

Design Guidance

Micro Patient Banner

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Prepared by
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PREFACE

Documents replaced by this document

Document Title	Version
Design Guidance – Micro Patient Banner	1.0.0.0

Documents to be read in conjunction with this document

Document Title	Version
Design Guidance – Patient Banner	4.0.0.0
Design Guidance – Patient Name Input and Display	2.0.0.0
Design Guidance – Date Display	3.0.0.0
Design Guidance – Sex and Current Gender Input and Display	2.0.0.0
Design Guidance – Time Display	3.0.0.0
Design Guidance – Patient Identification Number Input and Display	2.0.0.0
Design Guidance – Address Input and Display	2.0.0.0
Design Guidance – Accessibility Principles	1.0.0.0
Design Guidance – Accessibility Checklist	1.0.0.0

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1 INTRODUCTION

This document provides guidance for the design of a Micro Patient Banner (MPB). It describes the area of focus, lists mandatory and recommended guidance points with usage examples and explains the rationale behind the guidance.

The term 'patient banner' (PAB) refers to the area of the user interface that contains demographic information for a patient record. The patient banner is the area within the user interface that is most often used to match records with patients and contains key information for identifying patients, such as name, address, date of birth, and patient identification number. This information may be matched with that provided by the patient (or a third party, such as a parent), usually in their presence or over the telephone. Information in a patient banner may also be matched with that in any of the patient's associated artefacts, such as samples, letters, specimens, wristbands and X-rays.

The Micro Patient Banner is a patient banner designed for small screen, hand-held devices such as Personal Digital Assistants (PDAs). Its purpose is to display patient demographic information for the patient whose record is currently being viewed on the PDA, so that healthcare staff can ensure the correct patient is identified and the correct record is displayed, as shown in Figure 1:

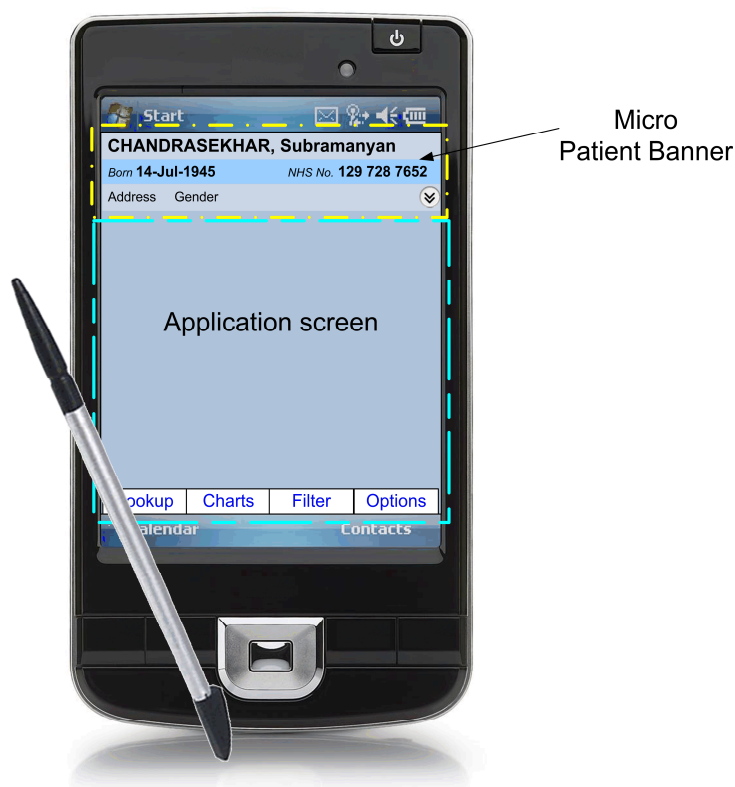


Figure 1: A Micro Patient Banner Displayed on a PDA

Note

Existing Microsoft Health Common User Interface (CUI) guidance on the full-screen Patient Banner is targeted at desktop monitors. Its title is *Design Guidance – Patient Banner {R1}*.

Important

The visual representations used within this document to display the guidance are illustrative only. Stylistic choices, unless otherwise specified, are not part of the guidance and are therefore not mandatory requirements for compliance with the guidance in this document.

Table 1 describes the changes made since the previous version of this guidance (Baseline version 1.0.0.0 dated 26-Aug-2008):

Change	IDs	Change Description
Deleted		None
Modified		Enhanced out of scope context setting (section 1.2.2)
		Enhanced illustrations context setting (section2)
		Length of name changed from 40 to 35 characters in Rationale (section 3.3.2)
Added		None

Table 1: Changes Since the Last Baseline Version

1.1 Customer Need

Although there are no accurate figures on the frequency or cost of mismatching errors, they form a significant part of the whole range of errors in healthcare. These mismatches can occur between a patient, their record, laboratory results and, in the case of inpatients, their wristband. Whilst the wide variation in wristbands has now been addressed by a standard¹, there is considerable variation in patient banner layout across applications, which has already been the subject of guidance {R1}. When errors do occur, they are typically one of three main types²:

1. The patient is given the wrong treatment due to failure to identify the patient correctly
2. The patient is given the wrong treatment as a result of a failure to match the patient correctly with samples, specimens or X-rays
3. The patient is given the wrong treatment as a result of a failure in communication between staff, or due to staff not performing checking procedures correctly

Accurate patient identification is emphasised by the World Health Organization (WHO) publication on *Patient Safety Solutions*³ and by the Joint Commission⁴ both of whom provide guidance on how to improve patient identification.

Handheld computers, that is PDAs, are increasingly being used by healthcare staff. For a list of the many uses to which they are being applied in a health care setting, refer to *Handheld Computers* {R6}. For details of adoption rates, refer to *Who's Using PDAs?*⁵

This Micro Patient Banner design guidance is restricted to PDA usage and aims to:

- Ensure patients are correctly identified and matched with their patient record and wristband {R2} by displaying data items consistently
- Allow quick access to and display of other summary information for a patient (such as the address)

Significant inconsistencies exist across existing micro patient banners used in PDA-based clinical applications displaying patient information. This has a large but unquantifiable cost in terms of

¹ Standardising wristbands improves patient safety, UK National Patient Safety Agency (NPSA) Safer Practice Notice {R2}: <http://www.npsa.nhs.uk/EasySiteWeb/GatewayLink.aspx?allid=5346>

² Right patient - right care, NPSA {R3}: <http://www.npsa.nhs.uk/EasySiteWeb/GatewayLink.aspx?allid=3234>

³ Patient Identification – Patient Safety Solutions {R4}: <http://www.jcipatientsafety.org/fpdf/Presskit/PS-Solution2.pdf>

⁴ National Patient Safety Goals {R5}: http://www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals/08_npsg_facts.htm

⁵ Who's Using PDAs? Estimates of PDA Use by Health Care Providers: A Systematic Review of Surveys {R7}: <http://www.jmir.org/2006/2/e7/>

incorrect identification of patients, leading to safety issues and, potentially, additional staff training. Reduction of inconsistency is therefore an important goal in itself. Finally, having a consistent, agreed layout for micro patient banners in clinical systems makes the design and development of such systems easier and quicker.

1.2 Scope

The guidance in this document informs the design of a patient-safe micro patient banner to support one task, namely patient identification. This section details the items that are in scope, and those that are out of scope, with respect to this guidance.

1.2.1 In Scope

This guidance is applicable to User Interfaces (UIs) such as those displayed on hand-held devices, also known as PDAs. These devices are characterised by a small display screen size, typically quoted by manufacturers as about 4 inches (that is, approximately 10 centimetres) in diagonal. It is assumed that, as a minimum, these devices are capable of operating at a display resolution greater than or equal to 240 x 320 pixels, but less than 1024 x 768 pixels, and have a pointing device such as a stylus.

This guidance informs the design of demographic information displays to support the identification of a single patient, safely and accurately. It is applicable for all care settings. This guidance was developed primarily to support the work of the following healthcare staff as these are especially likely not to have a previous relation with the patient. Additionally, they are the most likely users of a hand-held device such as a PDA (this guidance is not limited to these roles):

1. Inpatient doctor
2. Night nurse practitioner
3. Out of hours clinician
4. First response paramedic
5. District nurse
6. Bank nurse

1.2.2 Out of Scope

This section defines areas that are not covered in this guidance. Although there may be specific risks associated with these areas that are not addressed in this guidance, it is likely that the principles in this guidance will extend to micro patient banner aspects in many of the areas listed below.

The following items are out of scope:

- The display of clinical information
- The modification of demographic information
- The display of information for more than one patient at a time
- Information governance, security and confidentiality
- The following form factors: wall-mounted screens, whiteboards, projected images, desktop monitors, Tablet PCs, telephones, and Smartphones
- Displaying alerts in an MPB
- Displaying an MPB in a pop-up window

- Multi-language applications that use right-to-left writing (such as Arabic), the Cyrillic alphabet (such as Russian), or ideograms (such as Japanese)
- Display styles such as the choice of font size, background and foreground text colour that can affect the readability of information in the MPB, as with all other displayed text
- Bar code representations (such as a patient identification number in the form of a bar code)

Note

Listing an item as out of scope does not classify it as unimportant. Project time and resource constraints inevitably restrict what can be in scope for a particular release. It is possible that items out of scope for this release may be considered for a future release.

1.3 Assumptions

ID	Assumption
A1	Existing guidance on the Patient Banner {R1} is targeted at desktop monitors and is an important reference document but is not automatically applicable to the MPB
A2	The 'log in' dialogue is out of scope and users are assumed to have logged in successfully to the application running on the PDA in order to view the patient record and MPB
A3	All aspects relating to security, privacy and data protection are out of scope of the MPB work
A4	A MPB is not to be used within a Patient List, but is displayed after a single patient has been selected from a Patient List
A5	Whilst the MPB has not been designed for use by patients, healthcare staff may at their discretion, show an MPB to patients
A6	This guidance is equally applicable on devices used in portrait and in landscape display modes

Table 2: Assumptions

1.4 Dependencies

ID	Dependency
D1	Changes to any of the documents listed in the References section in this guidance document
D2	The display of dates must conform to the guidance for Date Display {R8}
D3	The display of age must conform to the guidance for Time Display {R9}
D4	The display of name must conform to the guidance for Patient Name Display {R10}
D5	The display of gender must conform to the guidance for Gender and Sex Display {R11}
D6	The display of patient identification number must conform to the guidance for Patient Identification Number Display {R12}
D7	The display of addresses must conform to the guidance for Address Display {R13}
D8	The design of clinical applications must conform to the accessibility guidance {R14, R15}

Table 3: Dependencies

2 MICRO PATIENT BANNER GUIDANCE OVERVIEW

Important

The visual representations used within this document to display the guidance are illustrative only. They are simplified in order to support understanding of the guidance points. Stylistic choices, such as colours, fonts or icons are not part of the guidance and unless otherwise specified are not mandatory requirements for compliance with the guidance in this document.

2.1 Summary of Guidance

Reference	Section	Description
MPB-0001	3.3.1	A Micro Patient Banner always consists of one zone, referred to in this guidance as Zone 1, and may optionally also contain an additional zone, Zone 2
MPB-0002	3.3.1	Display of Zone 2 is optional
MPB-0003	3.3.1	Display information that facilitates patient identification in Zone 1
MPB-0004	3.3.1	Display supplementary information that may support patient identification in Zone 2
MPB-0005	3.3.1	Do not display any clinical information in a Micro Patient Banner
MPB-0006	3.3.1	In the default display of a Micro Patient Banner, show Zone 1; if Zone 2 is to be displayed in this default state, show Zone 2 in the collapsed state
MPB-0007	3.3.1	Provide visual indication that information is occluded, while Zone 2 is expanded, if appropriate
MPB-0008	3.3.1	A Micro Patient Banner will only support data display, not data input
MPB-0009	3.3.2	Display a Micro Patient Banner at the top of the screen
MPB-0010	3.3.2	Display a Micro Patient Banner horizontally rather than vertically
MPB-0011	3.3.2	Display a Micro Patient Banner in a fixed position, unmovable by the user
MPB-0012	3.3.2	Display a Micro Patient Banner so that it occupies the full width of the application window
MPB-0013	3.3.2	Do not obscure a Micro Patient Banner with other elements of the screen
MPB-0014	3.3.2	Apply visual styling to a Micro Patient Banner (such as a thick border or distinguishing background colour) in contrast to other elements of the application's user interface
MPB-0015	3.3.2	Do not display a Micro Patient Banner on screens that contain information relating to more than one patient
MPB-0016	3.3.2	Do not display a Micro Patient Banner in or alongside a Patient List
MPB-0017	3.3.3	Always display the patient's name (family name and given name), date of birth, and patient identification number in a Micro Patient Banner
MPB-0018	3.3.3	An MPB may optionally display the patient's title
MPB-0019	3.3.3	An MPB may optionally display the patient's age
MPB-0020	3.3.3	Do not display the patient's location (such as ward and bed), in an MPB
MPB-0021	3.3.3	For a deceased patient, an MPB additionally displays the date of death and age at death
MPB-0022	3.3.3	If an individual data item is not known or is otherwise unavailable, appropriate self-explanatory text or a blank string (but not a '?'), are to be displayed immediately after the corresponding data label
MPB-0023	3.3.3	Display the preferred name if available
MPB-0024	3.3.3	Do not display the patient's photograph in a MPB
MPB-0025	3.3.4	Display the elements of the patient name, date of birth and patient identification number in Zone 1

Reference	Section	Description
MPB-0026	3.3.4	Where the age of a living patient is being displayed, display the age in Zone 1
MPB-0027	3.3.4	For a deceased patient, display the date of death and the age at death in Zone 1
MPB-0028	3.3.4	Display the full address (including the postcode) and gender in the expanded Zone 2
MPB-0029	3.3.4	In the expanded Zone 2, precede the full address with the label 'Usual address' or 'Temporary address' as appropriate
MPB-0030	3.3.4	In the expanded Zone 2, provide a means to access all addresses available in the record
MPB-0031	3.3.5	Precede the date of birth with the label 'Born'
MPB-0032	3.3.5	When displaying the age use only two abbreviated units, a lower and an upper unit, without any intermediate units (as described in the rationale)
MPB-0033	3.3.5	Precede the gender with the label 'Gender'
MPB-0034	3.3.5	Display the gender value in full (that is, do not display the gender value using a symbol, icon, pictogram or a textual abbreviation)
MPB-0035	3.3.5	Precede the patient identification number with an appropriate label, for example, 'NHS No.'
MPB-0036	3.3.5	Precede the preferred name with the label 'Preferred name'
MPB-0037	3.3.5	Precede the date of death with the label 'Died'
MPB-0038	3.3.5	Precede the age at death with the label 'Age at Death'
MPB-0039	3.3.5	Do not add a colon after the label text
MPB-0040	3.3.5	Do not include unnecessary punctuation in a label
MPB-0041	3.3.5	Display labels in the style given to label text
MPB-0042	3.3.5	Display values in the style given to data text
MPB-0043	3.3.5	Use text styles for labels and for values so that more visual emphasis is given to the value text relative to the label text
MPB-0044	3.3.5	For each label in Zone 1, provide a definition and a means to access the definition (for example, by a tooltip)
MPB-0045	3.3.5	Provide a means to inform the user that gender should only be used to identify and address the patient correctly, not for clinical judgements
MPB-0046	3.3.5	Provide a means to access the record for all data items in Zone 1 and Zone 2
MPB-0047	3.3.5	Provide a means to enable users to adjust font properties for all text displayed in a Micro Patient Banner, particularly the font family, size and colour
MPB-0048	3.3.6	Display the patient name elements and title, in the following order: family name, given name, title
MPB-0049	3.3.6	Do not include labels for the patient name elements and title
MPB-0050	3.3.6	Display a comma after the family name
MPB-0051	3.3.6	Display the title in parentheses, omitting the parentheses if the title is not being displayed
MPB-0052	3.3.6	Display the patient's family name in upper case and the patient's given name and title in title case
MPB-0053	3.3.6	Display the patient's preferred name, if available, immediately below the family name
MPB-0054	3.3.6	Display the family name and the given name in full (that is, without truncation), splitting across lines if absolutely necessary
MPB-0055	3.3.7	For a deceased patient, use a background area for Zone 1 in which both the colour and the pattern are substantially different from those used for a living patient

Reference	Section	Description
MPB-0056	3.3.7	The choice of both background colour and pattern must be such as to differentiate a Micro Patient Banner of a deceased patient from that of a living patient
MPB-0057	3.3.7	Display the date of death along with its label
MPB-0058	3.3.7	Display the date of death below the date of birth
MPB-0059	3.3.7	Display the age at death, preceded by its label, immediately after the date of death
MPB-0060	3.3.7	Display the age at death without parentheses
MPB-0061	3.3.8	Display the patient's preferred name (if available) immediately below the given name, with both items left-aligned
MPB-0062	3.3.8	When a patient's preferred name is not available, the patient's name must be centred vertically and left-aligned in Zone 1
MPB-0063	3.3.8	For a deceased patient, display the date of death and age at death labels and values in that order, immediately below the label corresponding to the date of birth. Left-align both date labels

Table 4: Summary of Guidance

3 MICRO PATIENT BANNER GUIDANCE DETAILS

3.1 Introduction

The guidance provided in this document is based upon a programme of research, including:

- A Web based survey of clinicians and administrative staff covering a range of patient identification issues
- One-to-one interviews with a range of healthcare professionals
- A plenary discussion with members of a design steering group for a large clinical system

Note

The guidance and examples within this document are based on the requirements for the National Health Service (NHS) within the UK. When applying this guidance, you should consider how your clinical application will need to handle information, such as patient identification numbers (shown with the label 'NHS No.' in the images in this guidance), within the country of use.

3.2 Principles

The following key principles have shaped the guidance in this document:

- Reliable and accurate identification of an individual patient record
- Matching a patient record with:
 - The correct patient, whether present in person or by phone
 - Other artefacts associated with the patient, for example, samples, letters, or wristbands
- Displaying core information according to existing standards and guidance and using a minimum data set available to clinical applications
- Promoting consistency across the mix of users, clinical applications and care settings
- Displaying minimum supplementary information to support patient identification
- Minimising opportunities for human error

3.3 Guidelines

3.3.1 Guidance – Structure and Composition

ID	Description	Conformance	Evidence Rating
MPB-0001	A Micro Patient Banner always consists of one zone, referred to in this guidance as Zone 1, and may optionally also contain an additional zone, Zone 2	Mandatory	High
MPB-0002	Display of Zone 2 is optional	Mandatory	Medium
MPB-0003	Display information that facilitates patient identification in Zone 1	Mandatory	High
MPB-0004	Display supplementary information that may support patient identification in Zone 2	Mandatory	Medium
MPB-0005	Do not display any clinical information in a Micro Patient Banner	Mandatory	High
MPB-0006	In the default display of a Micro Patient Banner, show Zone 1; if Zone 2 is to be displayed in this default state, show Zone 2 in the collapsed state	Mandatory	High
MPB-0007	Provide visual indication that information is occluded, while Zone 2 is expanded, if appropriate	Recommended	Medium
MPB-0008	A Micro Patient Banner will only support data display, not data input	Mandatory	Medium

Usage Examples

CHANDRASEKHAR, Subramanyan

Born 14-Jul-1945

NHS No. 129 728 7652

In this correct example showing Zone 1, all required elements are displayed. They are also positioned in the correct order, and are labelled correctly.

CHANDRASEKHAR, Subramanyan

Born 14-Jul-1945

NHS No. 129 728 7652

Address

Gender

Zone 1

Zone 2

In this correct example, Zone 1 is shown, along with Zone 2 in the default collapsed state. Menu items for access to supplementary information, namely address and gender, are displayed in Zone 2.

CHANDRASEKHAR, Subramanyan

Born 14-Jul-1945

NHS No. 129 728 7652

Address

Phone

Risks

Known Allergies

This is an incorrect example, as the MPB is shown with menu items in Zone 2 for accessing clinical data namely risks and allergies.

Rationale

The sole purpose of the MPB is to support patient identification. The primary information required for this task (as identified in the wristband guidance {R2}) is displayed in Zone 1, which is permanently displayed. Additional supplementary information, such as the address, can be useful when resolving multiple matches of name. However, as this is not always necessary, the address has been allocated for display in Zone 2. As Zone 2 is a repository for supplementary information, its entire display is optional, however when it is displayed in its default collapsed form, it may be expanded on-demand by a user. This enables optimum use of the limited screen on small devices such as PDAs.

The expansion of Zone 2 may lead to the occlusion of information that was being displayed below the MPB prior to Zone 2 being expanded. This information may be critical to the clinical task at hand and the user may not be aware that its occlusion is only temporary. The user may not even be aware that data have been occluded, potentially compromising patient-safety. By requiring that visual indication of occlusion is provided, such as a transparent background for Zone 2, the presence of data will be apparent to the user and a potential risk mitigated.



The MPB guidance only supports the display of demographic information and does not consider the editing of it. Hence, guidance is limited to display.

3.3.2 Guidance – Application Context and Positioning

ID	Description	Conformance	Evidence Rating
MPB-0009	Display a Micro Patient Banner at the top of the screen	Mandatory	Medium
MPB-0010	Display a Micro Patient Banner horizontally rather than vertically	Mandatory	High
MPB-0011	Display a Micro Patient Banner in a fixed position, unmovable by the user	Mandatory	High
MPB-0012	Display a Micro Patient Banner so that it occupies the full width of the application window	Mandatory	Medium
MPB-0013	Do not obscure a Micro Patient Banner with other elements of the screen	Mandatory	High
MPB-0014	Apply visual styling to a Micro Patient Banner (such as a thick border or distinguishing background colour) in contrast to other elements of the application's user interface	Mandatory	High
MPB-0015	Do not display a Micro Patient Banner on screens that contain information relating to more than one patient	Mandatory	High
MPB-0016	Do not display a Micro Patient Banner in or alongside a Patient List	Mandatory	High
Usage Examples			
Intentionally left blank			
Rationale			
<p>The sole purpose of a Micro Patient Banner is to ensure the user has sufficient information to confirm the patient's identity ('right patient') and that the correct record is open ('right care'). This guidance accounts for the application context and achieves:</p> <ul style="list-style-type: none"> ■ Careful placement of a Micro Patient Banner in a permanent and prominent part of the screen in order to optimise visibility of the key information needed for patient identification ■ Easy recognition of a Micro Patient Banner in the wider context of the application, by the use of visual styling to differentiate the banner from other items displayed on the screen <p>The optimal positioning of a Micro Patient Banner is important as patient identification is a frequent and critical task. This guidance:</p> <ul style="list-style-type: none"> ■ Enables users to find the information required for patient identification quickly and repeatedly, by ensuring a Micro Patient Banner is in a fixed position at the top of the screen (as indicated by <i>Research-Based Web Design and usability Guidelines</i>⁶) ■ Ensures patient identification is accurate by displaying a Micro Patient Banner only when information for a single patient is displayed; this prevents a Micro Patient Banner from being associated with the records for another patient if a screen is displaying information for more than one patient ■ Supports users' natural reading pattern; users of clinical applications in English-speaking countries have a cultural disposition to read from top-to-bottom and left-to-right, whether reading a printed page or a computer screen {R16} ■ Allows efficient use to be made of the screen by using a horizontal Micro Patient Banner <p>Note</p> <p>A vertical Micro Patient Banner would lead to wasted space. For example, the maximum number of characters required for a patient's family name is 35 characters. To avoid text wrapping over multiple lines, the vertical banner would have to be very wide. Accordingly, a horizontal banner must be used.</p> <p>Due to the fact that, unlike the PAB, the MPB only displays demographic information, it might seem to developers of clinical applications as suited for display in a Patient List. However, there are a range of different tasks for which a Patient List is used by clinical and administrative users, and their design varies across clinical applications. For example, in some applications the Patient List might be required to display patients' phone numbers, or the names of patients' clinicians. Neither of these items supports patient identification {R2}. Mandating that the MPB only supports patient identification excludes the display of extraneous items of information that may lead to screen clutter and compromise patient safety.</p>			

⁶ Koyani et al, Research-Based Web Design and Usability Guidelines: U.S. Department of Health and Human Services {R16}: <http://www.usability.gov/pdfs/guidelines.html>

3.3.3 Guidance – Minimum Data Set

ID	Description	Conformance	Evidence Rating
MPB-0017	Always display the patient's name (family name and given name), date of birth, and patient identification number in a Micro Patient Banner	Mandatory	High
MPB-0018	An MPB may optionally display the patient's title	Mandatory	Medium
MPB-0019	An MPB may optionally display the patient's age	Mandatory	Medium
MPB-0020	Do not display the patient's location (such as ward and bed), in an MPB	Recommended	Medium
MPB-0021	For a deceased patient, an MPB additionally displays the date of death and age at death	Mandatory	High
MPB-0022	If an individual data item is not known or is otherwise unavailable, appropriate self-explanatory text or a blank string (but not a '?'), are to be displayed immediately after the corresponding data label	Mandatory	High
MPB-0023	Display the preferred name if available	Recommended	Medium
MPB-0024	Do not display the patient's photograph in a MPB	Recommended	Medium
Usage Examples			
<div> <div> CHANDRASEKHAR, Subramanyan (Mr) <i>Preferred name</i> Rama Born 14-Jul-1945 (61y) NHS No. 129 728 7652 </div>  <div> In this correct example, all three optional items in Zone 1, namely title, preferred name and age, are displayed. </div> </div>			
<div> <div> CHANDRASEKHAR, Subramanyan 14-Jul-1945 NHS No. ? </div>  <div> In this incorrect example, the patient identification number is not available and is incorrectly shown as a '?'. </div> </div>			
Rationale			
<p>Displaying and using a minimum data set will:</p> <ul style="list-style-type: none"> Improve patient safety by ensuring that the process of identifying patients and associating them with their respective records is based upon a consistent set of data that is common to all clinical applications Facilitate clinical effectiveness by providing a consistent set of data that is displayed in a standardised manner across all clinical applications; users will spend less time scanning the interface for key data items and more time using that data effectively (see Designing Interfaces⁷) At least partially mitigate the risk associated with using out-of-date images by not including a photo of the patient; user feedback indicated that photographs are not critical for patient identification, and currently have more logistical drawbacks than patient safety benefits {Error! Reference source not found.} <p>The following requirements are met in full or in part:</p> <ul style="list-style-type: none"> The user can clearly confirm that the correct patient record is open when the patient is present in person and able to answer questions The user can clearly confirm that the correct patient record is open when identifying the patient over the phone The user can clearly confirm that the correct patient record is open using another set of information about the patient. This other set of information may be held in the user's memory or as an external source, such as written correspondence, paper records, or other artefacts such as wristbands {R2} and specimen bottle labels. The information may be machine-readable, such as bar codes or Radio Frequency Identification (RFID) tags The user can identify an individual patient record with the highest degree of accuracy possible as the minimum data set is the necessary and sufficient set of information required for accurate patient identification 			

⁷ Tidwell J, Designing Interfaces {R17}: www.designinginterfaces.com

- The user can see when any part of key patient identification information, namely the minimum data set, is missing from the system
- The information represented in a Micro Patient Banner conforms to information display standards applicable to clinical computer systems (for example, date display)
- The attributes displayed in a Micro Patient Banner are those that are most likely to be known for all patients

The minimum dataset for living and deceased patients is supported by user feedback from a range of clinical and non-clinical roles. This user feedback found that using abbreviations in the Patient Banner, such as '?' or '-', to indicate the absence of key data was confusing to a large number of users.

User feedback also showed strong support for displaying a patient's preferred name if this is different from the first name (such as a nickname) and it is recorded in the system. This facilitates less formal patient-clinician interactions and could be used by, for example, nurses to enhance patient care. Additionally, it provides supplementary information to support patient identification. The PDS {Error! Reference source not found.} may record the preferred name as composed of a given name, a family name, and any middle names.

Note

While it is recognised that a photograph of the patient may be helpful, its inclusion would compound the significant space constraints that already impact a Micro Patient Banner. Additionally, new business processes and systems may need to be established to accommodate the handling of photographs, if they are not already in place. For these reasons, inclusion of a photograph has not been mandated in this guidance.


User research healthcare staff, has shown that a patient's title (such as Mr, Mrs and so on) is not of high importance for patient identification, relative to other identifiers. However it may be important to know, so as to address a patient correctly. Again, due to the limited screen estate of the MPB, we have not mandated the display of the patient's preferred name but are mindful that clinicians like to use the preferred name when giving care. In the absence of this, the title becomes more important. Its display in the MPB is therefore deprecated from that in the PAB (that is, its display is Recommended rather than Mandatory).

The patient's telephone numbers and email address are also excluded from display in the MPB, as the sole role of the MPB is to support patient identification and is not to support other tasks such as contacting a patient.





Risk assessments and user research with healthcare staff, have indicated that for newly born babies there is a risk that the date of birth may be interpreted incorrectly as the current date. To mitigate this risk, the guidance mandates that the date of birth must always be accompanied with its corresponding label, which should always be 'Born'. Age is not a core item of information for patient identification (for example, it is not part of the wristband specification {R2}). However, user research has indicated that knowing a patient's age can be helpful when resolving multiple patient matches. Being mindful of the limited screen space, the guidance therefore does not mandate that the age always be displayed.

In the user research, participants were asked to state what information is most effective for identifying patients. They were also asked what additional information they would like to see at a glance, immediately on opening a patient's record. Though for some participants the postal address was useful information, the patient's location (such as ward and bed) was never stated. This information is certainly very useful, such as for staff working in the secondary care setting who need to know where a patient is, but is not useful for patient identification.

3.3.4 Guidance – Information Grouping

ID	Description	Conformance	Evidence Rating
MPB-0025	Display the elements of the patient name, date of birth and patient identification number in Zone 1	Mandatory	High
MPB-0026	Where the age of a living patient is being displayed, display the age in Zone 1	Mandatory	High
MPB-0027	For a deceased patient, display the date of death and the age at death in Zone 1	Mandatory	High
MPB-0028	Display the full address (including the postcode) and gender in the expanded Zone 2	Mandatory	Medium
MPB-0029	In the expanded Zone 2, precede the full address with the label 'Usual address' or 'Temporary address' as appropriate	Mandatory	Medium
MPB-0030	In the expanded Zone 2, provide a means to access all addresses available in the record	Mandatory	High
Usage Examples			
<div> <div> CHANDRASEKHAR, Subramanyan 14-Jul-1945 (61y) Male NHS No. 129 728 7652 </div>  <div> <p>In this incorrect example, the gender is displayed wrongly in Zone 1. Additionally, its label is absent.</p> </div> </div>			
Rationale			
<p>This guidance increases patient safety by:</p> <ul style="list-style-type: none"> Ensuring that the process of identifying patients and associating them with their respective records is based upon a set of data that is organised according to a consistent and logical set of principles Displaying information in consistent zones, so the user is able to quickly recognise and distinguish between key data items Displaying information in a consistent order, so the user is better able to interpret the text field values and correlate them with other patient information screens Reflecting the order of information used by most clinicians in patient identification and verification; by displaying the patient name first, the most important data item is emphasised Enabling supplementary information such as address and gender, to be revealed in an expandable section 			

3.3.5 Guidance – Data Labels and Values

ID	Description	Conformance	Evidence Rating
MPB-0031	Precede the date of birth with the label 'Born'	Mandatory	High
MPB-0032	When displaying the age use only two abbreviated units, a lower and an upper unit, without any intermediate units (as described in the rationale)	Recommended	High
MPB-0033	Precede the gender with the label 'Gender'	Mandatory	High
MPB-0034	Display the gender value in full (that is, do not display the gender value using a symbol, icon, pictogram or a textual abbreviation)	Mandatory	Medium
MPB-0035	Precede the patient identification number with an appropriate label, for example, 'NHS No.'	Mandatory	Medium
MPB-0036	Precede the preferred name with the label 'Preferred name'	Recommended	High
MPB-0037	Precede the date of death with the label 'Died'	Mandatory	High
MPB-0038	Precede the age at death with the label 'Age at Death'	Mandatory	Medium
MPB-0039	Do not add a colon after the label text	Mandatory	Medium
MPB-0040	Do not include unnecessary punctuation in a label	Recommended	Medium
MPB-0041	Display labels in the style given to label text	Mandatory	Medium
MPB-0042	Display values in the style given to data text	Mandatory	Medium
MPB-0043	Use text styles for labels and for values so that more visual emphasis is given to the value text relative to the label text	Mandatory	Medium
MPB-0044	For each label in Zone 1, provide a definition and a means to access the definition (for example, by a tooltip)	Recommended	High
MPB-0045	Provide a means to inform the user that gender should only be used to identify and address the patient correctly, not for clinical judgements	Mandatory	Medium
MPB-0046	Provide a means to access the record for all data items in Zone 1 and Zone 2	Recommended	High
MPB-0047	Provide a means to enable users to adjust font properties for all text displayed in a Micro Patient Banner, particularly the font family, size and colour	Recommended	Medium
Usage Examples			
<div> <div> CHANDRASEKHAR, Subramanyan Born 14-Jul-1945 NHS No. 129 728 7652 </div> <div> NHS Number: A ten-digit number used to identify a person uniquely within the NHS in England and Wales. </div> </div>  <p>In this correct example, a definition is displayed for the label accompanying the patient identification number.</p>			
<div> <div> CHANDRASEKHAR, Subramanyan 14-Jul-1945 (61y) ♂ NHS No. 129 728 7652 Address </div>  </div> <p>In this incorrect example, gender is displayed in Zone 1. Furthermore, it is displayed using a pictogram.</p>			
<div> <div> CHANDRASEKHAR, Subramanyan Born 14-Jul-1945 (61y) NHS No. 129 728 7652 Address Gender </div>  </div> <p>In this incorrect example, text styles applied to labels and to data do not give the desired emphasis on the latter.</p>			
<div> <div> CHANDRASEKHAR, Subramanyan 14-Jul-1945 NHS No. 129 728 7652 </div>  </div> <p>In this incorrect example, the date of birth is not displayed with its required label.</p>			

Rationale

User feedback indicated that the labels 'Born', 'Died' and 'Preferred name' were seen as most suitable for the date of birth, date of death and preferred name respectively. For example, 'DoB' and 'DoD' were determined to be hard to differentiate visually; additionally some screen readers read aloud 'DoB' as 'dob'.

To guide the user's eye to relevant information, the font size and weight must be chosen so more visual emphasis is given to data values than to their corresponding labels. Data values may, therefore, be rendered in, for example, a larger font size or with greater weight than the corresponding labels to help users locate the required information efficiently. The corresponding data text style and label text style are not specified here but are left to the designers of software applications to choose. As specified in the accessibility guidance {R14, R15}, users should be allowed to set their own font preferences to maximise readability.

For a living patient, the patient's age is displayed in parentheses and a label is not included as displaying the actual age alongside the date of birth makes the value self-explanatory. In addition, the parentheses separate the age from the other text placed nearby and give the age a unique style, helping users to identify this part of the display efficiently.

For a deceased patient, there is again a need to give the age a unique style so as to ensure users do not mistake a deceased patient for one who is alive, nor vice versa. This is achieved by doing the converse to the case of a living patient, namely, by displaying a label with the age, which is displayed without parentheses.

The display of an age value has been considered carefully for the range of patients from babies to adults. Short, that is, abbreviated units are used to save on space in the already constrained Micro Patient Banner. Additionally, only two units are used, a lower and an upper unit, without any intermediate units, further economising on space without compromising the displayed value. The permitted abbreviations for the units are listed in the *Design Guidance – Time Display* {R9}.

Here is a summary of the age bands with their lower and higher units:

Age	Lower Unit	Higher Unit
< 2 hours	Minutes	Minutes
< 2 days	Hours	Hours
< 4 weeks	Days	Days
< 1 year	Weeks	Days
< 2 years	Months	Days
< 18 years	Years	Months
>= 18 years	Years	Years

Here are examples of the display of a patient's age:



Age	Display
1 hour 30 minutes	90min
1 day 2 hours 5 minutes	26hrs
3 days 17 hours 7 minutes	3d
27 days 5 hours 2 minutes	27d
28 days 5 hours 2 minutes	4w
29 days 5 hours 2 minutes	4w 1d
1 year 1 day 5 hours	12m 1d
1 year 8 days 5 hours	12m 8d
1 year 39 days 5 hours	13m 8d
4 years 39 days	4y 1m

Labelling the information according to the above guidance confers the following benefits:

- Users can clearly differentiate between data items (see *How to limit clinical error in interpretation of data* ⁸)
- Users are less likely to be confused about what certain data values represent, for example, a date on its own could be a date of birth or a date of death
- The user is able to read patient identification information in an unambiguous, consistent way wherever this information might appear

This guidance supports the need for flexibility on the part of application designers by leaving open the choice of:

- Data and label text styles
- Label definitions
- Means to access the definitions and the record

User research with healthcare staff has shown that using an icon such as  or  to display a patient's gender is not understood. Also, *Design Guidance – Sex and Current Gender Input and Display* {R11}, also specifies other permissible values (namely 'Not known' and 'Not Specified') for which there are no graphical representations. For these reasons, this guidance prohibits all pictorial forms of displaying gender in the MPB. A common form for displaying gender is in abbreviated form, such as 'M' for male and 'F' for female. While these are more intuitively understood, the problem remains for the other values, for which any abbreviation would be ambiguous. The overarching principle, which applies across all items in a MPB, is to always display the minimum data set and accompanying labels in full, provided screen space allows for this. Any departures from this principle should be based on sound safety assessments.

As already discussed, for age and for address, gender is not a core item of information for patient identification {R2}, but is a helpful item when resolving multiple matches or when addressing a patient. In the user research, a participant commented that *"Having gender displayed reduces the chance of mistaken identity by half. It is good to know the gender when discussing patients with relatives and over the phone, so that the correct personal pronouns can be used. This saves anxiety and embarrassment"*. Its display is therefore not mandatory but, when displayed, the label 'Gender' must be used rather than 'Sex' as, for patient identification, the patient's current gender classification is more relevant than that recorded at birth. Comments were also made by participants about the difference between sex and gender and that the former is used for clinical purposes (such as for prescribing). However, this difference between sex and gender was not understood by all participants in the user research, a number of whom saw these terms as being synonymous. To emphasise the difference, this guidance advises that suitable cautionary information be provided to users. The suggested definition for gender is: 'Gender: a person's current gender. This may be different from a person's sex, which is a person's gender defined at the point of birth registration.'

A further aspect mentioned by one participant in the user research was the need to know whether a patient was of transgender or whether the sex and gender differed. These aspects stray from the aim of the Micro Patient Banner and therefore the guidance does not advise displaying such information.

The label 'Born' is mandated, though wristband guidance uses 'Date of Birth', because the former is shorter and screen space is limited on the MPB. In the user research, one person commented that the label helps *"To avoid confusion with today's date [for] new born babies."*




Finally, reference to tooltips is only to serve as an example, not as a recommended design choice. Indeed, tooltips may not be supported by the operating system software running on the PDA, as these do not typically support stylus-hover behaviour in the way that desktops support mouse-hover behaviour. One can envisage a tooltip-like display style activated upon touch instead of on hover. However, the guidance does not require that PDAs used for clinical applications must have touch-sensitive screens. The guidance endeavours to be platform-agnostic, so simply emphasises the need to support on-demand explanatory information to the user in a form suited to the chosen platform. In addition to the suggested definition for gender given above, the following definitions are suggested:

- Patient name: 'The patient's family name, followed by their given name'
- Date of birth: 'The patient's date of birth'.

⁸ Wright, P. C. Jansen, JC. Wyatt. (1998): How to limit clinical error in interpretation of data: Lancet 352: 1539-43 {R18}: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed&cmd=Retrieve&list_uids=9820319&dopt=Citation

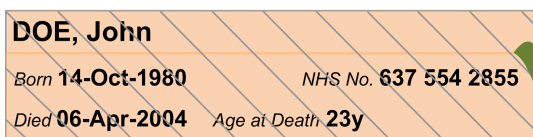
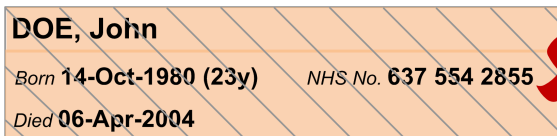
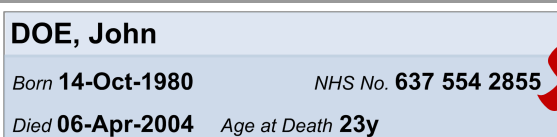
3.3.6 Guidance – Patient Name

ID	Description	Conformance	Evidence Rating
MPB-0048	Display the patient name elements and title, in the following order: family name, given name, title	Mandatory	High
MPB-0049	Do not include labels for the patient name elements and title	Mandatory	High
MPB-0050	Display a comma after the family name	Mandatory	High
MPB-0051	Display the title in parentheses, omitting the parentheses if the title is not being displayed	Mandatory	Medium
MPB-0052	Display the patient's family name in upper case and the patient's given name and title in title case	Mandatory	High
MPB-0053	Display the patient's preferred name, if available, immediately below the family name	Recommended	Low
MPB-0054	Display the family name and the given name in full (that is, without truncation), splitting across lines if absolutely necessary	Mandatory	High



Usage Examples	
<div> BALASUBRAMANIAM, Lakshminarayanan Born 14-Nov-1978 NHS No. 308 506 5640 Address Gender </div> 	In this correct example, the long family name and given name are displayed in full, without truncation.
<div> Last Name CHANDRASEKHAR Born 14-Jul-1945 NHS No. 129 728 7652 </div> 	In this incorrect example, the family name is displayed with a label. Additionally, the given name is absent.
<div> Chandresekhar, SUBRAMANYAM Born 14-Jul-1945 NHS No. 129 728 7652 </div> 	In this incorrect example, the given name instead of the family name is displayed in uppercase.

Rationale
<p>Identifying and then interpreting the patient's name correctly is a very frequent user task and is clearly a vital requirement for patient safety. This guidance promotes task efficiency by giving the elements of the patient's name a clear and consistent emphasis. Furthermore, user feedback showed that the elements of a patient's name were always identified correctly by users, hence a label need not be provided for the elements of a patient's name.</p> <p>Clinical applications must be capable of displaying all the elements of patient names, in full. The family name and the given name are both crucial for correct patient identification, and must therefore be displayed without truncation.</p> <p>The comma required after the family name might seem to contradict the requirement to avoid unnecessary punctuation. However, adding a comma is normal practice when the family name precedes the given name and helps the user interpret the name elements correctly, especially as these elements are not labelled.</p> <p>Displaying the patient's title is optional as user research has indicated that while it can be helpful (like gender) in addressing the patient correctly, it supports, but is not necessary for patient identification. So, while users may value all items of information, this has to be balanced with the need to avoid screen clutter, and focus on the sole purpose of the banner, namely patient identification. Finally, the title is not part of the core set of information required by the wristband guidance {R2}. For these reasons, the patient's title may be optionally displayed in the MPB.</p>

3.3.7 Guidance – Micro Patient Banner for a Deceased Patient

ID	Description	Conformance	Evidence Rating
MPB-0055	For a deceased patient, use a background area for Zone 1 in which both the colour and the pattern are substantially different from those used for a living patient	Mandatory	High
MPB-0056	The choice of both background colour and pattern must be such as to differentiate a Micro Patient Banner of a deceased patient from that of a living patient	Mandatory	High
MPB-0057	Display the date of death along with its label	Mandatory	High
MPB-0058	Display the date of death below the date of birth	Mandatory	Medium
MPB-0059	Display the age at death, preceded by its label, immediately after the date of death	Mandatory	Medium
MPB-0060	Display the age at death without parentheses	Mandatory	Low
Usage Examples			
		In this correct example, all the required elements for a deceased person are displayed and labelled correctly.	
		In this incorrect example, the age at death is incorrectly positioned and its label is missing.	
		In this incorrect example, there is no background fill pattern. Additionally, the background colour does not adequately emphasise the banner as that of a deceased person.	
Rationale			
Applying the above guidance confers the following benefits:			
<ul style="list-style-type: none">Users can easily recognise when they are viewing the record of a deceased patient; the Micro Patient Banner is substantially different from that of a living patient, and a user will not fail to recognise this even without reading the contents of the Micro Patient BannerUsers who are colour-blind are fully supported as the guidance requires that a pattern be used in addition to any change in background colourEnquiries from relatives can be dealt with more sensitively			
To reduce the possibility of mistaking a living patient for a deceased one, or vice versa, it is important that the changes to the display are not subtle. For example, the choice of background colour must be substantially different for a deceased patient than that for a living patient. However, changing only colour is not adequate as about one in ten of the population is known to have colour-blindness. Therefore, choose brightness, saturation, and hue to emphasise the difference as some users will notice these instead of a seemingly obvious change of colour. Furthermore, use a pattern to account for those cases where all colour-related cues go unnoticed. Refer to the accessibility guidance {R14, R15} for more information.			
User research found that participants sometimes recognized that the Micro Patient Banner referred to a deceased patient because of the additional information displayed (namely the date of death and the age at death with their corresponding labels). These items provide additional visual cues to alert the user that something is different. These cues are subtle but sufficient and effective; they encourage users to read the display more carefully thereby reducing the possibility of making errors in patient identification.			

3.3.8 Guidance – Alignment of Information

ID	Description	Conformance	Evidence Rating
MPB-0061	Display the patient's preferred name (if available) immediately below the given name, with both items left-aligned	Mandatory	Medium
MPB-0062	When a patient's preferred name is not available, the patient's name must be centred vertically and left-aligned in Zone 1	Mandatory	Low
MPB-0063	For a deceased patient, display the date of death and age at death labels and values in that order, immediately below the label corresponding to the date of birth. Left-align both date labels	Mandatory	Low
Usage Examples			
<div> <div> CHANDRASEKHAR, Subramanyan <i>Preferred name Rama</i> <i>Born 14-Jul-1945</i> <i>NHS No. 129 728 7652</i> </div> <div>  </div> <div> <p>In this incorrect example, the preferred name is right-justified instead of being left-aligned with the family name.</p> </div> </div>			
<div> <div> DOE, John <i>Born 14-Oct-1980</i> <i>NHS No. 637 554 2855</i> <i>Died 06-Apr-2004</i> <i>Age at Death 23y</i> </div> <div>  </div> <div> <p>In this incorrect example, the age at death is left-aligned with the patient identification number.</p> </div> </div>			
Rationale			
Information in a Micro Patient Banner must be displayed in a uniform manner so consistency is achieved across the range of clinical applications and care settings. This will help users find information reliably, repeatedly and efficiently.			

3.4 Rationale Summary

The guidance in this document mitigates patient safety issues that arise during patient identification.

General Principles:

- Reliable and accurate identification of an individual patient record
- Matching a patient record with:
 - The correct patient, whether present in person or on the telephone
 - Other artefacts associated with the patient (for example, samples, letters or wristbands)
- Displaying core information according to existing standards and guidance and using a minimum data set available to all clinical applications
- Promoting consistency across the mix of users, clinical applications and care settings
- Displaying minimum supplementary information to support patient identification
- Minimising opportunities for human error

Usability Principles:

- Enhance readability of data over that of corresponding labels
- Separate primary data required for patient identification from secondary supporting data
- Permanent display of primary data for frequent and efficient access
- On-demand display of secondary data to reduce screen clutter

- Guidance based on feedback from user research
- Support all users by additionally addressing requirements for accessibility

Existing Standards:

- NPSA Safer Practice Notice: *Standardising wristbands improves patient safety* {R2}

Evolving Standards Under Development by Healthcare Organisations:

- Information needed for patient identification
- Age display in electronic system for children
- Gender display

4 DOCUMENT INFORMATION

4.1 Terms and Abbreviations

Abbreviation	Definition
CUI	Common User Interface
MPB	Micro Patient Banner
NHS	National Health Service
NPSA	National Patient Safety Agency
PAB	Patient Banner
PC	Personal Computer
PDA	Personal Digital Assistant
RFID	Radio Frequency Identification
UI	User Interface
WHO	World Health Organization

Table 5: Terms and Abbreviations

4.2 Nomenclature

This section shows how to interpret the different styles used in this document to denote various types of information.

4.2.1 Body Text

Text	Style
Code	Monospace
Script	
Other markup languages	
Interface dialog names	Bold
Field names	
Controls	
Folder names	Title Case
File names	

Table 6: Body Text Styles

4.2.2 Cross References

Reference	Style
Current document – sections	Section number only
Current document – figures/tables	Caption number only
Other project documents	<i>Italics</i> and possibly a footnote
Publicly available documents	<i>Italics</i> with a footnote
External Web-based content	<i>Italics</i> and a hyperlinked footnote

Table 7: Cross Reference Styles

4.3 References

Reference	Document	Version
R1.	Design Guidance – Patient Banner	4.0.0.0
R2.	Standardising wristbands improves patient safety, NPSA Safer Practice Notice: http://www.npsa.nhs.uk/EasySiteWeb/GatewayLink.aspx?allId=5346	2007
R3.	Right patient - right care, NPSA: http://www.npsa.nhs.uk/EasySiteWeb/GatewayLink.aspx?allId=3234	2004
R4.	WHO Collaborating Centre for Patient Safety Releases - Patient Safety Solutions – Volume 1, Solution 2: http://www.jcipatientsafety.org/fpdf/Presskit/PS-Solution2.pdf	2007
R5.	The Joint Commission - National Patient Safety Goals – Goal 1: http://www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals/08_npsg_facts.htm	2007
R6.	Mohammad Al-Ubaydli, <i>Handheld Computers</i> , BMJ 2004;328;1181-1184	
R7.	Chantelle Garritty and Khaled El Emam: Who's Using PDAs? Estimates of PDA Use by Health Care Providers: A Systematic Review of Surveys: J Med Internet Res 2006;8(2):e7: http://www.jmir.org/2006/2/e7/	
R8.	Design Guidance – Date Display	3.0.0.0
R9.	Design Guidance – Time Display	3.0.0.0
R10.	Design Guidance – Patient Name Input and Display	2.0.0.0
R11.	Design Guidance – Sex and Current Gender Input and Display	2.0.0.0
R12.	Design Guidance – Patient Identification Number Input and Display	2.0.0.0
R13.	Design Guidance – Address Input and Display	2.0.0.0
R14.	Design Guidance – Accessibility Checklist	1.0.0.0
R15.	Design Guidance – Accessibility Principles	1.0.0.0
R16.	Koyani et al, Research-Based Web Design and Usability Guidelines: U.S. Department of Health and Human Services: http://www.usability.gov/pdfs/guidelines.html	2006
R17.	Tidwell J, Designing Interfaces: www.designinginterfaces.com	First Edition
R18.	Wright, P. C. Jansen, JC. Wyatt. (1998): How to limit clinical error in interpretation of data: Lancet 352: 1539-43: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed&cmd=Retrieve&list_uids=9820319&dopt=Citation	1998

Table 8: References