknowledged within the time frame. It would be expected that staff logging on to administration pathways would see the reminders and would have to acknowledge or action them before moving on.</p> <p>Reminders generated must warn when the next dose of a medicine is due such that staff can make a decision whether to administer the overdue dose or the next scheduled one.</p> <p>It must be possible to produce routine reports to identify and collate delays in administration over a specified period of time by ward and/or schedule and/or by route of administration.</p>	1
GEN.AD.011	<p>Actual scheduled times for administration should be defined at a local level (linked to the individual prescription requirement) according to when medicines administration rounds are undertaken and local policy.</p> <p>There should be the facility within a system to allow for different schedules to be determined according to ward, to specialty or individual medicine (e.g. oral hypoglycaemics being given at meal times etc).</p>	1
GEN.AD.012	<p>Recording of medicines given must be possible via single or dual signature. Local/national definition of when this is required must be possible at medicine, ward, staff type, patient or specialty level. The process of achieving a second signature must not detract from the safety checking requirements by being overly complex and/or time consuming e.g. entry of a pin code would suffice.</p>	1-2
GEN.AD.013	<p>The system must support the requirement that specified medicines may not be administered until they have been verified by a pharmacist. It must be possible to define this by individual medicine, by prescriber type, location, specialty, indication or a combination of these. This must be definable at a local level.</p>	1
GEN.AD.014	<p>It must be possible to 'hold' or 'suspend' prescriptions prior to administration and/or preparation pending results confirmation and/or other pre-defined parameters and to clearly display them as such. Access controls must be used to allow for prescriptions to be released/changed from suspension with ongoing reminders generated at regular intervals (defined locally as to how and who they should be sent to) to ensure that the administration is not forgotten.</p>	2
GEN.AD.015	<p>The system must provide facilities to account for non-administered scheduled medicines such that they are highlighted at subsequent drug administration rounds to enable retrospective charting.</p> <p>This information must be highlighted within pharmacy pathways e.g. individual patient care plans.</p>	1

GEN.AD.016	<p>Where a dose of a medicine has been prescribed rather than the actual strength of a product there must be the ability to translate this into actual strengths of the medicine to be administered. For example Furosemide tab 60mg might translate into Furosemide tab 40mg take one plus Furosemide tab 20mg take one OR Furosemide tab 20mg taken three.</p> <p>The suggestion of what should be administered may be via:</p> <ul style="list-style-type: none"> • system recommended products (including the quantity); • manual entry by nursing staff (with checks on dose calculation being performed by the system); or • may be according to requirements entered by pharmacy that link to supply. <p>Where pharmacy have entered requirements these should displayed as the priority but it must be possible for staff to over-ride these during administration (with reasons being entered).</p> <p>Reporting on the actual strengths administered must be possible with exceptions to suggested combinations being highlighted.</p> <p>This information must be available for transfer to primary care as part of the final discharge information.</p>	1-2
GEN.AD.017	Medicines may need to be crushed or dissolved if patients are unable to swallow. The system should allow additional notes on how or if the medicine can be given if it can't be swallowed e.g. crushed	2
GEN.AD.018	The system should provide additional information about the administration of medicines via links to the local formulary, eBNF, local or national guidelines or the SPC.	2
GEN.AD.019	The system must support the administration of more than one infusion being used over a period of time to complete a prescription e.g. two 500 mL bags used sequentially to infuse 1L over 8 hours.	1
GEN.AD.020	<p>Any variation in the dose actually received by the patient should be recorded as the 'actual dose administered', with the reason being recorded elsewhere within the record. The administration record should display the actual dose administered. Where no alteration to the 'given' record is made the assumption should be that the dose has been administered in full as far as staff are aware.</p> <p>This should also be used to record the actual dose where there is a prescription that allows for the determination of the actual dose to be given at the point of administration e.g. 30-60mg. This must be forced, i.e. an actual dose must be recorded when there is an option available.</p> <p>Batch number recording should comply with functionality detailed in section GEN.AD.019.</p>	1
GEN.AD.021	Site/location (i.e. anatomical site) for the administration of a medicine must be recordable (using standard coded descriptions) for certain medicines - e.g. injections, topicals - where this is not explicit within the order. Where the site is required as part of the intervention - e.g. intra-articular injection into a joint – the initial prescription should include specific directions as to which joint etc. and be	1

	<p>automatically included in the administration record.</p> <p>There should be the ability to passively record the time that the drug is given using the system time/date at the time of entry. There must also be the facility to allow the manual entry of time/date should this be different to the system time.</p> <p>Communication of this information across the interface will be required for specific medicines particularly when follow up administration is required e.g. depot injections.</p>	
GEN.AD.022	In the future the system should support the generation of recommended actual administration sites for - e.g. for intramuscular injections - to allow for site rotation management within ongoing longer term prescriptions.	3
GEN.AD.023	A future requirement will be the ability to record the site of administration using a pictorial representation.	2-3
GEN.AD.024	<p>It must be possible to record batch numbers and expiry dates for all medicines administered (including blood products). The information should be recorded in specific fields so that it may be available for look-up should batch tracking be necessary.</p> <p>It must also be possible to mandate at a national and/or local level where batch numbers must be recorded by individual medicine, therapeutic group, within a specialty, by route of administration or by product type.</p> <p>In the longer term the inclusion of batch number and expiry date into auto-id codes would be expected to facilitate recording.</p>	1
GEN.AD.025	It must be possible to record the details of how a parenteral medicine has been given where necessary e.g. via which line if more than one is available, via which lumen etc. Where a line or lumen has been specified as part of the prescription this must be apparent within the administration pathways	1
GEN.AD.026	It must be possible to add notes to the administration record that can be viewed by all health care professionals with an interest in medicines. It must be possible to see that a note exists with retrieval being a simple action.	1-2
GEN.AD.027	The system must support the generation of reminders such that staff accessing medicines administration pathways are updated to the fact that medicines have altered for one of the patients that they are caring for since the last recorded medicine administration for that patient. In certain wards or departments this reminder may be required to display when users log on in the particular area e.g. intensive care.	3
GEN.AD.028	The system must allow a medicine to be given earlier than prescribed/scheduled within limits set locally.	1

GEN.AD.029	It must be possible to annotate a prescription/administration record to record the administration of a medicine different to that prescribed - e.g. syrup given in place of a tablet if users have allowed access rights.	2
GEN.AD.030	The system must support the recording of medical gas administration.	2

General Requirements - Discharge		
Ref	Description	Delivery Priority
<p>Delivery Priority</p> <p>1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term</p>		
GEN.DI.001	<p>Details of the medicines within the final discharge prescription/ supplied on discharge must be available to be sent:</p> <ul style="list-style-type: none"> • electronically to the GP and/or other identified location e.g. tertiary centre to secondary care; • supplied in paper format for patient information (may require more than one copy); • in printed form when electronic transfer is not possible. <p>The information should be produced/sent as above as part of standard work flow processes within the Trust, e.g. normally the generation of the discharge letter.</p> <p>If any changes are made to the discharge prescription once the discharge letter has been sent or printed the prescriber of the alterations must be made aware of the need to resend the information to ensure that it is up to date and accurate. The system should facilitate this.</p>	<p>1</p> <p>1</p>
GEN.DI.002	<p>The discharge prescription and thus information conveyed to the GP must include full details of the final prescription including:</p> <ul style="list-style-type: none"> • drug, form, strength if applicable, dose and frequency, additional administration instructions, supply made (if available), course length, whether the GP is expected to continue the treatment - see GEN.DI.005; • any other follow up that is required relating to medicines including monitoring, review dates, shared care arrangement, supply issues e.g. clozapine, dialysis and; • clinical pharmacy information e.g. use of compliance aids (monitored dosage systems), unusual supply information, monitoring information or the use of child resistant closures and; • the inclusion of any clarification/ endorsement added by a pharmacist during the clinical checking process. <p>There must also be the facility to provide details of any changes that have occurred to treatment in comparison to an admission prescription within a discharge letter/communication. These details should include details of the medicines and the reasons for the change(s) or discontinuations.</p> <p>If a patient suffers any adverse reactions/allergies/intolerances to</p>	<p>1</p>

	<p>any medicines whilst in hospital this information must be also be communicated and coded in such a way that it can update a central record.</p> <p>Information to be included in the letter may have more than one source if a patient has been treated in different areas e.g. ITU and a ward. The option of including information from the complete episode of care and not necessarily just the last treatment location must be supported.</p>	
GEN.DI.003	<p>If changes are made to the inpatient prescription after the discharge medicines have been prescribed an alert should be sent simultaneously to the prescriber making the alteration, alerting them to the need to review the discharge prescription, and to pharmacy, to review the discharge medicines at the same time.</p> <p>It must not be possible to easily alter inpatient medicines once a patient has been discharged from the hospital.</p>	1
GEN.DI.004	<p>Information about ongoing supply that is attached to a discharge prescription should be limited to:</p> <p>GP to Continue</p> <ul style="list-style-type: none"> This implies that the medicine(s) should be continued in primary care with further detail about review and duration following as part of the discharge letter. <p>GP Not to Continue</p> <ul style="list-style-type: none"> This implies that the course is/will be complete or that the medicine(s) may not be clinically required by the patient once the supply has been exhausted. This also covers instances where the supply is being made in total and may last for some time. <p>GP to Review</p> <ul style="list-style-type: none"> This implies that primary care should review and make the decision about whether to continue the medicine(s) or not according to information within the discharge letter. <p>Hospital to Continue</p> <ul style="list-style-type: none"> This implies that the medicine(s) will continue but that the supply will be managed by the hospital 	1
GEN.DI.005	<p>The system must support the generation of discharge prescriptions that comply with current legislation to enable supply. Controlled drug legislation currently therefore requires that handwritten signatures are utilised thus a hard copy must be produced in addition to the correct format describing the medicine and the quantity to be supplied.</p> <p>The system must be developed to meet any ongoing changes to legislation as they occur.</p>	1
GEN.DI.006	<p>It must be possible to electronically direct the supply requirements for discharge to different locations which may or may not be within the hospital and may include Trust pharmacy department, community pharmacy, homecare organisation, alternative hospital.</p> <p>The system must support this on an organisation/location wide</p>	1-2

	basis, specific to a particular medicine or specific to an individual or group of specialties or a combination of the above.	
GEN.DI.007	<p>Verification of discharge medicines by pharmacists must be supported. The status of verified must be visible within the medicines record and be incorporated into discharge information communicated onwards.</p> <p>Transfer of prescriptions to stock control systems for supply must not occur without verification having been undertaken.</p> <p>It must be possible to delay discharge and/or transfer of discharge information from the system until verification has been undertaken. The use of this functionality must be defined locally and may be used across a Trust, specialty, user type, individual or a combination of these or not at all.</p>	1
GEN.DI.008	<p>The facility to pre-define specific discharge order sets must be available. These should be centrally defined and conform to local formulary requirements within the system as well as other requirements detailed for the prescription of order sets/regimens - see GEN.OS.085</p> <p>Access to prescribe from these order sets should be locally flexible to allow for individuals, specialties or specific levels of staff or a combination of the above to have prescribing rights.</p>	1
GEN.DI.009	<p>The system should allow medicines to be locally highlighted if they are not to be prescribed on discharge, e.g. benzodiazepines prescribed in hospital only. This should prompt a review by the prescriber if the medicine is selected as part of the discharge process that requires them to acknowledge and accept the reminder or over-ride it.</p> <p>The system must support the reporting of the details of any acceptance or over-ride by user, type of user, specialty, location and medicine(s).</p>	1
GEN.DI.010	Discharge prescriptions should include an indication of when they are required by the patient, i.e. what the estimated time of discharge is planned to be.	1
GEN.DI.011	It should be possible to pre-prescribe or partially prescribe a discharge prescription for a patient and complete/authorise it at a later date.	1-2
GEN.DI.012	It should also be possible to facilitate (and remind about) the prescribing of discharge medicines as the initial inpatient prescription is generated if a patient is admitted for specific reason, e.g. routine postoperative medicines.	3
GEN.DI.013	The system should be able to send a copy of the discharge medicines information to the patient's regular nominated community pharmacy (as defined within the electronic prescriptions service requirements) to ensure continuation of supply in either electronic or paper format, providing that the patient is in agreement.	2-3

GEN.DI.014	<p>The system must support the ability to highlight a drug/ group of drugs, or a drug used in a specific indication that is covered by a shared care arrangement.</p> <p>Access to prescribe shared care medicines should be limited by local access controls which should be flexible to allow for individuals, specialties or specific levels of staff or a combination of the above to have prescribing rights.</p> <p>Selection of shared care drugs should include the ability to link to documentation specific to that medicine that outlines the specifics of the agreement.</p> <p>A record of initiation of a shared care arrangement should be generated the first time that the medicine is prescribed and be visible during ongoing access to the prescription. This should initiate the production of a communication to be sent to the appropriate shared care partner(s). Second and subsequent prescriptions should remind prescribers of the status and generate updates for the appropriate partner(s).</p>	2-3
GEN.DI.015	<p>It must be possible to generate discharge prescriptions from inpatient medicine lists. This functionality must require that each medicine be reviewed individually and transferred, with particular emphasis being placed upon the review of PRN, parenteral and rectal medicines. It must not be possible to copy an inpatient list across in its entirety in one action. Supply requirements attached to inpatient prescriptions should be transferred with them in order to facilitate discharge supply requirements which may be altered during the pharmacy verification process.</p> <p>Any stop dates/treatment durations should be carried through to the discharge prescription, with the remaining duration being based on the planned discharge date. The user should have the ability to amend the stop dates/treatment durations if they wish to do so.</p>	1
GEN.DI.016	<p>The system must support the ability to prescribe short leave (weekend leave) medications in a similar manner to discharge medicines. These prescriptions should be obviously identified as being different to discharge prescriptions in all views within the system.</p> <p>When leave medicines are prescribed the duration of the leave must be defined either within specified time frames or for a set number of days. Individual days may be selected, effectively requesting multiple sets of medicines to be supplied.</p> <p>Where specific time frames have been set there must sufficient flexibility within the system to update these at any time before or during the time period.</p> <p>The system must support the automatic presentation of leave status in the drug administration record so the nurse does not have to keep completing a record for each drug round, and all users know the patient is on leave.</p> <p>If a patient returns early it must be possible to remove the automatic administration record so that manual recording can begin again.</p>	1

General Requirements – Outpatient Medicines		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
GEN.OM.001	<p>The system must support outpatient prescribing, which may be undertaken in a variety of different ways.</p> <p>Access to this area of functionality must be separate from other types of prescribing to ensure that confusion does not result. The system should default to out-patient mode if the prescriber is accessing a record for a patient in an out-patient setting.</p> <p>Separate controls must be in place to control access by user type, specialty and location. Specifically access to FP10 generation must not allow access by unregistered medical staff.</p> <p>The drug lists that are accessed must comply with other controls (formulary lists) used in other prescribing areas in the system, including the use of order sets.</p> <p>The system must support the repeat prescribing and dispensing of hospital-only medicines. Where supply via hospital is ongoing the system must generate reminders as to when repeat prescriptions are required.</p>	1
GEN.OM.002	<p>The following types of outpatient 'prescribing' must be supported:</p> <ul style="list-style-type: none"> • the production of an electronic supply request to the local hospital pharmacy department, with the functionality to produce a paper prescription if required as well or instead according to local definition; • the ability to generate a request to a patient's GP or other independent prescriber (including tertiary or secondary care) to initiate, amend or discontinue a medicine; • the production of an FP10 type request that will conform the requirements of the EPS; • to record that a supply has been made from local clinic stock (this may or may not be via the utilisation of a PGD); • to record that a medicine has been administered within an outpatient setting – i.e. both the prescription of the medicine and the administration are recorded; • the production of private prescriptions (where the requirement for this has been defined locally according to the medicine and/ or the prescriber/ specialty). <p>The system must also support limiting access to the different options by time of day and/or location.</p>	1

	<p>All prescribing as listed above must utilise standard medicines pathways for prescribing to ensure that coded information is available that can be transferred to other care settings more safely and complies with local formulary requirements.</p> <p>All prescriptions written in this setting should be supported by any decision support available within the system within the constraints of the information available at the time.</p> <p>Information about what has been supplied must be transferred in to an outpatient note/letter that can be electronically forwarded to primary care when an actual supply has been initiated.</p>	
GEN.OM.003	There must be the ability to locally link individual medicines, groups of medicines, therapeutic type, specialty, time of day, location, individual user, specific clinic or any combination of the above, to the specific supply routes as above.	1-2
GEN.OM.004	There should be the option of varying the normal route of supply according to clinical need. Access to over-ride these controls should be locally flexible, to allow for individuals, specialties or specific levels of staff or a combination of the above to have prescribing rights.	2-3
GEN.OM.005	Where recommendations about medicines have not been followed up following an outpatient appointment there should mechanisms in place to feed this back to the initial prescriber.	3

General Requirements – Medicines Management		
Ref	Description	Delivery Priority
GEN.MM.001	<p>Two way links/integration with the appropriate pharmacy system must be in place to facilitate the supply of medicines for all situations utilising standard NHS message standards. Information should be transferred automatically such that re-keying of data is not required i.e. patient demographics and medicines details with associated dose and directions.</p> <p>Supply requests should be generated within the prescribing system for transfer to the dispensing system providing the item is not identified a patient's own medication or a ward stock. Supply requests should not be actioned in the dispensing system until the script has been verified by a pharmacist. It should be possible to verify a prescription in either system or area of functionality (see later).</p>	1
GEN.MM.002	There should also be integration with other pharmacy-related systems to facilitate compounding and labelling e.g. in oncology; for aseptic preparation; and parenteral nutrition preparation.	2
GEN.MM.003	<p>Information on the cost of all drugs must be accessible for lookup. This should be integrated with local contracting/ stock control systems so that prices are automatically updated and are accurate locally.</p> <p>The system must also support the actual display of costs for individual medicines on a locally defined basis should Trusts wish to highlight these.</p> <p>Whilst the prime function of these systems is to support clinical practice there must also be the functionality to support financial reporting for internal cost centres. It must be possible to generate reports that summarise/detail the costs of medicines prescribed and administered to individual patients or groups of patients within the system to support clinical audit, payment by results and commissioning. Reporting may be by specialty, disease group (HRGs/ SNOMED codes), indication, ward, location, consultant by individual medicines, or by medicine therapeutic group, over specified periods of time to name but a few.</p>	2-3
GEN.MM.004	<p>The system should facilitate the setting of a local budget for a specific medicine, group of medicines, for a number of patients for an individual user, specialty or location if required.</p> <p>When requested information should be generated to screen outlining the budget remaining and/or committed, this should display passively when a budget limit is approaching (as defined locally). When the budget is limited for a specific number of patients information should be passively available on screen during the prescribing process to indicate the current status.</p> <p>Alerts should only be generated if limits or targets are reached.</p>	3

GEN.MM.005	<p>It must be possible to identify the source of the medicine that a patient is utilising during an inpatient stay with this information transferring to the discharge prescription to inform the source of supply. These categories should be limited to:</p> <ul style="list-style-type: none"> • Patients own i.e. medicines that patients have bought in with them on admission. • One stop dispensed i.e. hospital supplied. • Inpatient supply. • Ward stock (it must be possible to pre-define within the system ward stocks that are routinely held). <p>There must be the ability to define/ update the source of supply at any point during the patient stay.</p> <p>It must also be possible to define how the supply is to be made up, in particular when a dose is prescribed and not an actual product. This must link to the administration pathways to inform staff as to what should be given - see administration section for further detail.</p> <p>Access to complete and update this information should be locally flexible for individuals, specialties or specific levels of staff or a combination of the above.</p> <p>Access to define this information should also be possible during the pharmacist verification process (which may include verification of the method in which the supply is to be made as a separate verification).</p>	1
GRN.MM.006	<p>It must be possible for the system to support the recording of the number of tablets or an approximate ('fuzzy') quantity e.g. >56 a patient has of their own on admission. This information should then be available with the date the record was made within the discharge prescription information so that the pharmacy can identify which medicines may not require supply.</p>	2
GEN.MM.007	<p>The system should link to emergency cupboard supplies or ward stock lists such that:</p> <ul style="list-style-type: none"> • Medicines can be easily located when not available locally. • and in future allow the supply within the cupboard to only be accessed following the order of a medicine that requires supply from a emergency or other cupboard 	2-3
GEN.MM.008	<p>Systems should aim to move towards full ward stock reconciliation so that an order can automatically be sent to the appropriate supply source when the stock levels are low.</p>	3

GEN.MM.009	The system must support integration with the main stock control system to inform the wards and/or prescribers if stocks of a certain drug are low or have a manufacturing problem. This should generate information during the process of prescribing, administration or be available as a lookup facility within and without of these pathways.	2
	Local definition of the information that should be transferred/ available must be possible. It should also be possible to attach information to identify alternatives available.	3
GEN.MM.010	The facility to track, in real time, where in the supply process, within the local Trust supply chain (i.e. from within the pharmacy department) the medicine requested is, must be supported to be viewed by all users including patients.	2
	In the longer term this should include information as to how long it will be before the supply is likely to be available.	3
GEN.MM.011	It should be possible to supply medicines from ward stock and generate over-rides to curtail any supply requests being generated.	3
GEN.MM.012	If a recommendation is made to the patient to buy a certain medicine as it is a cheaper option, this information should be transferred to primary care as part of the discharge information or outpatient information, along with a note that the supply is to be purchased.	2-3
	Information as to which medicines are cheaper if purchased must be available to prescribers accessing the outpatient or A/E prescribing pathways if locally required.	3
GEN.MM.013	The system must support interfacing to electronic supply cabinets or cupboards which allow access to the correct medicines once they have been prescribed and/ or are due to be given. Over-rides for emergency access must be in place according to local policy.	3
GEN.MM.014	To aid patient compliance and understanding the system should be able to use the current medicines list or discharge medicines list to produce an individual patient compliance sheet (which includes simple indications for the medicines), more formal medicines administration chart or 'simple' list of medicines for the patient in either paper or electronic format according to need at the time	1
	The information produced should allow edit or addition by specific members of staff with suitable access controls in place.	1
	It must be possible to define locally-specific information to print with individual medicines or groups of medicines that can be included in the information if requested.	2
	This information should also be available in larger print, different languages and Braille.	2

GEN.MM.015	<p>The Drug Reference Files should indicate the appropriate patient information leaflets that are to be used according to local requirement. It should be possible to access these from the relevant Drug Reference Files (e.g. locally derived leaflets) or from externally defined sources e.g. standard pharmaceutical industry leaflets.</p> <p>It must be possible to access/produce patient information leaflets in different languages, formats etc, e.g. Braille.</p>	2
GEN.MM.016	<p>The system must support the recording of the collection/receipt of medicines by a patient or their named representative against the prescription written if required locally (this will be particularly important for CD audit) and should include discharge prescriptions supplied at ward level.</p> <p>If a medicine has not been collected by a patient an alert should be generated which prompts follow-up according to locally agreed mechanisms, e.g. a patient cannot be discharged from the system.</p> <p>It must be possible to define this as being required for individual medicines, groups of medicines, by prescriber and/or location</p>	3
GEN.MM.017	<p>The amount of a medicine to be supplied on an out patient prescription or to an inpatient should be linked to their next appointment if the supply is to continue coming from secondary care in the long term.</p>	2-3
GEN.MM.018	<p>An urgent supply request link with the pharmacy must be supported by the system for medicines required in a hurry. This should highlight those medicines that have been defined as being required urgently should they be prescribed within locally predefined parameters.</p> <p>There should also be the functionality locally define specific wards and/or departments and/or medicines and/or routes of administration that are a priority for supply.</p> <p>Equally, there should be the ability to allow for individual users to define requests as urgent. This should be locally flexible to allow for individuals to be granted access (or not) to this facility.</p>	1-2
GEN.MM.019	<p>The system must support the facility for pre-defined prescriptions or supply requests to be brought to the attention of the pharmacy department 24 hours a day using locally-defined alerting procedures.</p> <p>The system must generate an alert in pharmacy when locally defined products that are needed in emergency situations (for example those which may need to be made) are ordered/ prescribed e.g. specialist eye drops. This must support diversion to on call staff if ordered out of hours.</p>	2
GEN.MM.020	<p>Links to information must be supported that outline which formulations are available locally and how they should be stored i.e. fridge storage or not.</p>	3

GEN.MM.021	The system must facilitate the highlighting of medicines in which packaging has recently changed as defined locally. This must be highlighted within the administration pathways.	2-3
GEN.MM.022	<p>The functionality must be available to allow the highlighting of any supply problems that exist during the prescribing process (preferably as early during the selection process as possible), be they due to local pharmacy problems or national manufacturing problems</p> <p>Systems must support the highlighting of problems (or not) locally at Trust level or nationally and have time limits attached to them so that they are automatically removed when the warning is no longer valid. Where the problem is a local short term issue this must be made clear.</p>	2
GEN.MM.023	<p>The system must support the facility to display and update information about specific medicines or groups of medicines based on national announcements, e g: drug withdrawals, MHRA announcements, warnings etc.</p> <p>The system must allow the information to be communicated in a variety of different ways, which might include:</p> <ul style="list-style-type: none"> • displayed as part of the prescribing pathways as either an alert or as a specific piece of guidance, which may or may not include the suggestion of alternatives; • to highlight existing prescriptions to indicate that a review may be required or that new information is available; • to generate alerts to ensure that existing prescriptions are reviewed; • to automatically display or highlight to individual users that there is information that they should read. <p>It must be possible to generate these nationally for display within local systems.</p>	2
GEN.MM.024	There should be the ability to allocate and attach unique auto-id/ (bar) codes to patient-specific medicines that can then be used as part of later checks to ensure that the patients are given their correct medicines.	3
GEN.MM.025	The system should allow the generation of reminders to patients via SMS messages or email that their medicine(s) needs collecting or that blood tests need to be taken etc.	3

General Requirements – ‘Drug Reference File’		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
GEN.DR.001	<p>The system must utilise and maintain a comprehensive drug Reference File using the national drug dictionary (dm+d) descriptions and identifiers and an approved third party decision support database.</p> <p>Descriptions utilised for all elements of a prescription must follow national standards so that all systems display clear and consistent names, forms etc. The use of abbreviations should be kept to a minimum with only nationally-agreed abbreviations only being allowed.</p> <p>For all drugs the file will include (based on the dm+d) as a minimum:</p> <ul style="list-style-type: none"> • International Non-Proprietary Name (rINN) or approved BP name or clinical trial name. • Dose, form, strength, pack size(s) (where applicable). • SNOMED clinical terms. • EAN or approved auto-ID code. • Proprietary names. • Legal class and therapeutic classification (including BNF classification, with the ability to add free text). • Technical attributes of the drug to allow ‘manufacture’ where appropriate e.g. diluents allowed. • Local formulary status and exceptions. 	1
GEN.DR.002	<p>All manual (and automatic) updates, amendments and creations in the Drug Reference file must be verified before being accessible/ visible to users for any purpose.</p> <p>The system must support a method of updating named or groups of users as to the alterations made to the content if required e.g. a message to detail an alteration to a medicine description.</p>	1
GEN.DR.003	<p>Use of generic drug names must be the primary mode of display within the system unless there are defined reasons to use a proprietary name e.g. modified release, combination products or insulins.</p> <p>Where a proprietary name is to be utilised both the proprietary and generic names should be displayed.</p> <p>It must be possible to select a medicine by proprietary name but have the generic description routinely displayed unless the proprietary name is required as above. Where there are specific requirements to specify a named brand this must be possible but not routine i.e. the proprietary description must be positively selected as being required.</p>	1 1

GEN.DR.004	The system must support changes to the way in which medicines are named when new variations become available e.g. alcohol-free mouthwashes. These changes must be defined nationally (as part of dm+d) and supported locally.	1
GEN.DR.005	It must be possible to add specific notes to medicines that will be displayed during the ordering/prescribing process that remind prescribers of local issues e.g. monitoring required, local policy, error avoidance etc.	1
GEN.DR.006	The system should facilitate access to information on the stability of various preparations and storage requirements.	3

7 Speciality Specific Requirements

Individual clinical specialties have differing needs based upon the varying clinical work carried out. The following sections outline what additional requirements there are to meet these needs: they are not necessarily specific to each area and may be required elsewhere.

7.1 Anaesthetics and Critical Care

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Medicines are often administered by the prescriber thus, prescribing and administration may be required as one action.
- Complex monitoring may be required to inform actual medicines and/or doses to be administered. Prescribing can be extremely complex involving many different combinations of medicines.
- There are complex needs for the recording of variable dosing/changes to other agents based on complex, variable dose/variable agent prescriptions.
- Routes of administration may be complex, with the use of multi-lumen lines for example.
- Patients may not be conscious.

Anaesthetics and Critical Care		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.AC.001	<p>The system should support the following functionality. It is accepted that the medicines that would trigger this type of pathway would need to be defined locally and/or nationally as would the links to different types of surgery, the duration that medicines should be withheld and any local variation that may be required.</p> <p>When patients taking specific medicines that may 'interfere' with a procedure are scheduled for elective surgery the system should facilitate the generation of information informing them when to stop taking the medicine(s) before surgery and when to restart them after surgery. The triggers should be the listing for surgery coupled with a patient's medicines list held centrally on the Care Record Service. There should also be the ability to edit the information supplied at the pre-operative assessment clinic if required.</p> <p>This functionality could also be utilised in other related and specialist areas, e.g. radiology etc</p>	3

SPEC.AC.002	The system should link to machines such as haemodynamic monitors and suggest adjustments to the rates of inotropes and vasopressor medicines according to the data feed in real time.	3
SPEC.AC.003	<p>To maintain sedation continuous infusions are administered with the rate of infusion being adjusted according to the sedation level required.</p> <p>The system must be able to record the sedation level required as well as the actual levels recorded over time.</p> <p>The prescription for the infusion must allow the inclusion of detail that describes the rate in relation to the sedation score.</p> <p>In the future it should be possible to link the actual rate of infusion to the recorded sedation score and suggest alterations to the rate of infusion that users can accept or override with alterations being made via the infusion pump accordingly.</p>	<p>1</p> <p>1</p> <p>3</p>
SPEC.AC.004	The system must support the prescription of medicines for peripheral and central nerve blocks both in bolus and continuous format.	1
SPEC.AC.005	<p>It should be possible for drugs administered as part of an anaesthetic to be captured by the system. This should be managed in such a way that it adds value to the process and does not take up more time than existing processes. Where information can be captured via feeds from anaesthetic equipment or other electronic recording being used e.g. anaesthetic machines this should be fed in automatically negating the need for manual or dual entry.</p> <p>The anaesthetic record should be incorporated into the main patient record and whilst retaining identity as an anaesthetic record must not be viewed or utilised in isolation. For instance, it must feed into decision support requirements, e.g. for interactions, monitoring etc.</p>	1-2
SPEC.AC.006	The retrospective prescribing and administration of medicines (in one process) must be allowed in emergency settings and theatres. The actual times that drugs were administered should be recorded and not the computers current time - see also general requirements administration section	1
SPEC.AC.007	It must be possible to put infusions on hold while another procedure is carried out - see also general requirements section .	2
SPEC.AC.008	Systems should support the use barcodes or other auto-id codes to facilitate both the prescription and recording of controlled drugs used in theatre settings and to automatically complete CD registers including the recording of witnessing - see also general requirements section .	3
SPEC.AC.009	It must be possible to record all medicines that are used in theatre procedures be it prospectively or retrospectively and to identify that they were administered as part of the procedure being undertaken. Order sets related to, for example individual procedures must be available to support this process.	1
SPEC.AC.010	Medicines given in theatres/ recovery must be highlighted visually to the ward staff so they can identify the where they were administered.	1

SPEC.AC.011	It must be possible to record pain scores, nausea scores and sedation scores and relate these to analgesia, antiemetics or sedatives prescribed respectively. It must be possible to display these graphically over time in relation to the indicated medicines prescribed and administered.	2
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	available in previous records or from the NHS Care Records Service. There should be prompts to measure INR and/or report the latest INR or other coagulation test, e.g. factor Xa or APTT.	
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7.3 Maxillofacial, Oral Medicine, Dental, Ophthalmology and Ear, Nose and Throat

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Commonly used medicines are often used via unusual routes or for alternative indications.
- There is a wide range of topical preparations utilised some of which have to be compounded.
- There are many specialist preparations utilised within each specialty
- Ongoing repeat supply by secondary care is not uncommon for specialist preparations.
- The requirement to support specialist preparations (e.g. preservative free products) and unusual administration schedules for ophthalmology.

Maxillofacial, Oral Medicine, Dental, Ophthalmology and Ear, Nose and Throat		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.ENT.001	Mouthwashes: nationally and locally different formulations are often favoured for extemporaneous preparations. The system must be able to identify the preferred local preference, with the full local formula available for listing.	1
SPEC.ENT.002	It must be possible for hospital dentists to prescribe drugs that are not on the NHS dental list: this includes prescriptions both within and without the hospital setting. Local definition of which supply routes should be utilised must be possible for this prescriber group to ensure that the correct type of prescription is produced to allow for the supply to be made.	1
SPEC.ENT.003	Ophthalmic prescribing is often led by ophthalmologists indefinitely.	1
	To allow better management of ophthalmic medicines the system must allow course lengths and/or review times and/or other ongoing review requirements, and to be identified for individual prescriptions in any setting.	1
	The system must support the transfer of the information (as above) to GPs, and also to optometrists if required to ensure that they are aware of the ongoing requirements.	1

SPEC.ENT.004	The system must identify and highlight those patients that require regular sight tests due to the medicine that they are taking. There should be automatic referral (with the option for this to be screened before being sent) to optometrists with identification of the eye test needed	3
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7.4 Obstetrics and Gynaecology

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Prescribing must take into account both mother and baby during the different stages of pregnancy.
- Specialist information about the use of medicines during pregnancy and breast feeding must be available and taken into consideration.
- The administration of medicines to the foetus may need to be incorporated within a mother's record.
- Anaesthetic requirements may apply with particular emphasis on spinal/epidural administration of medicines.
- The special conditions that apply around the prescription and administration of medicines by midwives must be supported.

Obstetrics and Gynaecology		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.OG.001	<p>The system should support the checking of women of child bearing age admitted to identify and record if they are taking the oral contraceptive pill and the type of 'pill' being taken. A negative response should also be recorded (i.e. none being taken) with a positive response automatically being recorded if one has already been prescribed.</p> <p>The first time that a patient's record is accessed on admission a reminder should present if there is no record present in those areas that require it (these should be locally defined)</p> <p>Once present the information should be visible to users.</p>	3
SPEC.OG.002	<p>The system must facilitate the recording of a patient's pregnancy, identifying the gestation and trimester status. This should automatically update over the duration of the pregnancy.</p> <p>This information should link to decision support to check that medicines prescribed are not contraindicated in pregnancy - see also decision support section</p>	1 2

SPEC.OG.003	The system should link a mother to their baby so that drugs administered during pregnancy can be viewed as part of a linked record. This should also include indicators as to whether breastfeeding is in progress and links to view medicines being administered to the mother whilst breastfeeding continues.	2
SPEC.OG.004	The system must support the inclusion of passive reminders about the need to undertake foetal monitoring if specific medicines are to be administered during pregnancy. These medicines should be identified locally.	2-3
SPEC.OG.005	<p>The system should have links to named websites/BNF to identify which medicines are safe during breast feeding coupled with links to contact medicines information with local extension number(s) and/or email addresses.</p> <p>Reference sources that should be available for access include:</p> <ul style="list-style-type: none"> • BNF for Children • the medicines compendium www.emc.medicines.org.uk • UK medicines information central www.ukmicentral.nhs.uk and medicines Q&A's at http://www.druginfozone.nhs.uk/search/product.aspx?id=116 <p>- see also decision support section.</p>	2
SPEC.OG.006	It must be possible to link the prescribing of oxytocin in labour to the rate/ quality of contractions being experienced.	3
SPEC.OG.007	It must be possible to access information to see which medicines can be given safely in pregnancy. There should also be links to contact medicines information with local extension number(s) and/or email addresses.	1
SPEC.OG.008	The system should prompt for dose adjustments that may be required during pregnancy, e.g. levothyroxine, lamotrigine etc	3

7.5 Renal and Liver

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Dose adjustment due to poor renal or liver function may be required
- Medicines may be specifically contraindicated.
- Monitoring of renal and liver function will often be linked to prescribing/administration decisions.
- The prescription and administration of differing types of dialysis and their specific requirements.
- The changes required to the dosing of systemic medicines due to the effect that dialysis may have on them.
- Fluid restriction and monitoring may be linked to prescription and administration.
- Conditions may be chronic with care taking place in different settings.

Renal and Liver		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.RL.001	The system must support all the elements required for the prescription of dialysis, in addition to outlining when dialysis is to be performed. Individual prescriptions will include: <ul style="list-style-type: none"> • type of dialysis • fluid type • flow rate • concentrate to use • how to dilute it • time on dialysis • pressure in the system • choice of kidney • wash back 	1-2
SPEC.RL.002	The system must support the prescription and administration of medicines that need to be given during dialysis, e.g. heparin. It must be flexible enough to allow for medicines to be scheduled to be given before dialysis, at the start of dialysis, during dialysis, during the last hour(s) of dialysis and at the end of dialysis etc. This must be clear and unambiguous. It must be possible for the actual time of administration to be recorded.	1

SPEC.RL.003	The system must support the variation in haemodialysis days/times required for different patients. It must also be flexible enough to allow for dialysis times/days to be altered as this is a common occurrence.	1
SPEC.RL.004	The system must automatically prompt for updated prescription information to be communicated to primary care when changes are made to regular prescriptions for routine dialysis patients. This information should include information about any changes made to medicines that are still supplied via secondary care, e.g. epoetin with information about the hospital supply route being incorporated.	1-2
SPEC.RL.005	Where drugs are to be administered via a dialysis machine the system must support the identification of the specific part of the machine via which it is to be administered, e.g. pre or post dialyser.	1
SPEC.RL.006	The system must support the prescription of drugs on certain days of the week, e.g. dialysis days or alternatively not on dialysis days.	1
SPEC.RL.007	The system should be able to record what days the patient is to have dialysis and what type of dialysis they are receiving.	1
SPEC.RL.008	It must be possible to prescribe the type of peritoneal dialysis (continuous peritoneal dialysis (CAPD) or automated peritoneal dialysis (APD)), with or without the addition of additives (which will include detail of the drug and dose and dwell time where it is relevant e.g. with antibiotics).	1
SPEC.RL.009	The system must support the prescription of line locks. The detail must include the details of the drug, the volume of fluid to be put in a line (which line) and the duration of time that it is to be left in place if required.	1
SPEC.RL.010	The system must support the production of prescriptions for home care dialysis patients. It must be possible to communicate these electronically via the EPS or other locally agreed mechanism to a nominated supplier. Access to this route must be determined locally, with controls in place as outlined in other sections.	2
SPEC.RL.011	Shared care arrangements for renal patients necessitate that access to information about results, medicines (including the reasons for starting and stopping them) is routinely available across care settings. The system must support this.	2-3
SPEC.RL.012	Specific warnings should be sent to prescribers when there is a possibility that levels of immunosuppression have been affected. This is particularly important in transplant patients. This may be due to drug interactions, changes in pathology tests or co-morbidity, which should be supported by decision support.	2
SPEC.RL.013	When patients are treated in non renal areas the system should generate reminders for ward staff as to when dialysis sessions are next due.	2-3

SPEC.RL.014	It must be possible to prescribe doses of medicines in smaller than normally recommended volumes for administration, e.g. vancomycin 1g in 100mL rather than 250mL sodium chloride for renal or fluid-restricted patients with suitable reminders being presented both during prescribing and administration.	1
SPEC.RL.015	<p>The system should support the prescription and administration of intravenous iron. This should include dose calculation and the administration of test doses.</p> <p>The prescribing should be linked to the checking of ferritin levels, with reminders being generated to adjust prescriptions as required.</p>	1
SPEC.RL.016	<p>The system must support the prescription of plasma exchange requirements.</p> <p>This includes the duration, exchange fluids, flow rate, volume and any additional agents required such as heparin, calcium, linelocks etc.</p>	3
SPEC.RL.017	There should be links to appropriate electronic knowledge sources (e.g. Martindale) to identify the molecular size of medicines if required so that support can be given as to when they should be administered, i.e. before or after dialysis.	2-3

7.6 Mental Health

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Care is undertaken in a variety of settings and may incorporate planned time away from acute settings e.g. weekend or day leave.
- Support is required to record the administration of medicines in 'remote' settings.
- The Mental Health Act may impact on the prescription of medicines.
- Clozapine prescribing has specific monitoring and supply requirements that are unique to this medicine.
- Support for the prescription and ongoing monitoring of Lithium therapy
- Community and social care is generally well integrated.

Mental Health		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.MH.001	Mental health care is provided in a wide range of settings with many different organisations interacting. The system must support access to information required and communicate it where it is required.	1-2
SPEC.MH.002	<p>The system should facilitate the recording of when a patient has collected their medicines.</p> <p>The system should support the identification of patients that fail to collect their medicine(s) three days in a row and alert the drug prescribing centre. This is a current requirement so that a drug centre can check the patient has not overdosed or is at risk of withdrawing.</p> <p>This function must be supported for use in other locally defined areas and/or for individual patients i.e. updates to case managers/key workers if patients fail to collect medicine(s). If required the system must also support the notification (as defined locally) that prescriptions have been collected.</p>	2
SPEC.MH.003	<p>The system must be able to support requests for daily dispensing requirements for transfer to local stock control systems.</p> <p>Requests for the dispensing of medicines in certain circumstances e.g. controlled drugs may need to be for a specific number of days/doses and not necessarily linked long term to a standard pack size.</p>	1

SPEC.MH.004	The system must support the production of batch prescriptions for methadone that may be prepared in advance for up to 28 days, to cover for weekends and bank holidays in line with current CD legislation.	1
SPEC.MH.005	The system should be linked to the criminal justice prescribing system so that medicines requirements/histories can be transferred across the different care settings when permitted.	3
SPEC.MH.006	<p>Under the current Mental Health Act certain medicines can and cannot be administered to a patient without their consent. The system must support the prescribing of medicines within these constraints. If and when the Mental Health Act is updated or replaced system functionality must be updated to support this.</p> <p>For patients being treated under section 2 of the Mental Health Act the system should support the inclusion of information to:</p> <ul style="list-style-type: none"> • record whether a patient has been informed about the nature of their treatment and by whom; • record whether or not the patient has given consent for treatment; • record which medicines have been prescribed under the section and thus how long they remain valid for under the act (maximum of 28 days, with no renewal under section 2). <p>For section three of the Mental Health Act the system should support the inclusion of information to:</p> <ul style="list-style-type: none"> • identify which medicines have been prescribed under section 3; • relate the prescription of medicines to the expiry date of the section and warn when it needs renewing (maximum of 6 months and can be renewed); • relate the prescription of any medicines outlined in either form 38 or form 39 to ensure that they are prescribed within the parameters outlined. If prescriptions lie outside of these prescribers must be warned of the deviation; • Allow the entry of information into form 38 or 39 that can be used to cross-check prescriptions written to confirm that they comply with the treatment outlined in these forms. 	2
SPEC.MH.007	The system must support the definition of advanced directives drawn up between clinicians and patients which detail treatment plans that might be used in future episodes of severe mental illness.	3
SPEC.MH.008	The system should support the recording of the a patient's current concordance with treatment not just what they have been prescribed.	3

SPEC.MH.009	<p>The system should support the identification of patients who may self harm, or who have self harmed in the last three months (or other locally defined time period) and link this to the discharge pathways so that they can only have two weeks of medicines or a specified maximum amount dispensed on discharge. Reminders should be generated with the discharge pathway to reinforce this.</p> <p>The number of days that the supply is limited to should be defined on a local basis.</p>	2
SPEC.MH.010	<p>Clozapine prescribing has specific requirements to ensure that regular monitoring is undertaken, with supply not being allowed until such time as blood monitoring results are available and checked. The prescription of clozapine must therefore trigger links to clozapine monitoring systems so that blood tests reminders and results are available to the team via either system. The blood test interval should be apparent when clozapine is being prescribed. with prescriptions automatically being transferred to the nominated supply route. Detail as to how/where the supply should be delivered must also be apparent.</p> <p>The number of tablets dispensed should also be visible in the main system as part of the clozapine record.</p> <p>The blood test results should be transferred to, and/or available within, the main system and link into decision support. If a clozapine blood result comes back as red then an absolute stop should be initiated so that administration is stopped. Following this a decision as to whether this will stop all future prescribing must be recorded and highlighted should clozapine be selected in future so that future prescriptions may be disallowed. It must not be possible to continue to administer clozapine if a due blood test result is not available within the system.</p>	2
SPEC.MH.011	<p>Prescribers should be able to easily identify all patients that are currently prescribed a certain drug e.g. lithium. This should also allow supplementary information to be viewed, for example when blood tests or ECGs are required and all previous results.</p>	2
SPEC.MH.012	<p>It must be possible to highlight the total dose of antipsychotics currently prescribed (usually calculated as a total of all antipsychotic medicines by the percentages of BNF maximum dose for each one which are then added together to calculate an overall %) per individual patient. This should be displayed to prescribers accessing current prescriptions and during prescribing.</p> <p>If 100% or above as a total of all the antipsychotics prescribed are reached the system must remind prescribers about NICE requirements to review and/or initiate increased monitoring, as well as requiring the recording of a reason for continuing at such doses.</p>	2

SPEC.MH.013	<p>Community teams often administer depot injections. The system must support this practice via allowing viewing of a patients record to check if the patient has been admitted and if the dose has been given or amended. The system should also prompt for administration that is outstanding, as would occur for inpatients.</p> <p>The record of administration should also be supported by the system so that one central medicines record can be maintained for a patient.</p>	1-2
SPEC.MH.014	It must be possible to access guidance on switching between different antipsychotic drugs and antidepressants.	2
SPEC.MH.015	The rapid tranquilisation policy should be easily accessible and should facilitate the prescribing (and administration) of the medicines within it according to local policy.	1
SPEC.MH.016	The system must facilitate the highlighting of medicines that should be withheld prior to ECT, and ensure that administration pathways are updated accordingly.	1
SPEC.MH.017	<p>The system must support the flexible administration of depot injections which may be given before or after a defined date and allow further doses to be adjusted accordingly.</p> <p>When doses have not been charted as having been given within a locally defined time period, reminders should be generated and reported to users according to locally defined reporting processes.</p>	1
SPEC.MH.018	The system must allow for local flexibility around dosing schedules to be defined as patients may spit out doses, necessitating repeat administration or delayed administration.	1
SPEC.MH.019	It must be possible to identify and record a non-clinical warning that links in to the medicines pathways and displays at given points, e.g. within the administration process for e.g. aggressive patients. These should be locally defined.	2

7.7 Diabetes, Endocrinology and General Medicine

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Prescribing and administration may need to link to specific parameters e.g. blood pressure, heart rate etc.
- Risks with the prescription and administration of insulin require managing.
- Patient self administration and management for certain chronic diseases will need to be supported.
- Variable dosing and sliding scale dosing are commonly used.
- The viewing of pathology results in conjunction with medicines is commonly required as may be the ordering of pathology tests from within prescribing pathways.

Diabetes, Endocrinology and General Medicine		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.DEG.001	Insulin administration is managed on a day-to-day basis by patients themselves: they are the experts at knowing what their insulin requirements are. Systems should in future have the functionality to allow them to record their own administration of insulin doses rather than have nursing staff manage it. This should allow self-recording of doses to be managed on a patient and individual medicine basis. This has the potential to be utilised as part of a patient education process in future as well.	3
SPEC.DEG.002	The system must support the prescription of specialist pumps as part of an overall order, e.g. for long term continuous insulin.	1-2

	from displaying in, for example current medicines or administration views if the dose has not been prescribed.	
SPEC.DEG.005	The system must support the prescription and administration of stat doses of insulin that can be administered should an infusion fail. The criteria that are required to allow this must be definable within the prescription.	1
SPEC.DEG.006	<p>The system should support the generation of blood sugar diaries ideally via the upload of information from blood sugar test machines. In the longer term the addition of insulin doses administered should be possible.</p> <p>Patients could at some stage do this at home and send their blood sugars into the diabetic team so they could be reviewed and dose alterations suggested as necessary.</p>	2-3

7.8 Surgery and Orthopaedics

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Administration of medicines may often be temporarily curtailed preoperatively.
- Alternative routes of administration may be required for patients that remain nil by mouth for periods of time.
- Surgical antibiotic prophylaxis selection and the timing of administration is important.
- The recording of medicines given during and post surgery will need to be visible as part of the record (as outlined in the anaesthetics section).
- Orthopaedic use of antibiotic-impregnated bone cement is common.

Surgery and Orthopaedics		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.SO.001	The system must support the prescription of locally defined antibiotic prophylaxis pathways for different procedures which may be selected by procedure, drug or location. It must be possible to prescribe the doses in relation to the procedure being undertaken so that the antibiotics can be administered at the correct time.	1
SPEC.SO.002	The system must support the co-prescription of intrathecal and other specialist pumps as part of an overall order.	1
SPEC.SO.003	The prescription and administration of intravesical bladder instillations must be supported. This will include the requirement to detail the dwell time and to record details pertaining to this, as part of the administration record. It must also be possible to pre-schedule these with appropriate links to local supply mechanisms to ensure that the fluid(s) is available at the correct time.	1
SPEC.SO.004	It must be possible to identify that a patient has short bowel syndrome and to link this to future prescriptions, reminding prescribers about medicines that may not be recommended.	3

SPEC.SO.005	There must be the facility for orthopaedics to record the use of antibiotics within bone cement.	1
SPEC.SO.006	Bone cement must be prescribable on the system. A system of reminders that prompt or require confirmation of use should be in place, linked to the procedure logged for individual patients.	1
SPEC.SO.007	A system of controls must be in place to allow for extremely high doses of medicines to be prescribed in limited circumstances, i.e. specific Trust-defined medicines in specific Trust-defined indications, e.g. high dose antibiotics for infected prosthetic joints by named practitioners with information being required to clarify the nature of the request. The use of this function must be the exception rather than the norm and be switchable on or off according to local Trust clinical governance requirements.	2

7.9 Clinical Pharmacy

General principles:

- Support for the monitoring and identification of patient specific parameters to maximise the outcome of medicines.
- Confirmation of clinical checking of prescriptions.
- Recording of the contributions made to care.
- Communication of ongoing pharmaceutical care requirements for all care settings.

Clinical Pharmacy		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.CP.001	<p>The system must support the verification of prescriptions by pharmacists.</p> <p>The act of verification should be used as part of the control process for requiring a medicine supply to be made.</p> <p>Once verification has been completed the request, where a supply is required, should be forwarded to the relevant stock control system functionality.</p>	1
SPEC.CP.002	<p>At the time of verification the system must support user visibility/access to information outlining the:</p> <ul style="list-style-type: none"> • age, weight and other demographic details for a patient; • any alerts or warnings that have been triggered; • current active medical problems; • a comprehensive list of current medicines. 	1
SPEC.CP.003	<p>Pharmacist verification of medicines must be easily identifiable to all users so it is clear which medicines have been verified and which have not. This should be visible in all views of medicines within the system.</p>	1
SPEC.CP.004	<p>It must be easy for a defined set of patients (e.g. by ward, consultant, bay etc), for pharmacists to view which medicines have and have not been verified. The system must support viewing of this information on screen or via a printout.</p> <p>This should be coupled with the system supporting the highlighting of other pharmaceutical care needs that have been recorded and may require follow-up such that a work list of activities can be generated.</p>	1 2

SPEC.CP.005	<p>There must be the facility to remove a verification record with an associated reason being required (i.e. verified in error or circumstances changed). The verification removal must be available as part of a patients medicines record and be viewable as part of a report/display identifying any changes made to the medicines record.</p> <p>Where the record has been removed by someone other than the initial verifying user this should be notified to the initial user.</p>	1 3
SPEC.CP.006	Full reporting functionality must be supported for all of the elements of verification to allow for audit to be undertaken.	1
SPEC.CP.007	<p>There should be the facility to vary how verification is utilised in different clinical areas/specialties such that administration may be restricted or disallowed until verification has been completed. This should be a positive action, i.e. lack of verification would normally not invoke restrictions.</p> <p>Thus it must be possible to restrict drug administration until verification has been carried out, ensuring that the medicine(s) is not scheduled within administration pathways. This must be locally customisable for use in different clinical areas, specialties (e.g. oncology) and for individual consultants as well as allowing for local access controls to be set according to user, grade, specialty or location or time of day/week</p>	1
SPEC.CP.008	It must be possible to record interventions or contributions made by pharmacy staff. These should be incorporated in the entry generated as part of the care record outlined below and feed into the local incident reporting system.	1
SPEC.CP.009	It should be possible to access community pharmacy dispensing information so that all medicines dispensed in the community, with dates and quantities can be viewed from within the system. It is envisaged that this information will be available via the NHS Care Record Service.	2-3
SPEC.CP.010	Where doses of medicines have been calculated manually from first principles using pharmacokinetic parameters there should be the facility to record the methods utilised and to attach this information to the actual prescription for retrieval as part of the patient medication record. A notes function should be utilised for this.	1
SPEC.CP.011	<p>The system must support the management of compliance aid provision and documentation.</p> <p>The system must:</p> <ul style="list-style-type: none"> • allow patients to be identified as requiring a compliance aid; • define the type of aid according to a locally defined list e.g. venalink, dosette box etc.; • record the identified local community pharmacy/ or other source that will supply/ refill the aid in the long term; • record that an assessment has been carried out, by whom and the date performed; • allow for the addition of specific notes; 	1

	<ul style="list-style-type: none"> incorporate summarised information about compliance aid requirements into discharge letters and prescriptions. <p>Access to this functionality should be restricted to locally defined staff so that assessments may be carried out.</p> <p>It must also be possible for other staff to identify and refer patients for assessment to receive an aid, as above as part of a general pharmacy referral function.</p> <p>On discharge the option must be available to transfer the information to the identified long term supply source with a patient's permission. This information should also be available for printing should it be required.</p>	1-2 2-3
SPEC.CP.012	<p>It should be possible for local access controls to allow pharmacy staff to request drug levels for certain drugs - e.g. Gentamicin - from within the pharmacy specific work areas. Where local access policies allow pharmacists to request levels directly an order should be generated. Where they do not, a direct request should be forwarded to the team responsible for the patient asking for the test be undertaken.</p> <p>When requests are made by non-pharmacy staff the system must support the communication of these to the pharmacy department according to locally determined processes.</p>	1
SPEC.CP.013	<p>Therapeutic drug monitoring must be supported.</p> <p>It should be possible to generate alerts to individuals, groups, staff types or departments to identify when a drug that requires monitoring has been prescribed. (The drugs to be highlighted should be identified according to local policy and may be specific to drug, specialty, ward or consultant or a combination of the above).</p> <p>It must be possible to request drug level monitoring either following an alert generated according to local policy or automatically following prescription.</p> <p>It must also be possible to record dose recommendations/ calculations as part of the prescription.</p>	2-3 2-3 2-3 2-3
SPEC.CP.014	Talking prescriptions must be supported for blind patients or other patient groups that are identified locally as requiring them.	3
SPEC.CP.015	Alerts that have been generated for drug interactions or other medicine-related issues must be available to pharmacists to view as part of the verification process and generally so that they can see which ones have been overridden or accepted.	1
SPEC.CP.016	<p>It should be possible for ongoing pharmaceutical care requirements to be added to discharge information being sent to primary care (see sec GEN.DI.002). It must be possible to add these on an ongoing basis and/or to finally edit them at the point of discharge.</p> <p>Information to be included should be identified from within the pharmaceutical care plan and from compliance aid provision information or may be entered directly into noting specified as</p>	1

	<p>being for discharge.</p> <p>Information incorporated should include, for example:</p> <ul style="list-style-type: none"> • ongoing monitoring or review identified; • compliance aid information; • patient preference information e.g. the use of non-click lock tops etc.; • counselling information that may be of relevance; • information about unusual prescriptions and supply options; • ongoing shared care arrangement if pertinent. <p>Information should be clearly identified as being entered by a pharmacist with contact details being incorporated.</p>	
SPEC.CP.017	<p>It should be possible for the system to support the generation of alerts being sent to individual PDAs or bleeps when drugs are prescribed for a certain team. This must be locally defined and be sufficiently flexible to allow for a combination of a specific medicine, therapeutic group, ward, consultant, location or specific user to be defined for the generation and receipt of the warning.</p> <p>It must be possible to alert a team/individual when a discharge prescription is written via a PDA or bleep.</p>	3
SPEC.CP.018	<p>The system must allow the structured capture of pharmacy care records. Whilst the exact details recorded may vary the following represents a summary of the minimum that will be required.</p> <p>Access to view the record must be available to all system users managing medicines. It must be possible to sort or filter the view of the record according, for example, date, actions completed, contributor, type of record etc</p> <p>Access to input in to the record must be controlled to allow entry, edit or view according job role.</p> <p>It must be possible to predefine templates for care for specific medicines or groups of medicines that can be uploaded in to the plan.</p> <p>The record must contain the following as a minimum:</p> <ul style="list-style-type: none"> • Structured notes that allow initial patient assessment notes and defined actions to be outlined with dates for follow up scheduled. This information must create a task/ work list for the nominated individual. • It must be possible to define different categories and subcategories of note (these may include counselling, monitoring, contribution, compliance etc). • It must be possible for users to transfer task lists to other individuals when required on a temporary basis e.g. to cover leave or shift changes. • It must be possible to update these notes at any point during the stay. • It must be possible to close actions once they have been completed. • It must be possible to assign a care priority (low, 	1-2

	<p>medium, high). This will be done according to either the patient parameters, or the toxicity or complexity of medication regimen, or both.</p> <ul style="list-style-type: none"> • The system should have the ability to identify these patients for continued monitoring by the initial assessor. • The system should have the ability to delegate or refer each prioritised patient to individual members of the pharmacy team. It must be possible for this to be overridden by high-level predefined users. • The system should have the ability to reprioritise the pharmaceutical care priority based on ongoing parameters to the care plan. • The system should have the ability to allow members of the pharmacy team to identify specific monitoring parameters and assign a therapeutic target, for example those for renal function. • The system should have the ability to alert members of the pharmacy team when the assigned therapeutic target parameters are exceeded. Alerts must be escalated according to locally defined processes. • The system should have the ability to allow members of the pharmacy team to cancel monitoring parameters. • The system should have the ability to highlight ongoing requirements of care plans to alert other members of the care team to actions required of them. • The system should have the ability to highlight such ongoing requirements of care plans and add them to the job lists of pharmacists responsible for the ongoing pharmaceutical care of patients after transfer • The system should have the ability to document the risks and benefits of medicines use . • The system should have the ability within the care planning process to summarise care episodes and reinstate a care plan (for example at transfer between critical care areas and general medical wards). • The system should have the ability to identify items on care plans that would be required on discharge into the discharge summary. 	
SPEC.CP.019	It must be possible to add patient-specific management notes that are highlighted as the defined time during a patient's stay e.g. outlining that there should be no benzodiazepines prescribed/supplied on discharge.	1
SPEC.CP.020	It must be possible to record for individual patients where child resistant containers should not be used. This information must transfer to the central patient record/pharmacy stock control system. It must be possible to update this information at any time.	2
SPEC.CP.021	It must be possible to access when a community pharmacy or practice medications review has been undertaken for an individual patient and the detail of it if the patient is happy for it to be shared.	3

SPEC.CP.022	It must be possible for the system to generate a report to highlight any new admissions to a ward, clinical area or consultant according to required date/time entries. There must also be the ability to highlight patients that have selectable parameters met within it, e.g. no drug history taken, unverified medicines present, number of medicines prescribed.	2
SPEC.CP.023	In future it should be possible for patients to enter the system and: <ul style="list-style-type: none"> • view the medicines that they are prescribed; • report suspected ADRs to the MHRA electronically. When local circumstances allow the system must also support <ul style="list-style-type: none"> • patients directly requesting to see a pharmacist; • patients asking questions about their medicines that are answered online. 	3
SPEC.CP.024	It should be possible to identify patients to prescribers that require review before further routine prescribing would be recommended.	3
SPEC.CP.025	The system should support the input of pharmacy notes. Access to the type of noting must be locally flexible. It should be possible to create notes that: <ul style="list-style-type: none"> • are attached to individual medicines; • are directed to individual prescribers that require acknowledgement/over-ride; • require an action that is inbuilt into the message that requires acceptance or over-ride; • attached to other parts of the medicines use process to act as reminders, e.g. administration requirements. 	1
SPEC.CP.026	It should be possible to highlight to prescribers/pharmacy staff which medicines require specific counselling. This should be highlighted within pharmacy care records. These should be generated according to local protocol and should be locally customisable according to drug or group of drugs and by user, grade or type of staff, location, specialty or consultant.	2

7.10 Gastrointestinal, Respiratory and Palliative Care

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Medicines are used in a variety of different clinical settings e.g. endoscopy, functional testing etc.
- Palliative care may utilise medicines at doses not normally encountered and for alternative indications.
- Medical gas prescribing is common.
- Long term prescription of medicines is common with trend review a core requirement.
- Medicines are often administered according to response or need.

Gastrointestinal, Respiratory and Palliative Care		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.GRP.001	The system should allow the prescribing of specialist endoscopy injectable drugs such as sclerosing agents, adrenaline and dye sprays. The associated routes, sites and methods of administration used within endoscopy must be available to be incorporated as part of the prescription.	1
SPEC.GRP.002	The system must support the integration of the medicines used during endoscopy with the endoscopy reporting tool and with the results of the endoscopy and recommendations recorded on the system. Where recommendations have been made for medicine(s) to be initiated within primary care these should be available to the prescriber to action as per outpatient requirements for the supply of medicines.	1-2
SPEC.GRP.003	The system should link the booking of a colonoscopy to the supply of a bowel preparation according to local policy and procedure. The necessary letter, instructions and record of supply should be generated with access being controlled locally.	2
SPEC.GRP.004	The system should link to and display spirometry results for FEV1 and FVC so that inhalers can be prescribed appropriately. Ward-monitored peak flow should also be available for viewing when reviewing inhaler usage.	3

SPEC.GRP.005	<p>The system should facilitate the recording of a patient's preference for different inhaler types.</p> <p>It should also record how good their inhaler technique is and when they have been counselled. The system must support the transfer of this information to primary and long term care practitioners via discharge information or via local information transfer methods.</p> <p>The above should be linked to the prescribing pathways to ensure that appropriate devices are selected.</p>	3
SPEC.GRP.006	<p>If the patient is at high risk of type 2 respiratory failure then the system should advise clinicians to use high flow oxygen with arterial blood gas or oximetry control.</p>	3
SPEC.GRP.007	<p>The system must allow the prescribing of higher doses of opiates than normal doses in specified palliative care locations.</p>	2
SPEC.GRP.008	<p>When a patient is started on a locally defined pathway(s) of care/medicines - e.g. care of the dying - it must be possible to remind prescribers that all other medications require review. It should also be possible to facilitate discontinuation of them.</p>	3
SPEC.GRP.009	<p>It must be possible to access guidance that supports the conversion of one opiate to another e.g. oxycodone to morphine and/or from one route to another, e.g. oral to subcutaneous.</p> <p>In future it should be possible for the system to calculate the equivalent dose and suggest a dose according to the changes required, e.g. increase in pain relief, loss of route of administration etc.</p>	2 3

7.11 Neurology, Radiology, Infectious Diseases and Genitourinary Medicine

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Additional patient confidentiality may be necessary for specific prescribed medicines.
- Care is provided in a wide range of diverse settings making remote access a requirement.
- Treatment may be given over a long period of time requiring visual representation over specific timelines.
- Contrast media and other support therapy utilised in imaging must be supported.
- Certain neurological conditions require precise timing of medicines administration.

Neurology, Radiology, Infectious Diseases and Genitourinary Medicine		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.NRIG.001	<p>It must be possible to access a patient record whilst maintaining patient confidentiality.</p> <p>It must be possible to access/view all specialties' prescriptions but the display of HIV/GU medicines must be restricted for confidentiality reasons if patients request this.</p> <p>If patients do 'opt out' there must be facility to record that they have requested this and understand the implications. This opt-out will ensure that the information is not transferred or accessible outside of the clinical specialty or location in which the patient is being treated. The only exception to this is if a supply is required when the information may be transferred to pharmacy with suitable alternative patient identifiers if they are in use.</p>	1
SPEC.NRIG.002	<p>The system must support the use of the current alternative patient number system, i.e. the GU number used in place of the patient name to maintain confidentiality. Where this is used there must be no link to the patient's actual details for those that do not require access to it, i.e. those outside the GU area.</p>	1

SPEC.NRIG.003	The system should support the graphical representation of medicines started/stopped over a period of time alongside the viral load measured and CD4 count.	1-2
SPEC.NRIG.004	The system should allow documentation and linking of when different 'ART' regimes were stopped and why they were stopped. For example drug 1 stopped then drug 2 stopped two weeks later. This will influence whether the patient is now likely to be resistant and should be linked to the previous two requirements.	3
SPEC.NRIG.005	The system should alert prescribers when a CD4 count and/or viral load result indicates that resistance may be developing or is present and should suggest that resistance testing is initiated. This should be related to the current prescription.	2
SPEC.NRIG.006	If CD4 viral load values are within a defined range without trending then the system should be able to generate repeat prescriptions in the future if required. There will be legal constraints around this within current legislation that will need to be addressed before this could be automatic.	3
SPEC.NRIG.007	Decision support should trigger alerts to prescribers such that if a CD4 drops to less than 200 (or <u>< 15% in children under the age of 5</u>) they may wish to consider initiating prophylaxis.	3
SPEC.NRIG.008	The system must support access to information about the equivalent doses for the conversion of oral to IV anti-retrovirals and peri-operative regimens in HIV patients from within the prescribing pathways for these medicines	2-3
SPEC.NRIG.009	The system must support the prescription and administration of all contrast media/other medicines used in imaging services. This must form part of the overall patient medicines record and link in to decision support for checking of interactions etc.	1
SPEC.NRIG.010	The system should support the recording of a treatment break. The record should include: <ul style="list-style-type: none"> • date started; • date stopped; • date when re-started; • the reason for the treatment break. 	2-3
SPEC.NRIG.011	The system should support the identification of Parkinson's disease patients. This should be utilised to generate reminders to ensure that medicines are administered on time and that preferably patients should self medicate. Where there are delays being experienced this should be highlighted to ward staff, and administration prioritised. When medicines are being recorded as being administered late there should be 'educational' reminders highlighting why this may cause patients problems.	2

7.12 Dermatology, Elderly Medicine and Rheumatology

Requirements outlined in this section may not necessarily be specific to this area but may be significantly more likely to be required to support ongoing clinical practice. Thus they should be viewed as being available for use in other clinical specialties should they be required.

General principles:

- Dosing requirements vary considerably in elderly patients
- Support for patients in understanding their medicines and ensuring compliance is required in this area
- There are many extemporaneous topical preparations in use in dermatology
- Topical prescribing may utilise escalating strengths of preparations including steroids strengths.
- Unlicensed medicines are commonly used in several dermatological conditions
- The treatment of several long term conditions may be carried out using shared care protocols and/or homecare arrangements

Dermatology, Elderly Medicine and Rheumatology		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.DMR.001	It must be possible to prescribe linked increasing strengths of topical agents over time with possible preconditions described that have to be met before the next strength is utilised, e.g. increasing strengths of dithranol preparations. Display of medicines lists should allow for the clear separation of topical treatments from those to be administered via other routes if required	1
SPEC.DMR.002	The system should allow the quantity of topical agents required per week or month to be specified if required and for this to be communicated as part of any supply request.	2
SPEC.DMR.003	The prescription of agents within the same class of medicine e.g. different potency topical steroids - should be allowed without generating a warning of therapeutic duplication.	2

SPEC.DMR.004	<p>The system for prescribing of thalidomide as an unlicensed drug with authorisation codes must be supported.</p> <p>The process of registration and authorization should be facilitated electronically. Typically registration is needed with the company as a prescriber/prescribing centre. Certain details about the patient then need to be sent, ideally electronically, to the company. A patient number is then returned and then prescribing can then be initiated utilising this. This then links to the supply function when authorisation codes are used to identify how many tablets may be dispensed. The authorisation code should feed into dispensing systems to ensure that checks are in place etc.</p>	<p>1-2</p> <p>3</p>
SPEC.DMR.005	<p>Patch testing products must be prescribable on the system with administration recording detail available outlining the type and severity of reaction.</p> <p>It must also be possible to attach pictures of the reaction(s).</p>	<p>2</p> <p>3</p>

7.13 Oncology and Haematology

7.13.1 Principles for Oncology Prescribing

The Cancer Services Electronic Prescribing System – Output Based Specification for Immediate and Medium Term Use (NPFIT-EP-BS-0006.01) has been used as the basis for the oncology specialty requirements within this document. This initial work has been built upon. The following principles have been identified for this specialty area:

1. An electronic prescribing system will be utilised for the prescribing and administration of all medicines. Because of the highly specialised nature of cytotoxic prescribing, access to specialist cancer electronic prescribing functionality must be limited to appropriately trained healthcare professionals, although read-only access should be freely available.
2. Limited prescribing of cytotoxic drugs is undertaken for the treatment of non-malignant conditions such as some renal and rheumatological diseases. Access for prescribing these drugs within these specialties must be available with appropriate safeguards to restrict access to appropriate regimens or doses by defined system users.
3. The specialised prescribing and administration of cytotoxic drugs requires specific documentation such as treatment plans, documentation of consents and patient information, treatment checklists, toxicity scoring, recording of cannulation history and recording of treatment response against disease sites.
4. An electronic prescribing system must support Cancer Networks. It must be possible to administer a system at Network level and reporting functions must be available at Network level. A system must support treatment of patients being divided between sites in a Network. Clinicians must be able to access and manage patient treatment from all sites within a Network, whether or not a patient is registered at that site. Prescribing systems must be able to support more than one pharmacy manufacturing unit within a Trust/Network and to allow patient treatment to be moved between sites.
5. An electronic prescribing system must have access to laboratory data at all stages during the prescribing process to check that critical tests are available. For example, information about a neutrophil count (that must lie within predefined limits) should be flagged and visible to users before administration can be authorised.
6. With the increasing integration of cytotoxic treatment and radiotherapy, electronic prescribing systems should interface with radiotherapy treatment and verification systems to support chemo-radiation regimens.

7.13.2 Speciality Requirements

Oncology and Haematology		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.OH.001	Deferring of treatment must be possible with appropriate re-booking and notification. This function must be intuitive and responsive. It must be evident in any printed reports and/or prescriptions produced.	1
SPEC.OH.002	It must be possible to put delays in place for various elements of treatment across a Cancer Network that automatically re-book later elements, with options to retain validity or not being in place. This should automatically occur if prescriptions are altered. Other notification must occur as appropriate e.g. to pharmacy worksheet/ preparative function. This function must be intuitive, responsive and include appropriate reasons for delay that can be reported/ audited. It must be evident in any printed reports/ prescriptions produced. Patient death must discontinue treatment and cancel appointments/schedules.	2
SPEC.OH.003	The system should alert system users when patients scheduled for one treatment modality are also scheduled for another treatment modality - e.g. radiotherapy – in order to avoid conflict in scheduling of treatment sessions. 'Links' to other systems must be supported to ensure that this is available.	2-3
SPEC.OH.004	The system should alert users when there is conflict in scheduling of a patient's treatment session across modalities. This could occur, for example, when chemotherapy treatment which should be delivered prior to radiotherapy is delayed and results in overlapping or inappropriate treatment dates.	2-3
SPEC.OH.005	It must be possible to view details of all patients attending for in-patient, out-patient and day case chemotherapy in daily, weekly or other locally defined format including by consultant, by clinic etc. The system must print treatment diaries for individual patients. It must be possible to highlight patients who are scheduled to attend but do not have a current prescription written.	1
SPEC.OH.006	The system must support the ability to identify quickly and easily where a patient is in the cycle process.	1

SPEC.OH.007	The system must support the selection of a treatment option dependent on diagnosis/indication, according to pre-defined regimens or by drug. Diagnosis and treatment options must be provided in for example, pop-up/drop-down menus with acronyms used as appropriate for regimens. The number of cycles required must be entered as part of the prescribing process. The system must limit access to certain regimens, parts of regimens/cycles and specific disease - or indication-related regimens according to user type. Access restrictions must be reportable for audit purposes.	1
	The system must support complex protocols that allow patients to be allocated to one of several regimens according to clinical trial randomisation. The system must support complex treatment programmes such as block-sequential or alternating regimens and support the allocation of additional chemotherapy, with the choice of one or more regimens at conditional branch points according to whether a predefined criterion has been met.	1
	The system must allow authorised personnel to prescribe/request chemotherapy treatments according to pre-defined and locally definable regimens (i.e. chemotherapy) and policies (e.g. use of growth factors).	1
	Where a pre-defined regimen (cancer measures 1E-305,306 and 3C-137,138,139) is used it must be possible to select some or all of the individual components within it for prescribing. The pre-defined list will include the following details as required by the Quality Measures:	1
	<ul style="list-style-type: none"> • Cancer type. • Therapeutic intent. • Doses per m2, per kg, flat dosing or e.g. Calvert Formula using EDTA or Cockcroft & Gault; Wright formula and other GFR formulae used in paediatrics. • Routes of administration. • Number of cycles (or indeterminate if applicable). • Length of cycle. 	1
	<ul style="list-style-type: none"> • Schedule of administration within a cycle. • Mandatory tests prior to a course of treatment, and prior to individual cycles. • Mandatory supportive drugs. 	1
	<ul style="list-style-type: none"> • Mandatory dose modifications and their indications. • Maximum number of cycles to be given before clinical review. 	1
	Authorised prescribers must be able to tailor a regimen to an individual patient, for instance by adjusting supportive care drugs. Where items are omitted or altered, reasons for this must be selected and auditable. When this is undertaken it must be possible to indicate whether the changes are relevant for further cycles. This must also be displayed when further cycles are validated.	1
There must be an alert/warning if the number of cycles prescribed is greater than that indicated by the selected	1	

	<p>regimen. Extra cycles may only be prescribed with high level authorisation, this must be auditable.</p> <p>It must not be possible to reduce the cycle time of individual regimens other than with high level access and within predefined limits.</p> <p>Doses must be automatically calculated and displayed for approval. Adjustments may be made according to percentage change or absolute change and may be for an individual cycle or be marked as appropriate for all subsequent cycles. Dose changes must be accompanied by a reason that is auditable.</p> <p>Where known dose reduction strategies are utilised it must be possible to have had these pre-defined within the regimen and thus to select them for an individual cycle and/or subsequent cycles.</p> <p>It must be possible to define/ cap fluid volume or reduce volume by a % in individual patients, by surface area. Adjustments may be for an individual cycle or be marked as appropriate for all subsequent cycles. This must be included in all displays.</p> <p>Where the actual dosage prescribed needs to be split over several infusion bags or syringes this should be made clear within the administration pathways but not necessarily within the prescription.</p>	<p>1</p> <p>1</p> <p>1</p> <p>2</p>
SPEC.OH.008	There should be a find and replace tool so that if there is an authorised drug change within a current regimen prescribers can locate all patients taking it and substitute it, if holding the appropriate prescribing rights e.g. granisetron to ondansetron.	2
SPEC.OH.009	All prescriptions must require pharmacist verification before they are available for administration. It is important that no cycle is available for production and/or administration until such time as it has been verified according to local practice.	1
SPEC.OH.010	Reviewing and authorising individual cycles must be possible before release for supply and/ or administration according to local circumstances and definition.	1
SPEC.OH.011	<p>The system must be able to calculate cumulative doses of certain drugs and alert when the maximum cumulative dose is being reached.</p> <p>In the short term it must be possible to enter a historical cumulative amount to date in lieu of previous prescriptions within the system.</p>	<p>2</p> <p>2</p>
SPEC.OH.012	Prescribing for both chemotherapy (parenteral and oral) and chemotherapy-related medicines (supporting therapy required as part of overall cancer treatment e.g. anti-emetics, hydration etc) must be supported within regimen definitions. Prescriptions must include drug name(s), form, strength, dose, route plus the schedule with accompanying information for the safe administration, i.e. diluents, rates of administration and volumes etc. (It must allow for doses to be given in a fixed fluid volume, volume bands or volumes calculated based on BSA or concentration data (due to stability of product). In addition, where PRN is used there must be an accompanying schedule	1

	<p>defining the maximum number of doses to be administered and an indication for use. The date and time written must also be included for all prescriptions.</p> <p>Calculations (where required) must automatically be performed based upon the criteria set within the drug regimen file. Differing surface area calculations must be supported for adults and paediatrics.</p> <p>The original method of dose calculation must always remain as part of the prescription e.g. 50mg/m² to allow for ongoing checking. (When the Calvert formula is used for Carboplatin dose calculation there must be a prompt to check for EDTA or Cockcroft & Gault as appropriate with links to different dosage schedules/ advice where necessary.)</p> <p>Similarly paediatric dosing schedules must be available according to standard reference sources. The Wright formula must also be supported for paediatric prescribing.</p> <p>Dose rounding must be performed as appropriate but within pre-defined constraints to ensure that sensible doses are prescribed.</p> <p>Calculations required for administration purposes must be carried out automatically to remove the need for interpretation of an order.</p>	<p>1</p> <p>2</p> <p>1</p> <p>2</p> <p>1</p>
SPEC.OH.013	<p>The system should support the prescription and subsequent alteration of the rate of specified infusions - e.g. Rituximab according to patient blood pressure results, suggesting alterations to the rate every half an hour according to blood pressure readings entered into the system that may or may not be accepted. If accepted (and this should be acknowledged within the system), where the system is linked to infusion devices rate alterations should then be made.</p>	3
SPEC.OH.014	<p>An initial discharge letter for primary care detailing discharge medicines and changes made during a visit (including day case or outpatient visits) must be available for printing or communicating electronically - see also general system requirements section for discharge information.</p> <p>Letters should be in a template format, access-controlled and linked to a specific patient with the status also listed (i.e. draft, approved, sent). Access to letters sent must also be available for audit/data protection purposes.</p> <p>As per the Quality Measures (3C-130, 3C 131), details for the management of toxicities (for nausea and vomiting, diarrhoea, mucositis, extravasation, neutropenic sepsis and regimen specific toxicities) and the action to be taken by GPs must be available for electronic communication or by letter.</p>	1
SPEC.OH.015	<p>Drug administration - see also general system requirements section. If paper is to be utilised (electronic recording of administration should be the norm) printouts must conform to guidelines in place nationally e.g. paediatric oncology pharmacist group guidance and allow for separate charts for intrathecal requirements and clearly separate prescriptions for parenteral routes from others.</p>	1

	<p>The system must restrict access to the recording of the administration of chemotherapy to appropriately trained staff</p> <p>The system must highlight medicines that need to be given by specific personnel - e.g. intrathecal preparations and ensure that any local and/or national requirements pertinent to these are met as part of this process (including all the recommendations of the national review of intrathecal chemotherapy – Woods).</p> <p>The system must record each dose that has been administered, and when administration is incomplete, the reason for this according to oncology requirements.</p> <p>Batch numbers must always be recorded.</p> <p>Recording of medicines given must be possible via single or dual signature. Local (network or Trust)/national definition of when this is required must be possible. The process of achieving a second signature must not detract from the safety checking requirement.</p> <p>Where partial administration is recorded as being due to extravasation links to local guidelines must be supported.</p> <p>Overdue medicines within regimens must be reported in such a way to ensure that doses are administered or managed without compromising further scheduling.</p> <p>It must be possible to add notes to the administration record that are available to prescribers and for administration in future cycles.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>2</p> <p>3</p> <p>2</p> <p>1</p>
SPEC.OH.016	It must be possible to record toxicity scores for individual patients. These should be linked to decision support to highlight dosage reductions in future cycles of chemotherapy.	2
SPEC.OH.017	The system must allow reporting on regimen use as well as reporting on individual medicine(s) use. Equally, cycle numbers must also be available in a similar manner.	1
SPEC.OH.018	Prescriptions and amendments to prescriptions must be communicated electronically to the pharmacy department with an alert if locally required, and administration pathways updated in real time. Where alterations have been made to prescriptions warnings must display in administration pathways to ensure that updated doses are given.	1
SPEC.OH.019	<p>Clinical trial chemotherapy regimens/protocols must be identified as such and patients on clinical trials must always be so indicated to all users.</p> <p>It must also be possible to utilise a clinical trial regimen but to not enrol patients in the trial: where this is the case the non-trial participation must be identified.</p>	1
SPEC.OH.020	Access to relevant pathology and/or radiology information and/or nuclear medicine (e.g. EDTAs)/radiology reports must be available seamlessly during the prescribing process and be available as part of the active decision support rules. Access to other calculated parameters must also be available, e.g. body	1

	<p>surface area, weight, calculated renal function etc.</p> <p>The system must have the facility to require that pre-defined laboratory test such as absolute neutrophil count have been performed within a particular time period and have values that fall within specified limits before a prescription can be administered.</p> <p>Automatic viewing of laboratory data must be supported and be accessible within the prescribing and administration pathways.</p> <p>Authorised users must be able to over-ride mandatory tests that do not meet the pre-specified criteria.</p> <p>The acceptable values for tests and their validity periods must be locally defined according laboratory normal ranges. Laboratory tests and their acceptable values (may be age specific in paediatric regimens) must be defined at regimen level.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
SPEC.OH.021	The system must support the highlighting of potential errors through e.g. pop-up dialogue boxes and facilitate access to further information. It should be possible to audit the outcome of all such events.	2
SPEC.OH.022	The system shall offer the user maximum flexibility balanced with safety requirements, on searches for the required drug/ administration schedule, such as common drop-down scrolling lists, or the use of text-string search functionality. Options menu selections should be derived from the drug reference files, tumour sites and administration schedules.	1
SPEC.OH.023	The system must be available for use so that users who wish to prescribe/request treatment when attending at external Trusts within the Network can do so, with any supply request being directed to the correct department. Equally there must be the facility to support administration of regimens at external locations.	2
SPEC.OH.024	<p>Diluents (including preparation) and expiries must be associated with individual drugs with overrides possible where necessary, e.g. when there is more than one feasible choice. Volumes and forms must also be associated as far as possible.</p> <p>Different expiries at different concentrations and storage conditions must also be supported.</p>	<p>1</p> <p>1-2</p>
SPEC.OH.025	<p>The system must support a library of chemotherapy regimens and protocols that include the following elements:</p> <ul style="list-style-type: none"> • Treatment regimens, which describe combinations of drugs (with varying routes and forms) and IV fluids administered as part of a single treatment cycle; these may extend over more than one day. • Critical tests such as neutrophil count that must lie within predefined limits before administration can be authorised. There must be a facility to enter the results manually if there is no electronic link available on a, per patient per administration basis, to allow for blood tests performed at other hospitals where there is no facility for 	<p>1</p> <p>1</p>

	<p>electronic transfer of data.</p> <ul style="list-style-type: none"> • Radiotherapy treatments for combined chemotherapy-radiotherapy treatment, through an interface to radiotherapy treatment and verification systems. • Procedures such as sedation for paediatrics and lumbar puncture. • Supportive care such as antiemetics, haemopoetic growth factors and antibiotics. It must be possible to incorporate these directly in a regimen or cycle or to specify as a "sub-regimen", whose contents are inserted into the treatment plan at the time of allocation. This facility allows supportive care regimens to be changed without individual editing of every single regimen. • Complex protocols including multiple arms for clinical trials, conditional branching within arms depending on whether or not certain criteria such as response are met, and the use of block-sequential or alternating regimens. • The system must indicate whether or not a regimen is a clinical trial, and the intent of treatment such as curative, adjuvant or palliative. • Specification of the disease(s) and stage for which the regimen is intended. • Version control, fields to record the regimen's history and purpose and a 'valid from' and 'valid to' field that defines a regimen's in use period. 	<p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
SPEC.OH.026	<p>It must be possible to restrict the use of all regimens to pre-defined conditions and diagnoses and to disease stage (e.g. adjuvant, initial treatment or for use in relapse).</p> <p>Access to regimen definition files must be restricted.</p> <p>All changes to regimen definitions must be fully auditable.</p> <p>Regimens must be authorised by two signatories before being available for use within the system. This must be made and be auditable.</p>	<p>1</p> <p>1</p> <p>2</p> <p>1</p>
SPEC.OH.027	<p>Local and national definition of standard regimens and their scheduling must be possible, with full audit facilities to track any updates made to the file. These must be linked to specific diagnoses or indication definitions and indicate whether they are for adjuvant, palliative, radical use and first, second line etc. Standard staging and disease descriptors/codes must be used for this according to NPfIT national requirements.</p> <p>Definition for dose calculation within these files must be possible using a variety of parameters including BSA (Dubois), body weight (LBW or ABW), creatinine clearance (EDTA or Cockcroft & Gault, Wright formula), age etc. Where any of these parameters are updated there must be the facility to notify prescribers that doses may require updating and equally, where they lie outside expected parameters for age/weight (e.g. in paediatrics). Warnings relating to obesity should also be given. The method of calculation must be available for access if required.</p>	<p>1</p>

	<p>If patients mature over treatment cycle e.g. in paediatrics - the system must support the amendment of cycle doses.</p> <p>Automatic calculation of BSA etc must be carried out based on parameters entered into the system - e.g. height and weight - with definable limits for rounding or with the ability to cap for individual patients or within a regimen. There must be warnings in place to ensure that these are current.</p> <p>The ability to define the maximum dose allowed per drug per regimen (or per patient) must be available.</p> <p>Dose adjustment tolerances must be definable, e.g. +/- 5%.</p>	
SPEC.OH.028	It must be possible to manage dose banding requirements for prescribing and preparation for all products including rounding to account for tablet strengths, suspension strengths and pre-bought products ensuring that measurable volumes, quantities etc. are suggested.	1
SPEC.OH.029	It must be possible to prescribe clinical products and non-drug items that are required within a regimen as determined on a local basis. For example disposable elastomeric infusor devices could be included within, the prescription for the drugs that will be contained within them.	2
SPEC.OH.030	The system must provide for automatic review dates for regimen/file maintenance and alert users within a specified time prior to the review date.	1
SPEC.OH.031	<p>It must be possible to alert users within the pharmacy and radiotherapy departments that a prescription/request has been made.</p> <p>Links to the pharmacy stock control system/compounding system (or full integration) must be in place to facilitate the supply of medicines for all situations. These link(s) should facilitate compounding and labelling. The actual prescribing system does not need to have the functionality itself to produce worksheets or labels providing there are appropriate interfaces to software that can meet the requirements as detailed below. However, there must be seamless links to ensure that full workflow benefits can be achieved and a reduction in the risk of error from re-keying information achieved.</p>	2 2
SPEC.OH.032	The system must alert users (according to locally determined routing) when (blood) test results, according to pre-defined tolerances within drug regimen/protocols, may require alteration in drug, dose or frequency etc. for example, when test results indicate a neutropenic status. Context-sensitive dialogue boxes would be helpful to users, as would dose amendment suggestions.	1
SPEC.OH.033	<p>Entry of clinical notes added during patient assessments and reviews must be supported, with access being facilitated from prescribing pathways as should all noting entered. This must form part of the permanent patient record.</p> <p>As per Quality Measures (3C-139), treatment records should show whether or not courses of chemotherapy were completed, and, if not, why not. Sub-optimal response (for neo-adjuvant</p>	2 2

	<p>treatment) and disease recurrence (for adjuvant treatment) should be recorded.</p> <p>This might be achieved by a combination of input to a set of pre-defined labelled fields and free-text boxes. There should be the facility to link these to ensure onward communication at appropriate times e.g. administration warnings/information or prescribing idiosyncrasies for a specific patient.</p>	2
SPEC.OH.034	<p>It should be possible to record the response to, and side-effects of, treatment using CTC/ RTOG (Tox) and RECIST/ UICC (response) criteria.</p> <p>It should also include the ability to record toxicity at times other than scheduled assessments (e.g. contacts via the helpline or hospital admission) which should be fed back to the person carrying out the next scheduled assessment</p>	2
SPEC.OH.035	<p>It must be possible to record details of patient outcome including objective measurement of response.</p> <p>Where side-effects necessitate discontinuation of therapy this should be recorded as such, with links to decision support to ensure that all future prescribing is alerted to avoid the risk of repeating the same problem.</p>	2 2
SPEC.OH.036	<p>It must be possible to indicate that a patient has consented to treatment and that written (and specified) information has been received by the patient. This is a requirement of the Quality measures (3C-134).</p>	2
SPEC.OH.037	<p>Worksheets are only required if links to stock control/manufacturing systems are not available.</p> <p>It is most probable that chemotherapy dispensing will be performed against a printed worksheet rather than directly from a computer screen. However, the system must provide the primary reference and verification tools for dispensing and allow indicators to confirm a dispensing step is complete. Pharmacy users would not wish to copy such indications from paper records.</p> <p>Dose/prescription supply tracking should be possible or in development such that ward/department staff can track and anticipate supply times.</p> <p>Suppliers must indicate how their system would support electronic sign-off at each stage of the dispensing process. The application of barcode technology would be useful here and suppliers must indicate if the system would support this.</p> <p>The ability to print labels and worksheets as part of the same process to reduce the risk of confusion must be possible.</p>	2
SPEC.OH.038	<p>It must be possible to locally define the worksheets and labels format and such format (as presented on screen) must be reproduced in printed documents. This is essential in allowing ease and accuracy in verification. They must comply with the standards defined in The Quality Assurance of Aseptic Preparation Services, Third Edition. NHS Quality Control Committee. Pharmaceutical Press 2001.</p>	

	<p>Access to defining worksheets and labels must be controlled via password, as must re-printing.</p> <p>Batch production must also be supported and allow compliance and be validated, for GMP, GMP4 and licensing requirements.</p> <p>Master copies must be available for printing for licensing and back-up purposes.</p>	
SPEC.OH.039	<p>The system must automatically populate relevant patient demographics fields in worksheets and labels. It must be possible to initiate this function when a single recognised patient identification is entered and verified by a second field.</p> <p>Where the patient is part of a clinical trial the pertinent trial information – trial number/code, investigator and patient number - must also be included</p>	
SPEC.OH.040	<p>It must be possible to draw details of the individual constituents required to make a product from the Drug Reference Files and automatically populate the relevant fields in the worksheet and labels.</p>	
SPEC.OH.041	<p>The system must sequentially number pages in worksheets as page X of Y, with carry over of other information to ensure correct pages are matched.</p>	
SPEC.OH.042	<p>When a page in a worksheet is to be replaced, the replacement page must retain the original page number and indicate that that it is a replacement page.</p> <p>A drop-down menu must provide options for discard reasons.</p>	
SPEC.OH.043	<p>It must be possible for the worksheets to accommodate full chemotherapy dispensing information including :</p> <ul style="list-style-type: none"> • Automatic, sequential dispensed batch numbers (with facility for user override) • Session number and location i.e. satellite unit ID/ isolator ID etc. • Patient details including consultant. • Regimen details. • Selection of certain components where required e.g. infusion type. • Calculation of volumes required for each component. • Final product details, Drug name, form, dose, strength (optional), pack size, quantity, volume. • Date prepared. <p>For individual components of the above;</p> <ul style="list-style-type: none"> - drug name - form - strength - pack size (if appropriate) - quantity - batch number (system derived if available) - expiry date (system derived if available) - individual reconstitution requirements of vials with 	

	<p>particular diluents +/- addition to further diluents.</p> <ul style="list-style-type: none"> • Check boxes for 'in-process' checks for each stage of dispensing, volume checks and final check. • Shelf life of final product (may vary according to concentration) • Dispensing methodologies • Label reconciliation and printed copy • Specific checks for intrathecal requirements e.g. IV medicine given before preparation/ release • Free text and user-defined text macro boxes. 	
SPEC.OH.044	<p>It must be possible to reprint and monitor reprinting of worksheets. Only one copy of a worksheet must be printed for any product preparation. On occasion it may be necessary to reprint a worksheet. In such cases the system must provide a drop-down 'reason for reprint' options menu with mandatory entry requirements.</p> <p>All reprinted worksheets must be clearly identified as such.</p>	
SPEC.OH.045	<p>The system must provide audit facilities for reprinting of worksheets.</p>	
SPEC.OH.046	<p>Labels - only required if links to stock control/manufacturing systems are not available.</p> <p>The system must provide full functionality for labelling dispensed products (or interfaces to systems to undertake this) based on templates, which may be populated from information in the Drug Reference File (dm+d) (including number of labels required for each of the final products that the drug may be presented in) or completed by users from menu options.</p> <p>Some fields would be manually populated in either case. For example 'number of tablets'.</p> <p>BNF label terminology and all legal requirements (including MHRA and clinical trial requirements) must be accommodated in all cases (including those required for specials manufacture where relevant).</p> <p>Different sized labels should be supported.</p>	2
SPEC.OH.047	<p>It may be necessary on occasion to override some data fields in labels where fields are automatically populated. Suppliers must say if the system can support this & what controls are in place.</p>	
SPEC.OH.048	<p>It must be possible to re-print the total number of required labels or print additional labels. In such case the labels must clearly indicate that they are reprints or additional. Controls must be in place to manage this facility.</p> <p>The system must provide audit facilities for reprinted or additional labels including options list for reasons for reprinting, additional printing.</p> <p>Labels must also accommodate pharmacy contact details. If auxiliary labels are utilised to allow for complete information to be present – 'one of n labels' must be present on each label.</p> <p>Label reconciliation as required for GMP must be supported.</p>	

	Validation for GMP4 must be available.	
SPEC.OH.049	It must be possible to include labels as part of product templates to enable information common to a range of products containing the same drug to be included in all labels. For example all cisplatin labels would include the information 'store at room temperature' as a storage condition. It must be possible to produce labels in free-text and free format. This must be auditable.	
SPEC.OH.050	It should be possible to define 'extra' labels for certain products to allow for bag labelling or additional warnings for packaging.	

7.14 Paediatric Prescribing

7.14.1 Principles for Paediatric Prescribing

1. Children make up 22% of the total population. Medicines usage is extensive with at least 8% of children on long term medicines and many more receiving short courses of therapy.
2. The prescribing, dispensing and administration (giving) of medicines for children differs to a significant degree from adult practice:
3. Dose of medicines relates to size which, in contrast to adulthood changes rapidly and over a wide range, and dosing also has to take account of altering physical maturity.
4. Choice of dose and formulation and dilutions is thus heavily based on calculations which are open to error. Small errors can have greater impact than in adult practice.
5. Errors or inappropriate adjustment of dosage can be dangerous or can lead to ineffective therapy or avoidable side effects.
6. Medicines are much more often given by others than in adult life and frequently by several carers in different locations, within any given day or week.
7. The evidence basis and general expertise in prescribing and dispensing is significantly less than for adults creating a need for more support during the prescribing process in medicines in children.
8. Information provided to patients, carers and professionals needs to be geared to their particular needs and be communicated to, and available in, all locations of care to support administration of medicines. Locations will be diverse and include, for example schools, social care, early years etc.
9. Where systems support both adult and paediatric prescribing, access to pathways that meet the differing needs of practice must be demonstrably separate and ensure that only appropriate medicines can be prescribed. This means that appropriate formulations, dosing and guidance **MUST** be seamlessly visible/accessible when medicines are being prescribed or administered to children with suitable access controls to ensure that adult pathways are not available inadvertently. The opposite must be true if adult pathways are being accessed.
10. The main features listed for adult systems are equally appropriate for paediatric use with the speciality-specific differences/ additions being detailed below. Whilst many of the features listed are directly required in paediatric practice there are also many that would be beneficial in adult practice. Where this functionality may equally support adult use

e.g. dose rounding - access controls must be in place as above to stop the inadvertent use of an inappropriate pathway.

7.14.2 Speciality Requirements

Paediatric Prescribing		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
SPEC.PP.001	<p>Paediatric prescribing pathways must be separate to adult prescribing pathways unless the patient's age dictates that access to both should be supported.</p> <p>The system should default to a paediatric/neonatal formulary when prescribing for children. The prescriber should not be presented with medicines that are inappropriate for children or doses that are pre-defined for adults.</p> <p>The scheduling of medicines for children should default to administration times that reflect usual sleep and waking patterns.</p>	1
SPEC.PP.002	<p>Elements of a child's record that must be visible or easily accessible at the point of care are similar to those outlined in the general requirements section. Additional requirements include:</p> <ul style="list-style-type: none"> • date of birth; • gestational age, if less than one year; • height and weight. 	1
SPEC.PP.003	<p>Agreed standards for dilutions and strengths for routine products included in drug files for children's prescribing should be aimed for nationally. Systems should support the ability to define these nationally and identify them as being the preferred standard.</p>	1-3
SPEC.PP.004	<p>The system must provide the functionality to enable the creation of multiple prescriptions/views to support the different locations in which a patient may receive medicines to avoid the need to decant medicines into different containers for e.g. home and school. This information must be transferred as part of any supply message to ensure that the receiving pharmacy is aware of the reason for seemingly multiple requests.</p>	3
SPEC.PP.005	<p>The system must facilitate the generation of a record of administration that can support different care settings or record that the administration has happened in different settings, namely ward, theatre, A&E, home, school etc.</p>	1-2

SPEC.PP.006	The system must support the ability to create paediatric-specific care pathways that can be based on national and/or local guidance and can be accessed/utilised in a variety of locations. These should not be available for access in non-paediatric patients and the converse is true for adult pathways according to the age of the patient.	2-3
SPEC.PP.007	The BNFC recommendations for dosing should be the main knowledge source utilised within paediatric prescribing systems.	1
SPEC.PP.008	Access to the BNFC must be supported at all points during the medicines use process to allow for information retrieval of any BNFC content including, for example, side effects, contra-indications etc. Where feasible this should be by an automatic link to a medicine that has already been selected rather than via another menu/tree system.	1
SPEC.PP.009	It must be possible to access nationally agreed guidance on the best drug for certain disorders being treated. This may be accessed on request or may generate as guidance during the prescribing process if an indication has been incorporated. It may also generate guidance if indication-led prescribing routes are being utilised.	2-3
SPEC.PP.010	The ability to record the competence of the child and/or carer(s) to administer medicines must be supported as part of the self administration pathway when defining medicines to be self-administered.	2
SPEC.PP.011	The system should facilitate links to knowledge to support and give guidance in how to deal with baby/toddler protest or resistance in the administration of medicines, and also when this occurs in older children, especially the disabled.	3
SPEC.PP.012	It must be possible to define emergency treatment plans for patients and carers that can be accessed by users or patients/carers in hard copy form or electronically, according to preference.	3
SPEC.PP.013	In the long term the development of access and links to the record for children in social care or educational settings will be required.	3
SPEC.PP.014	The system should facilitate access to information about maternal drug and morbidity information within the limits of patient confidentiality.	3
SPEC.PP.015	The ability to attach guidance on repeat prescribing requirements for unusual drugs or formulations to avoid idiosyncratic or service variation must be available. This should include information on the drug name, formulation, administration details, availability and supplier details. The system must support communication of this information electronically (or in paper format) alone or as part of the discharge process, for GPs and/or community pharmacies.	2

SPEC.PP.016	The ordering of tests should be linked to the prescription of certain medicines (with the ability to define specific paediatric requirements where they differ from adult) - e.g. aminoglycosides - but this should be included as part of the prescribing functionality.	1
SPEC.PP.017	Where a dose/volume is to be prescribed - e.g. for oral liquids both the strength/volume of the parent preparation and the actual dose/volume should be displayed but clearly separated to avoid the need for calculation at the administration or dispensing stage.	1

8 Decision Support

Decision and knowledge support will be the additional tool that adds value to systems by supporting prescribing decisions and safe administration. Decision support must support the user in a variety of ways depending upon the context at the time:

- Users may require self directed access to knowledge sources e.g. BNF or local guidelines;
- There may be passive information/ guidance incorporated into pathways for specific medicines that remind or suggest ways forward;
- There may be background checks on various parameters both demographic and clinical that may suggest altering dose or choice and require attention;
- There may be checks against other medicines prescribed to allow checks for duplication, drug interactions, contraindications etc.;
- There may be absolute conditions that must be adhered to e.g. vincristine only given IV.

Decision support will, for the most part, be similar in all specialties although there will be specific contextual rules that may need to be developed for specific circumstances. Systems must support both the general and specific requirements. All information available within electronic systems must be available to support decision support, be it in the form of visual information or in the design of a specific set of rules.

Systems must be locally flexible to allow for incremental development of different 'rules', as well as utilising third party decision support knowledge databases to manage specific types of checking.

It is important that systems do not 'over-alert' as this will lead to user fatigue and the possible by-pass of important alert information. Guidance rather than alerts is likely to be more appropriate for the majority of support to ensure that alerts are generated only when an action is definitely required.

In summary, decision support should aim to guide prescribers to make the correct prescribing decision for the individual patient and support the safe administration of medicines. It should be managed as far as possible without the use of too many pop-up alerts.

8.1 Decision Support - General Requirements

Decision Support General Requirements		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
DSUP.GEN.001	<p>The system must be able to support access to decision support tools for prescribing, both national (including third party) and local Trust-defined. These should include access to online knowledge sources as well as active/reactive and passive decision support. For example:</p> <ul style="list-style-type: none"> • Library files of Trust formulary information. • British National Formulary (with direct links to the medicine information for the item being prescribed without the need to navigate to get there.) • Prescribing guidelines and policies (local and national). • Specialist clinical web-based modules. • Trust pathology services (including histopathology). • Drug interactions, dose range checks, cumulative dose checks, therapeutic duplication and allergy checking. • Contraindications, drug use in pregnancy and lactation. 	1
DSUP.GEN.002	<p>Alerts should be generated during the action of prescribing but may also fire late, i.e. when other elements of a patient's record alter subsequently, when they should be brought to the attention of the next person entering the patient's record or according to locally defined escalation procedures.</p> <p>When alerts are generated they should occur as soon as possible during the act of prescribing, i.e. they should not be triggered at the final stage of ordering if the initial selection of the medicine could have been a trigger.</p> <p>It must be possible to define a hierarchy for alert escalation if alerts are not acknowledged for different alert types. The hierarchy should operate according to location(s), specialty, user type, acuity of alert and time of the day.</p> <p>With all alerts the possibility of alert fatigue must be taken into account and only those with the highest priority should be triggered routinely. Thresholds should be defined where possible.</p> <p>It must be possible to define alerts that cannot be overridden i.e. life-threatening alerts as in the case of the prescription of intrathecal vinca alkaloids</p> <p>Acknowledgement of all alerts must be required to ensure that escalation is not invoked inappropriately. Reasons should be required if the override is selected. These must be defined locally.</p>	1

	<p>Override and acknowledgement of alerts must be auditable by alert type, user, time of day and location as a minimum.</p> <p>It should be possible to audit the outcome of all such events on a real time basis if required.</p>	
DSUP.GEN.003	<p>Alert fatigue is real concern that will require managing. This should take the form of including guidance and reminders within workflow rather than alerting, where it is feasible to do so. Alerting should be reserved for high level warnings that require an action to assure patient safety.</p> <p>There must also be local flexibility to allow any alerts to be managed according to clinical specialty and grade of staff if required, according to local (Trust level) clinical governance requirements. As part of this it should be possible to allow individual users (with access rights) to require the system to not show them a particular alert again, either 'ever' or within a selected period of time, or for a particular patient or patient group. Where alerts have been 'switched off' full audit details must be available to demonstrate this. This must not be undertaken lightly: it is better to ensure that alerts are few and require action than to suppress something that may have prejudged certain information being available to the prescriber.</p> <p>Alerts which are consistently ignored must be reportable on so that a review may be undertaken, aiding system development.</p>	1
DSUP.GEN.004	The system should allow for feedback to be generated for individual prescribers about their alert override pattern over a period time.	2
DSUP.GEN.005	The system should display information so that the finer details of complex alerts are not always on the screen but there are links to see them if the user wishes to.	1
DSUP.GEN.006	It must be possible for users accessing an individual patient record, with access rights, to view all alerts that have been generated for that patient. This should include details of alerts accepted and overridden and any additional information that has been recorded in association with it.	1
DSUP.GEN.007	New information added to a patients record must re-run decision support, for example when adding a new diagnosis/treatment to the patient record, lab results becoming available, revised height/weight measurements being entered etc., and must check all medicines/treatments for any decision support type that is currently 'live' within the system, e.g. contra-indication checking.	1
DSUP.GEN.008	<p>Decision support must check and supply warning/links to facilitate management of the areas below :-</p> <ul style="list-style-type: none"> • allergy checking; • adverse reaction checking; • intolerance checking; • parameter checking, e.g. renal function, path lab result checking etc. as required by individual medicines; • contra-indication checking; 	1

	<ul style="list-style-type: none"> • dose range checking; • drug interaction checking. <p>For example, if a patient is prescribed a medicine that they have a recorded allergy to, the system should alert the prescriber that the medicine selected may cause a reaction.</p> <p>It is important that these alerts are generated at appropriate points in the process and do not cause unwanted interruption, delays or alert fatigue.</p>	
DSUP.GEN.009	<p>The system should support dose checking against national dosing recommendations (including those for age), with appropriate tolerances or additional rules being allowed where there is flexibility around dosing (e.g. diamorphine 100mg is appropriate for opiate tolerant patients but may not be for opiate naïve patients).</p> <p>Dose calculation must take account of renal function results when these are available.</p> <p>If doses are inappropriate or outside of the parameters then warnings should be generated.</p> <p>There must be the ability to override these warnings.</p>	2
DSUP.GEN.010	<p>It must be possible to keep track of the cumulative doses of certain medicines over a period of time or indefinitely and to generate warnings when a certain dose(s) is reached. In the short term, it must be possible to enter cumulative doses to date as the history will not be available within the system.</p>	1
DSUP.GEN.011	<p>Elderly patients may need reduced doses of certain drugs due to reduced renal/hepatic impairment. The system should support and generate guidance to ensure that prescribers are aware of this requirement and incorporate this into the dose checking requirements as above.</p>	2-3
DSUP.GEN.012	<p>The system should use nationally validated warfarin prescribing programmes to support the prescribing and dose calculation of warfarin using a patient's INRs and indication. The desired INR should be captured as part of the initial prescription for warfarin as should the expected course length.</p> <p>The prescriber should be presented with the most recent INR results, the desired INR and warfarin doses (where available) at the point where the prescribing decision is made for subsequent doses.</p>	1
DSUP.GEN.013	<p>The system should offer guidance on dosage adjustment for patients on different types of dialysis</p>	3
DSUP.GEN.014	<p>The system should support the alerting of interactions of medicines at a nationally agreed alert level, i.e. the clinical significance.</p> <p>If all interactions generated alerts there is concern that alert fatigue will result.</p> <p>Interactions must be graded with only the more serious ones</p>	1

	<p>actually sending alerts to prescribers at the time; however all interactions must be visible if required.</p> <p>It is suggested that there are different grades of alert, with the interactions that are life threatening/absolute being prioritised for alerting to all prescribers. Those that generate options i.e. 'can do this but should also...' should also be highlighted, but should allow over-ride. Others that may be categorised as 'you should know this but probably won't take any action' must be visible to prescribers for reference but should not alert.</p>	
DSUP.GEN.015	The system must support drug interaction checking for medicines prescribed with street drugs, alcohol and smoking.	3
DSUP.GEN.016	<p>Drug-food interactions must also be alerted to, particularly where enteral feeds are being co-prescribed. Where interactions with 'normal' foods may be a problem - for example with monoamine oxidise inhibitors - reminders to warn patients should be present within the prescribing pathways and within the administration pathways to highlight to administration staff.</p> <p>The alerting process should include dieticians if enteral feeds are being given.</p>	2
DSUP.GEN.017	<p>The system must identify and alert to drug-disease and drug-age contraindications, e.g. beta blockers in asthma, aspirin in under-16 year olds etc.</p> <p>It must be possible to override these warnings with reasons for override being recorded.</p>	1
DSUP.GEN.018	<p>In the longer term the system should support the generation of reminders about the excipient content of medicines in the context of the size of the child, maturity, religion, metabolic status (co-morbidity where applicable). Examples quoted include the presence of small quantities of alcohol in inhalers, the presence of blood products and the animal source of the product.</p> <p>The system must also support the generation of alerts should excipients be listed as having caused a previous allergy/intolerance or adverse reactions, where this information is recorded.</p>	3
DSUP.GEN.019	<p>The system should generate reminders to check/counsel about pregnancy when drugs are prescribed to women of child bearing age that could be dangerous to the foetus, e.g. methotrexate.</p> <p>The system must facilitate the selection of medicines for an individual based on their pregnancy status. This should take the form of a warning when new medicines are selected that are not suitable and also alerting when a pregnancy is recorded that there are existing medicines that may be contra-indicated.</p> <p>The information should be supplied and maintained by a third party knowledge database supplier to ensure that it is up-to-date.</p>	2 2 2

DSUP.GEN.020	<p>The system should generate alerts to warn about the prescribing of medicines known to cross into breast milk when patients are recorded as breast feeding.</p> <p>In the longer term the system must also link to the baby's record to duplicate the alert.</p>	2 3
DSUP.GEN.021	The system should warn prescribers if there is therapeutic duplication within the same class of medicine in prescribing, e.g. two statins are prescribed at the same time.	2
DSUP.GEN.022	Specific medicines should only ever be given once in a patient's lifetime, e.g. Streptokinase. The system must generate an alert if a patient has ever received this type of medicine to ensure that it is not given again.	2-3
DSUP.GEN.023	The system should facilitate the suggestion of specific medicine(s) according to patient-listed diagnoses when they have not been prescribed. If a patient is not to be prescribed one of these medicines a reason should be recorded as to why, to ensure similar recommendations are not made again or are deferred until a later date.	2-3
DSUP.GEN.024	The system should recognise the removal or update of diagnoses and automatically review medicines currently prescribed to check that they continue to be required by the patient. Where there anomalies this should be brought to the attention of relevant users the next time the patient medicines record is accessed.	3
DSUP.GEN.025	<p>The system should facilitate the identification of those medicines that need regular blood or other tests to be performed including baseline line monitoring.</p> <p>Reminders as to what tests need to be performed should be generated at the time of prescribing with the option of ordering them at that time (this should be based on existing results and only suggest orders for those that are not available at that time).</p> <p>Reminders should then be generated at pre-defined time intervals when further/follow up tests need to be performed (in any care setting), with similar options available to facilitate the ordering of the tests. Tests should only be prompted for ordering and not automatically ordered by the system.</p> <p>It must be possible to locally or nationally define the tests etc that should be linked to individual medicines, with local customisation of national recommendations being possible.</p>	2
DSUP.GEN.026	<p>The system must support the generation of warnings that the renal or hepatic function is deteriorating in relation to certain medicines - e.g. aminoglycosides - with links to ensure that relevant tests are suggested/ordered, with results being highlighted and brought to the attention of the clinical team if they indicate a problem.</p> <p>The system should check renal and hepatic function and alert to dose adjustments that may be required when there is impairment. Actual doses should be recommended based on the results etc.</p>	2

DSUP.GEN.027	Test results that have been requested as part of monitoring required for medicines should be highlighted to prescribers when the results become available. If the results lie significantly outside normal ranges these must be alerted to, according to locally defined protocols.	2
DSUP.GEN.028	When test results indicate that a medicine will be required suitable links and/ or reminders to prescribers should be supported by the system to ensure that prescribing results. For example, ocular pressure reading and result drives the prescribing.	2-3
DSUP.GEN.029	<p>If a patient has a diagnosis added to his/her record that indicates that they should be given prophylaxis for a related condition, the system should prompt as to whether they need prophylactic medicine prescribing.</p> <p>The system must support the set-up of rules that would support such requirements with conditional branching as necessary e.g. to confirm that a suggested medicine is not contraindicated due to allergy.</p>	3
DSUP.GEN.030	<p>The system should generate reminders to prompt the review/ change of medicine(s) to be given by different routes, e.g. changing IV antibiotics to oral should generate a prompt 24 hrs before the last IV dose and offer recommendation about what oral medicine(s) should be given.</p> <p>The identification of when to utilise this functionality should be determined locally according to the drug, groups of drugs and by specialty or indication.</p>	2
DSUP.GEN.031	<p>The system should facilitate the recommendation and checking of intravenous fluid compatibility for drug/ fluid, fluid/fluid and drug/drug incompatibilities. Guidance recommending compatible combinations and alternatives should be displayed and warnings generated if incompatible combinations are selected.</p> <p>The above should be generated for mixtures going in to the same fluid or when combinations of fluids may be administered via the same IV/ central line.</p>	2
DSUP.GEN.032	<p>A third party database should contain information as to the possible adverse effects (side effects) of a medicine. This should support and alert the prescriber to the identification of possible side effects in individual patients according to test results or the identification if additional therapy is prescribed.</p> <p>Drugs that may generate more serious side effects should remind prescribers what needs to be monitored as they are prescribed.</p>	3
DSUP.GEN.033	More information should be offered to prescribers and people administering a medicine if the medicine is one that is not one that they see prescribed frequently. The system should have the ability to learn what is and what is not prescribed regularly.	3

DSUP.GEN.034	In the future the system must support the use of cytochrome p450 profiling to aid prescribing and the results incorporated into the system. Other pharmacogenetic tests as they become available need to be supported on the system as they become available.	3
DSUP.GEN.035	<p>The system should support the electronic reporting of adverse drug reactions to the MHRA at any point within the system.</p> <p>They should be reported electronically using the patients details on the Yellow Card Scheme layout requires.</p> <p>The system must also support the generation of a prompt to consider generating a report if a drug is discontinued with the reason stated as being 'adverse effect'. In particular, this should prompt for reports to be sent for reactions to new medicines (black triangle) and all adverse reactions in children under the age of 18 years. Established medicines should generate a lesser reminder suggesting that 'serious' reactions should be reported.</p> <p>Further technical details to facilitate this requirement will be produced jointly by the MHRA and NHS CFH to facilitate this requirement.</p>	2
DSUP.GEN.036	The system should remind prescribers of routes that may not be recommended for individuals due to specific concurrent conditions, e.g. IM (Intramuscular) injection in a patient with haemophilia	3
DSUP.GEN.037	The system should alert users to relevant non-clinical information about the patient that may impact on medicines prescribing or administration, e.g. language problems, poor IV access, anxiety etc.	3
DSUP.GEN.038	The system should facilitate access to specialist knowledge whether it is held at local, remote Trust or national level. It must be possible to define sources to be accessed at a local as well as national level.	1
DSUP.GEN.039	The system should facilitate and display information to support dose conversions for one drug to another. It should suggest equivalent doses of different preparations for drugs such as opiate and steroids	2-3
DSUP.GEN.040	<p>The system should support the calculation of cardio vascular risk factors so that these can be used to outline which locally defined medicines may be considered for individual patients.</p> <p>In future these should be calculated automatically and reminders presented to prescribers.</p>	3

DSUP.GEN.041	<p>For patients on IV aminophylline, vancomycin and other drugs with a narrow therapeutic index that require individual dosing, decision support should provide dosage guidance and prompts reminding when drug levels are to be taken. Drug level ordering should also be facilitated, i.e. it can be ordered as part of the prescribing process. The ordering of the blood test should include the time that the sample should be taken in relation to a dose and prompt an alert within the administration pathway to act as a reminder to ensure that administration and blood sampling are staged accordingly.</p> <p>When the drug levels come back the display of further guidance on what to do must be supported and/or information on who to contact for further advice. It must also be possible to generate specific escalating alerts for review of results by named individuals that may vary according to time of day/week, by medicine and/or location according to local policy.</p> <p>The system should also offer guidance on the conversion of IV aminophylline to oral theophylline</p>	2
DSUP.GEN.042	<p>The system must automatically identify and generate reminders about patients that require regular sight tests due to the medicine that they are taking.</p> <p>It should also specify what specific eye tests are needed</p>	3
DSUP.GEN.043	<p>It must be possible to check algorithms used in the system at regular intervals so that parameters can be adjusted as necessary to meet changes in practice etc.</p>	1
DSUP.GEN.044	<p>When links to knowledge sources are utilised to view additional information this could be linked to individual user's CPD (continuous professional development) records so they have a record of activity undertaken. This may take the form of the production of a report that users can choose how to utilise.</p> <p>The system could also support the use of learning packages.</p>	3
DSUP.GEN.045	<p>The system should be sufficiently flexible to support local development of competence. For example, when the number of alerts for an individual is high reports should be generated to indicate that there may be an educational requirement. Equally if the number of alerts or over-rides reduces, certain constraints such as those around non-formulary access, may be lifted as competence may have been demonstrated.</p>	3

8.2 Paediatric Decision Support Requirements

Paediatric Decision Support Requirements		
Ref	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
DSUP.P.001	<p>The system must support guidance for paediatric dosage based on the most appropriate method for the medicine concerned. This will include :</p> <ul style="list-style-type: none"> weight (but with the facility for height record and surface area calculation); age (may be based on maturity based in gestational age or other specific age calculations); <p>There must also be checks to ensure that:</p> <ul style="list-style-type: none"> both height and weight entries are up-to-date with warnings during the prescribing process when they are not; weight is presented against population percentile charts to identify outliers (including automatic alerts if more than 2 standard deviations outside with automatic highlighting if acknowledged to switch off future alerts); warnings should vary in frequency according to the likely change in height and/or weight according to the age of the child; entries should be checked against national average age - weight and height charts as a double check; access to national population data for age/ weight ranges to meet the contingency should weight not be immediately available. <p>Where dose has been calculated the method of calculation should be displayed, e.g. mg per kg.</p> <p>There must be maximum recommended doses in place so that obese children do not receive higher doses than adults</p>	1
DSUP.P.002	<p>The system must support dose calculation and checking, with reminders and warnings, against size, maturity and renal/ hepatic status when such information is available. If there is no information available to perform a check users must be made aware of the lack of support.</p>	2
DSUP.P.003	<p>No manual calculation should be required once a dose has been displayed and accepted</p>	1

DSUP.P.004	The system should prompt users to review/change dosages when a patient's record is next accessed for prescribing after significant weight changes/updates have been made to records.	1
DSUP.P.005	It must be possible to pre-populate doses/volumes for prescriptions within specific pathways according to age etc., for example for resuscitation drugs.	1-2
DSUP.P.006	The system must have drug-drug and drug-food interaction alerts, with the ability to tailor locally according to specialty, role and location.	1
DSUP.P.007	Therapeutic duplication reminders and alerts (as per main decision support section) should be generated that are specific for paediatrics.	2-3
DSUP.P.008	A full choice of locally (Trust level), routinely available individual medicine forms/formulations should be displayed for the prescriber to select from with the flexibility to locally configure those which may be substituted for alternative use during administration, e.g. tabs or syrup may be utilised for certain medicines without the need to rewrite the prescription. It must be possible to define these as being available for paediatric use only, i.e. so they are not visible within adult prescribing/administration pathways.	1-2
DSUP.P.009	The priority within the list of formulations available for choice should be based on the acceptability, palatability and convenience to a specific group or individual patient based on local requirements.	2
DSUP.P.010	The system must be sufficiently flexible to allow for paediatric-specific patient/carer information materials to be available in a variety of formats, including on-line, different languages etc with the ability to utilise either national or local (Trust, Network or regional) information within them or for them and/or to tailor locally (Trust level) for: <ul style="list-style-type: none"> • individual medicines; • specific conditions; • advice on how and when to give medicines; • information about license status and what this means; • side effects; • local (Trust) contact advice. 	3
DSUP.P.011	The system should facilitate reminders to the prescriber of the need for, and the calculation of, a loading dose in those medicines that require them.	2
DSUP.P.012	The system should support IV fluid calculators to manage fluid volume according to age, weight and restrictions (if in place).	1

9 Appendix I – Overarching Principles and Requirements

The majority of the entries below will be covered in technical requirements documents produced by NPfIT. They are listed here for completeness and to reinforce the importance that is attached to them by system users.

Ref.	Description	Delivery Priority
Delivery Priority 1 = Essential 2 = Desirable and would be anticipated as being available in the near future 3 = Desirable in the longer term		
1	<p>The system must provide comprehensive facilities to support electronic prescribing (and desirably all treatment), medicines administration and dispensing (or links to) activities, including dispensing worksheets, treatment/patient labels, dispensing and storage details.</p> <p>The system must allow for all verification procedures and ensure compliance with MHRA guidelines and legal requirements, as within the Medicines Act and the Misuse of Drugs Act.</p> <p>It must also facilitate safe and risk adverse systems of work, and support work towards paperless/ reduced paper systems.</p> <p>Scheduling of treatment and medicines administration must be provided to improve work flow and to maximise resources available.</p> <p>Stock management and costs/charging functionality is required, whether as separate from or interfaced to a pharmacy system.</p> <p>Access to the system must comply with all NPfIT security requirements and with full audit processes. Other NPfIT requirements in terms of data and message structure, system back-up and support requirements as well as ongoing definitions and developments must also be complied with to ensure that the system meets current compliance requirements.</p>	1
2	The system must be user friendly, fast and efficient and function in real time.	1
3	Access to patients' current medicines-related information must be available at all times.	1
4	All access to the system by any user must be password protected.	1
5	In the future the system could have higher levels of security access and could use photo access or finger print or Iris scan identification.	3
6	<p>Extensive training programmes need to be undertaken in each organisation so that all users can use the system effectively and be kept updated. Ongoing resource will be required to ensure that systems are adequately supported and developed.</p> <p>There must be a 24 hour help and back-up service available with robust downtime procedures to ensure that medicine prescribing and administration and information about current prescriptions can continue as safely as possible.</p>	1

7	Access for prescribers working in certain areas must be role based and updated regularly, e.g. paediatrics/ ITU/ oncology.	1
8	ePrescribing systems should be made available and incorporated into undergraduate and post graduate training programmes for all healthcare professionals.	1
9	Access must be readily available in all areas and the use of wireless access utilised where possible, including in all care settings.	1
10	Results should be presented in different formats - e.g. bar chart graphs etc. - depending on the user's choice.	2
11	Systems must be regularly updated to meet policy, process and equipment changes as well as legal requirements.	1
12	All actions performed in the system must be date-, time- and user-stamped and be auditable for reporting purposes.	1
13	The system should link with other services outside the hospital, e.g. GPs, prisons, schools, social services etc.	2
14	Alerts on the system need to be tailored so they are visual or audible depending on the users' preference.	3
15	In the future voice recognition could be used to speed up prescribing or the putting of notes onto the system.	3
16	It must be possible for more than one user to view a patient's medicines list at any one time. It must <i>not</i> be possible for more than one user to update the active medicines list at the same time.	1
17	The system must be kept regularly updated so that when new drugs are approved for use in the hospital they are put promptly onto the system. If these items are only to be prescribed by limited prescribers then the system should highlight this.	1
18	Each system must identify who is responsible for the information that drives the decision support and its continual update.	1
19	The system must be sufficiently flexible to enable full reporting for both clinical and management requirements with both bespoke reports being available as well as the tools to locally tailor data output The system must support the facility to create reports either from templates or <i>ad hoc</i> using a report writer, using a data dictionary and any field. It must be possible to save template reports for multiple or single user use. Reporting must be achievable by non-IT qualified staff and must not be technically onerous, i.e. report generation must be possible without the need to attend programming courses or training greater than one day. Examples that must be supplied include activity reports on any medication related activity, financial reports on drug usage down to the individual patient level and to identify all patients on particular medication for audit or monitoring purposes. Other requirements are outlined within the overall document.	1

20	The execution of reports must not prevent continued use of the system from the PC on which the report is being generated nor cause any loss of system response times.	1
21	It must be possible to execute report functions in batch and at pre-determined times. For example to run weekly reports overnight on a specified day.	1
22	It must be possible to view and print report summary statistics (file size, parameters etc) and select print options from a menu, including numbers of copies and the option not to run and not to print reports. It must also be possible to export data to common desk top packages.	1
23	It must be possible to produce comparative data reports, trends and projections reports utilising graphing if required. It must be possible to locally define and generate reports relating to diagnosis, treatment types, outcomes etc. using all data fields to support clinical care and/ or audit and/ or research.	1
24	Should downtime occur there must be pre-worked up methods for facilitating the update of patients' medicines records once the system becomes available again.	1

10 Appendix II – List of Respondents

Reviewer	Role	Organisation
Adrian King	Senior Project Manager	Humber Mental Health Trust
Alan Pollard	Chief Pharmacist	Worcestershire Mental Health Partnership NHS Trust
Andrea Galimberti	Consultant Obstetrician and Gynaecologist	Royal Hallamshire Hospital
Andrew Berrington	Consultant Microbiologist	City Hospitals Sunderland
Andrew Elliott	Senior Software Developer	Ascribe
Andrew Gledhill	Pharmacy IT Manager	Rochdale Infirmary
Andrew Hart	Head of Information Technology	City Hospitals Sunderland
Andrew Simmons	Product Specialist - Pharmacy	Ascribe
Andy Li	Consultant Gastroenterologist	Worthing & Southlands Hospital NHS Trust
Association of Nurse Prescribers		
Bianca Levovich	Intensive Care Consultant	Royal Brompton and Harefield NHS Trust
Bill Glendinning	Clinical Director of Pharmacy	North Cumbria Acute Hospitals NHS Trust
Bill Purvis	Clinical Projects Lead	South of Tyne and Wearside
Brian Power	Pharmacist	Wirral Hospital Trust
British Association of Dermatologists		
British Association of Perinatal Medicine		
British Medical Association (BMA)		
British National Formulary (BNF)		
British Pharmacological Society		
Bryne Kent	Projects Manager	Life Healthcare
Bryony Dean Franklin	Professional Manager Pharmacy Clinical Services & Director	Academic Pharmacy Unit Hammersmith Hospitals NHS Trust
Calum Polwart	Lead Pharmacist Cancer Services	Cancer Care Alliance Pharmacist Group
Carol Paeglis	Clinical Support Specialist	LSA Midwifery Officer
Caroline Osborne	Principal Oncology Pharmacist	Alder Hey, Royal Liverpool Children's Hospital
Cerner		NHS Account, Fujitsu Services
Chemotherapy Nursing Staff		Cheltenham General Hospital
Christine Booth	EPMA Project Pharmacist	Great Ormond Street
College of Mental Health Pharmacists		

College of Occupational Therapists		
David Slovick	Consultant Physician	Ealing Hospital
Debra Walker	Pharmacy Computer Manager	Pharmacy Practice Unit, Liverpool PCT
Dr Anubha Bajaj		International
Dr Ruth Palmer	Consultant Microbiologist	Blackpool, Fylde & Wyre Hospital NHS Trust
Edwina Wooler	Nurse	Brighton and Sussex University Hospital NHS Trust
Gail Foreshew	Pharmacist	Nottingham University Hospitals
Graham Alexander	Non-Medical Prescribing Lead	Worcestershire Mental Health Partnership NHS Trust
Graham Moule	Customer Services Manager	JAC Computer Services Ltd
Graham Parton	Chair UK Psychiatric Pharmacy Group	Avon & Wiltshire Mental Health Partnership NHS Trust
Great Ormond Street		
Guy Dickie	Programme Manager	NHS CFH ePrescribing Team
Harriet Brown	Pharmacist	Greater Midlands Cancer Network Pharmacist
Helen Hurst	Nurse	Manchester Royal Infirmary
Helen Simpson	Consultant Obstetrician	South Tees Hospitals NHS Trust)
Inderjit Singh	Pharmacy Director	University Hospitals Birmingham
Jane Wilson	Pharmacist	Bolton Salford and Trafford Mental Health Trust
Jeremy Proctor	Pharmacist	North East Healthcare NHS Trust
Judy Bulter	Nurse	South Tees NHS Trust
Julie James	Pharmacist	Bluewater Informatic
Julie Randall	Pharmacist	Hull and East Yorkshire Hospital
Karen Flynn	Project Manager	Life Healthcare
Karen Law	Nurse	ANP Older Peoples Link
Kevin Morris	Consultant Neurosurgeon	Hull Royal Infirmary
Lesley Longman	Consultant Restorative Dentist	Liverpool University Dental Hospital & British Dental Association
Louise Winstanley	Pharmacist	Central Lancashire PCT
Lyndon Taylor	Optometrist	Association of Optometrists
Malcolm Duncan	Healthcare Informaticist	FD BE
Mary Tully	Clinical Senior Pharmacist	University Of Manchester
Matthew Grove	Consultant Rheumatologist	Northumbria Healthcare Foundation Trust
MHPRA		
Michelle Sie	Lead Pharmacist Mental Health	Charing Cross Hospital, Mental Health
Neil Kirby	Pharmacist	Hope Hospital.

NHS CFH Common User Interface Team		
Niall Poole	Electronic Prescribing Project Manager	Heart of England NHS Foundation Trust
Nick Barber	Professor of Pharmacy Practice	University of London School of Pharmacy
Onye Chigbu	Product Manager – Prescribing and Medicines Management	GE Healthcare Integrated IT Solutions
Paul Altman	Consultant Nephrologist	Oxford Kidney Unit, Oxford Radcliffe Hospitals
Paul Frosdick	Senior Clinical Pharmacist	NHS CFH
Paul Gimson	Pharmacist	Royal Pharmaceutical Society of Great Britain
Paul Maltby	Pharmacist	Royal Liverpool University Hospital
Paul Robinson	Medicines, Industry and Pharmacy Lead	Department of Health
Pauline Sweetman	Business Process Lead for the Southern Cluster.	NHS CFH London, Prescribing & Medicines Management
Peter Austin	Senior Pharmacist	Southampton General Hospital
Peter Fletcher	Consultant Anaesthetist	Hinchingbrooke Health Care NHS Trust
Peter King	Clinical Business Analyst	Mersey Care NHS Trust
Peter Whitfield	IT Solutions Business Development and Product Manager	Siemens
Rak Patel	Consultant Anaesthetist	ELHT Blackburn
Richard Hillier	Consultant Psychiatrist	Lincolnshire Partnership NHS Trust
Richard Warren	Honorary Secretary	Royal College of Obstetricians and Gynaecologists
Richard Wight	Associate MD	South Tees NHS Trust
Royal College of Anaesthetists		
Royal College of Obstetricians and Gynaecologists		
Royal College of Physicians, and the Information Sub-Committee of the British Society of Gastroenterology		
Royal Liverpool Children's Hospital - Alder Hey		
Royal Pharmaceutical Society of Great Britain		
Russell Hill	Chief Pharmacist	Central and North West London Mental Health NHS Trust
Sam Sibeko	Senior Business Analyst	NHS CFH ePrescribing Team
Sarah Parker	NHS CFH CUI Team	Microsoft
Sharon Bradwell	Pharmacy Technician	Sheffield Care Trust
Sharon Carr	Brent Rehab Service	Willesden Centre for Health and Care
Sharon Humphreys	Consultant Psychiatrist	West London Mental Health Trust

Simon Clark	Consultant Neonatologist	NHS - Jessop Wing
Society and College of Radiographers		
Stephen Earwicker	General Practitioner	Broxtowe and Hucknall PCT
Stephen Goundrey-Smith	IT Consultant	SGS PharmaSolutions
Stephen Grainger	Consultant Physician/Gastro	BHR Hospitals Trust & BSG IT Committee
Stephen Langford	Pharmacist	University Hospital of North Staffordshire
Stephen Sturgiss	Obstetrician	Royal Victoria Infirmary
Steve Reggione	Customer Services Supervisor	JAC Computer Services Ltd
Sue Howgate	Nurse	Bradford PCT
Tim Hills	Senior Pharmacist Microbiology and Infection Control	Queen's Medical Centre
Tim Llewelin	IT Manager	Cheltenham General Hospital
Tony Cornford	Senior Lecturer	London School of Economics
Tony Dunne	Anaesthetics Pharmacist	Critical Care Directorate
UK Clinical Pharmacy Association & the Guild of Hospital Pharmacists		
Will Willson	Principle Pharmacist	Addenbrooke Hospital
Yinka Makinde	Clinical Risk Advisor	Accenture