

Tender No:

KDU/PRO/CAP/D/207/2023



General Sir John Kotelawala Defence University,  
Kandawala Estate, Ratmalana,  
Sri Lanka.  
T: Phone: 2632028 , 2622995  
Fax : 2622504, 2623599  
Web: www.kdu.lk

20.10.2023

## **INVITATION TO BID AND GENERAL CONDITIONS OF TENDER**

1. The Vice Chancellor of the General Sir John Kotelawala Defence University, as the Chairman, Department Procurement Committee Invites Bid/s from prospective Bidders for supply of **item/s listed in the schedule in Annex "A". The relevant specifications of the item/s are indicated in Annex "B".**

2. **CLOSING DATE & TIME.** The tender will close at 1000 hrs. on **09/11/2023**. Any Bid submitted after the closing time of the tender will be rejected & unopened such bids will be returned to the bidder.

3. **VALIDITY OF BID.** The bid submitted under this tender **must be valid for a minimum period of 120 days from the date of closing of tender.**

### **BID BOND / GUARANTEE.**

(a) If the quoted-bid value exceeds Rs: 2,000,000.00, such Bids should be accompanied with 1% of Bid Value an "on demand" and "unconditional" Bid Bond/Guarantee for a sum of Rs: ..... in the format given in Annex "C" through a recognized local Bank or Insurance Company registered in Sri Lanka which is authorized by the Insurance Board of Sri Lanka to issue such Bid Guarantees. All Bid Bond/Guarantees should be valid for at least 30 days more than the validity period of bids, ie, for 79 days from the date of Bid opening. **Cheques will not be accepted as Bid Guarantee.**

(b) Submission of insufficient Bid Bond/Guarantee value or period will be considered as a "**major deviation**" and such offer will not be considered for further procurement action and will be rejected.

5. **VALUE ADDED TAX.** The Bidders who bid for locally delivered items must have the VAT registration. The VAT portion must be shown separately in the price schedule in Annex "A" and VAT registration number must be indicated. If the quoted item is exempted from VAT or Bidding Company is not liable for VAT, reference number and date of relevant Act number/Gazette notification/a certificate (as applicable) **issued for the current financial year** from the Commissioner General of Inland Revenue to that effect should be submitted along with the Bid.

6. **BID SUBMISSION.** The **bidder must duly sign at the bottom of Annex 'A' of this document** indicating the name of the signatory and the name of the company & place the company common seal to confirm the acceptance of tender conditions. **The Bid/s that do not include authorized signature will be rejected.** The Bid/s duly signed by the bidder enclosed and sealed in an appropriate cover addressed to the following address should be sent by registered post or could be deposited in the **appropriate tender box placed at General Sir John Kotelawala Defence University, Kandawala Estate, Ratmalana** (at the Main Entrance of General Sir John Kotelawala Defence University) on or before the time & date specified for the closing of tender. **The tender reference number, date & time of closing tender should be indicated & underlined at the top left corner of the envelop.**

**Tender Ref No** : .....

**Closing Date & Time** : .....

The Chairman,  
Department Procurement Committee,  
General Sir John Kotelawala Defence University,  
Kandawala Estate, Ratmalana,  
Sri Lanka.

7. The Bid/s must be submitted in the attached schedule of prices in Annex "A" as applicable. However, bidders could use similar formats prepared with their own letter heads with all the details mentioned therein and submit in **three copies along with duly signed copy of a General Conditions of tender.** The Bid/s must contain **Technical Literature, Pamphlets, Drawings and Quality Standard Certificate etc** necessary to determine characteristics of items offered and in case of Machinery/Vehicles & Equipment, servicing and workshop data/after sales service, back up facilities or any other facilities provided by the supplier.

### **SUBMISSION OF SAMPLES/PAYMENT OF TESTING CHARGES.**

When it is required to submit samples, **every offer** must be accompanied with pre - marked samples. The marking of samples **indicating the Bidder & Offer number** must be done and the samples must be handed over to the officer at same place where tender box is placed **on or before the closing date & time of the Bid.** Samples submitted after closing time of the Bid will be rejected. The documents such as Air Way Bills etc, will not be accepted in place of samples. When the testing charges are required to be paid, bidders shall pay testing charges separately **for all offers** indicated in their bid/s.

(1) **Samples.** Please submit ..... samples.

(2) **Testing Charges.** A sum of Rs. .... **per offer** must be paid to the Bursar of KDU, prior to the submission of bid and a copy of the receipt must be annexed to the bid. It is the responsibility of bidder to inform the



9. **BID OPENING.** All duly received bids will be opened immediately after the scheduled closing time of Bids at the same venue. Bidders or their accredited agents could be present at the time of opening of bids.

10. **PRICES.**

For locally delivered items (including locally manufactured items & foreign items imported by the bidders) price must be quoted in Sri Lankan Rupees, inclusive of all charges for delivery of items to General Sir John Kotelawala Defence University Ratmalana, Faculty of Allied Health Science (FAHS) Werahera and University Hospital Werahera or Southern Campus Sooriyawewa. Unit price, VAT and Total price should be clearly indicated in schedule in Annex "A". Other than VAT, all other type of taxes (eg : NBT, BTT, etc.) should not be indicated separately and should be included in unit price.

11. **RESTRICTED TENDERS.**

Invitation to Bids are circulated among the registered suppliers with Ministry of Defence (MOD), only bids submitted by registered suppliers will be allowed for consideration. However, Chairman, Department Procurement Committee reserves the right to invite the bids from multiple combinations of Procurement Methods as stipulated in Chapter III of the Government Procurement Guideline, 2006 to ensure highest competitiveness.

12. **PERFORMANCE BOND/GUARANTEE.** A successful bidder shall furnish a Performance Bond/Guarantee in the form of "On Demand" & "Unconditional" Bank/Insurance Guarantee for sum equivalent to 10% of the contract value for every contract that exceeds Rs. 2,000,000.00 or equivalent amount in foreign currency through a recognized Commercial Bank registered in Sri Lanka or through an Insurance Company authorized by the Insurance Board of Sri Lanka to issue such Performance Guarantee for this purpose, within two weeks from the date of notification of award. VALIDITY PERIOD OF THE PERFORMANCE GURANTEE/SECURITY SHOULD BE COVERED WARRANTY PERIOD + 28 DAYS. The proceeds of the Performance Bond/Guarantee shall be payable to the Vice Chancellor of the General Sir John Kotelawala Defence University as compensation for any loss resulting from the supplier's failure to complete his performance obligations under the contract. If the contracted supplier fails to deliver the items on time or fails to complete the works as per the agreed contract, THE TOTAL VALUE OF THE PERFORMANCE BOND/GUARANTEE will be forfeited. If only partial delivery is made during the agreed contract period, the corresponding value percentage of undelivered quantity from the Performance Bond/Guarantee will be forfeited

13. **SIGNING OF CONTRACT.**

The notification of award will be transmitted to the successful bidder by post, by fax or e-mail. This notification constitutes the formation of the contract. The successful bidder should submit his written acceptance for the award and performance bond / guarantee (For awards over Rs. 500,000.00 without VAT) within 14 days of receipt of such notification. Upon acceptance of the award and furnishing of the Performance Bond/Guarantee, the successful bidder will have to enter into a formal contract with the Vice Chancellor of the General Sir John Kotelawala Defence University by signing the Contract.

14. **DELIVERY.**

Preference will be given for early delivery. In case of bulk supplies for locally manufactured items, the delivery of total quantity must be completed within 120 days of signing of contract, unless mutually agreed for extended delivery period with General Sir John Kotelawala Defence University. The bidder/s must indicate the proposed delivery schedule in Annex "D". In the event of placing a purchase order with the successful bidder, the total quantity so ordered must be supplied as one consignment unless part deliveries are agreed upon in the contract. The deliveries not made as per agreed delivery schedule will be considered as bad performances by the suppliers and no extended delivery period will be authorized. Under extreme unavoidable conditions too, the Chairman, Department Procurement Committee (Vice Chancellor of the General Sir John Kotelawala Defence University) reserves the right to grant or refuse delivery period extensions only within the current financial year with or without liquidated claim for delayed deliveries and that decision will be final.

15. **LIQUIDATED DAMAGES.**

In case of delivery period extensions requested by the successful bidder, a sum equivalent to 1% of the total value of the delayed supply per delay of one week or part thereof may be deducted from the payment due to the supplier from the General Sir John Kotelawala Defence University as liquidated damages up to the maximum limit of 12% of the total value of delayed supplies.

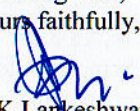
16. **PAYMENT TERMS FOR LOCALLY DELIVERED ITEMS.**

Payment will be made after acceptance of items which should be subjected to a pre-acceptance inspection/testing by General Sir John Kotelawala Defence University authorities. The delivery made to the General Sir John Kotelawala Defence University should not be considered as quantities taken over by General Sir John Kotelawala Defence University until items are properly accepted after pre-acceptance inspection. Any item that does not conform to the specifications or already approved sample will be rejected & it is the responsibility of the supplier to remove them from General Sir John Kotelawala Defence University stores/premises within 07 working days of such intimation (either verbal or written) at his own cost and replace them with items conforming to specification within one month of such rejection. The bidder shall allow approximately 30-45 days' period of credit from the date of acceptance of items for Account Office, General Sir John Kotelawala Defence University to obtain liquid cash from General Treasury & release the payment.

17. **RIGHTS OF THE PROCUREMENT COMMITTEE.**

The Department Procurement Committee reserve the right to accept or reject whole or part of this tender and their decision will be final. The successful bidders will be notified. Information with regard to rejected or unsuccessful bids will not be communicated.

Thanking You,  
Yours faithfully,

  
TSK Lankeshwara Lsc  
Lieutenant Commander (S)  
for Vice Chancellor  
General Sir John Kotelawala Defence University



## SCHEDULE OF PRICES FOR LOCALLY DELIVERED ITEMS

S/N	ITEMS	DENO	QTY	PRICE EACH SLRS	TOTAL PRICE SLRS
	<u>PURCHASE OF ELECTRONIC CHRONIC PAIN APP (e.Chrpain.App) FOR SELF-PAIN ASSESSMENT &amp; RECORD KEEPING AND MANAGEMENT</u>				
01	EPA –Software Design Development, Testing Implementation	No's	01		
02	EPA –Hosting Maintenance and Support for 6 Months	No's	01		
	<i>Attached The Specifications</i>				
	TOTAL				
	DISCOUNT				
	TOTAL(AFTER DISCOUNT)				
	VAT %				
	GRAND TOTAL				

## (A) OTHER DETAILS

- (i) DELIVERY PERIOD - .....
- (ii) MAKE & MODEL - .....
- (iii) VALIDITY PERIOD - .....
- (iv) WARRANTY PERIOD - .....
- (v) PAYMENT TERMS - CREDIT
- (vi) COUNTRY OF ORIGIN - .....
- (vii) DISCOUNT IF ANY - .....
- (viii) ANY OTHER TAXES - .....

## (B)

VAT DETAILS - VALUE ADDED TAX PERMANENT REGISTRATION CERTIFICATE / VAT EXEMPTION LETTER ISSUED BY DEPARTMENT OF INLAND REVENUE TO BE ATTACHED

## (C)

PLACE OF DELIVERY - ITEMS TO BE DELIVERED TO THE "GENERAL SIR JOHN KOTELAWALA DEFENCE UNIVERSITY, KANDAWALA STATE, RATMALANA ALONG WITH THE COPY OF ORDER AND RELEVANT INVOICE.

(D) ~~Any queries / information with regard to this procurement / tender could be obtained from Officer Commanding Logistics Services office at General Sir John Kotelawala Defence University through e-mail [ocls@kdu.ac.lk](mailto:ocls@kdu.ac.lk) and by telephone number 0112622504 during working hours.~~

~~NOTE: UNIT PRICE AND TOTAL PRICE ARE TO BE INDICATED CLEARLY IN THE TENDER, IF NOT QUOTATION WILL BE REJECTED.~~

~~FURTHER ALL BIDDERS MUST SUBMIT THEIR BUSINESS REGISTRATION ALONG WITH THEIR QUOTATION. BIDDERS WHO DO NOT ATTACH THEIR BUSINESS REGISTRATION WILL NOT BE CONSIDERING FOR EVALUATION.~~

SUPPLIER NAME - .....

ADDRESS - .....

CONTACT NUMBER - .....

E MAIL ADDRESS - .....

Company Seal

(E) Bid Reference: KDU/PRO/CAP/D/207/2023

(F) .....

DATE

I/We agree to abide by the condition of No 01-16 bidding document and undertake to supply the items as per delivery schedule mentioned in the contract, in the event of an order been placed with me/my firm/company as a result of this tender.

..... Signature.

..... Name of Signatory

..... Name of the Company/Bidder

Date :- .....

Company Seal



**ANNEX "B"**

**ELECTRONIC CHRONIC PAIN APP (e.ChrPain.App) FOR SELF-PAIN ASSESSMENT, RECORD KEEPING AND MANAGEMENT**

**TECHNICAL SPECIFICATIONS of EPA**

Description	Minimum requirement	QTY	Yes/No	If "no" your offer	PRICE EACH LKR	TOTAL PRICE LKR
<b>01.</b>	<b>Software Design, Development, Testing, Implementation*</b>					
<b>Product data</b>						
Equipment type	Website/web application					
Country of origin	Sri Lanka					
Country of manufacture	Sri Lanka					
Model	Cloud based					
1.1	Separate Android and IOS Applications for users	01				
1.2	Web application with user logins, Separate interfaces for patients, doctors and reviewers.	01				
1.3	Online Data portal and Dashboard	01				
<b>02.</b>	<b>Hosting, Maintenance and support for 6 months*</b>					
<b>General features</b>						
Online Data portal and Dashboard	Data visualization					

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	Web application	User logins, Separate interfaces for patients, doctors and reviewers						
	Mobile applications	Android and IOS Applications						
	Delivery time	Three (3) months						
2.1	Cloud Hosting and backups for six (6) months							
2.2	Data security	Encryption and maximum security						
2.3	Expert Health Informatician's support for nine (9) months							
2.4	<b>Service Provider's experience</b>							
	The supplier should have at least 5 years of experience selling similar products							
<b>03.</b>	<b>Consumables*</b>							
3.1	Android Mobile phones.		02					
3.2	Dongle		01					
3.3	Wire codes		01					
3.4	Stationary	Sign R12 Molecules	01					
3.5	Printing and photocopying	Sign R12 Molecules	01					

\*to the satisfaction of the KDU research team

Please see, "TERMS OF REFERENCE" and ANNEX 1 – COMPLIANCE METRIX





## TERMS OF REFERENCE

### **Procuring a ‘Service Provider’ to design, develop, cloud-based hosting and maintenance of a Smart Phone-based Application, an Electronic Chronic Pain App (e.ChrPain.App) (EPA), for Kotelawala Defence University, Ratmalana, Sri Lanka**

#### **1. Introduction**

Chronic pain is a common, complex, and distressing problem that profoundly impacts individuals and society. Chronic pain prevalence is expected to increase in the coming years due to the aging population and the increase in cancer survival rates. Cancer-related pain is one of the leading causes of chronic pain. According to the World Cancer Report (2014), cancers figure among the leading causes of morbidity and mortality worldwide, with approximately 14 million new cases and 8.2 million cancer-related deaths in 2012. As stated in the Annual Health Bulletin (2018) cancer prevalence in Sri Lanka is estimated to be around 51,300 (within 5 years of diagnosis) in the country. Further, the total number of reported cancers over the years through the National Cancer Registry has increased more than 4 times from 1985 to 2014.

Valid and reliable pain assessment tools are essential for effective pain management and clinical trials. Additionally, the physical and psychological effects of pain have an impact on the quality of life and further complicate its assessment. Following pain assessment, pain management strategies can be developed, refined, and evaluated to provide the best possible pain relief for patients with pain.

Although information and communication technology (ICT) is rapidly growing in Sri Lanka, the use of ICT in health care practice is still limited. The government hospitals in Sri Lanka are slow to implement ICT-based health care practices, compared to private hospitals which are more receptive to novel practices (Marasinghe et al., 2007). Many countries in the industrialized world and certain developing countries in the Southeast Asian region have shown the effectiveness of new digital technology-based health interventions compared with conventional methods. Academics, researchers as well as health service providers need to work to develop



and introduce such technology-based healthcare interventions to provide better health service to the nation.

In the present study, we aimed to design, develop and validate a smartphone-based electronic pain app that would be appealing to patients with chronic pain conditions to facilitate recording of self-assessed pain and seek advice from health care workers (HCW) during clinic visits and in emergencies. Millions of patients who suffer from pain will be benefited from the device in view of its real-time, quick, safe, and accurate approach to pain assessment and follow-up care.

Electronic Chronic Pain Application (e.ChrPain.app) or (EPA) is a smartphone-based application that can be used for managing chronic pain conditions such as cancer and other non-cancer pains. Both the patients and the members of the 'pain team' will have access to the electronic Pain App (EPA) to facilitate pain management. The App can be used by patients for the recording of self-assessed pain while the members of the 'Pain Team' can access self-assessed pain records of the EPA during clinic visits or remotely in emergency situations to manage their pain.

The purpose of the research is to **design, develop and validate the EPA** enabling future use to assess and manage chronic pain conditions. The validated EPA can be introduced to the patients and healthcare workers (HCW) through the Health Informatics division of the Ministry of Health (MOH), Sri Lanka for its future use.

Technical assistance is required from **experts in software technology and health informatics in designing and developing the EPA** while **cloud-based hosting and maintenance of EPA** is required for data collection during the validation process. A **'service provider'** is required to assist in designing, developing and cloud-based hosting and maintenance of EPA during the research.



who suffer from pain will be benefited from the device in view of its real-time, quick, safe, and accurate approach to pain assessment and follow-up care.

## **2. Background & Justification**

The number of people living with chronic pain conditions has risen over the years with significant physical and psychological morbidity experienced by the survivors along with a significant socio-economic burden on the individual, family, and society.

Self-report in the form of paper-based approaches has been the most commonly used pain assessment modality worldwide. However, patient recall of past experiences involves active reconstruction of events, which can lead to inaccuracies and biases in the reporting of the event. Pain reports can also be influenced by a patient's distress, as well as the most prominent and current state of pain. Finally, patients resort to hoarding (backfilling) or completing paper-based pain diaries just prior to returning them to the research center or to the pain clinic, which reduces the accuracy of collected data. Further, real-time data capture using electronically-based pain assessments represent a superior method for capturing patient pain data. Wireless mobile devices such as smartphones can: (1) conveniently collect pain reports in natural settings, (2) be individualized through flexible programming, (3) create time- and date-stamped pain reports to avoid back-filling, and (4) conveniently upload data to secure electronic databases for review by scientists and clinicians.

Although e-health has not been a priority for the government of Sri Lanka or for the private sector, there appears to be growing interest in this field, especially after the COVID-19 pandemic. International e-health/ telemedicine institutions and aid organizations have begun pilot projects in Sri Lanka, with a view to expanding access to primary care.

Having taken into consideration the practical limitations in follow-up care of patients with chronic pain, the investigators planned to develop an electronic version of a comprehensive follow-up pain assessment and recording facility along with provisions to access pain services when required, via a smartphone-based pain app. The effectiveness, feasibility, compliance, and satisfaction of end-users of the electronic pain app will be evaluated.



### 3. The Objective of the Assignment

This project envisages hiring a Service Provider (hereinafter referred to as “Service Provider”)” to achieve the below-stated brief scope of services within a period of 3 months, conforming to the health and industry standards, implementing, integrating with internal and external applications and providing support and maintenance for a period given under the scope of work.

The Service Provider is required to design, develop, implement and maintain the **e.ChrPain.App (EPA)**. The total duration of the assignment comprises, time for system design, development, and final deployment including periodic user training/ demonstrations (for 3 months) and support and maintenance for 6 months.

The following key points need to be addressed:

- Since the application will be used by a selected group of people (healthcare workers and patients), downloading the Pain Mobile application will be required. However, the following options should be facilitated.
  - Single-use private link sharing to download the application
  - Restricted Download through the App Store/ Play Store
- Simple and User-friendly application that allows enhance user experience to use necessary services.
- Integration with other stakeholders to build an eco-system that provides an optimized service to stakeholders.
- Use of proper technologies in order to improve service delivery.
- Provide a more robust and secure software platform for a sustainable environment.

### 4. Scope of Work

#### 4.1 Implementation of Chronic Pain App.

4.1.1. The Service Provider should review and understand the scope and functionalities of the mobile app, (Refer ANNEX 1).

4.1.2. The Service Provider should conduct a comprehensive requirement study and should propose new features. Some of the proposed features are available in ANNEX 1.

4.1.3. The selected Service Provider should conduct meetings when necessary to identify and verify the requirements with all the relevant stakeholders. Furthermore, the Service Provider should propose any improvements, if required.



- 4.1.4. On completing the above, a Detailed Software Requirements Specification (DSRS) and a Detailed Software Technical Design (DSTD) including the proposed solution architecture document should be submitted. The Service Provider should obtain approval from the committee appointed by KDU for the said deliverables.
- 4.1.5. Upon obtaining approval from the committee appointed by the KDU for the above, Service Provider should design and develop the solution.
- 4.1.6. The Service Provider should submit all deliverables as specified in below item '6' – Final outputs, Reporting Requirements, Time Schedule for Deliverables'.
- 4.1.7. The KDU intends to develop and launch the proposed Mobile App in three (3) months, followed by six (6) months of operational acceptance after going live.
- 4.1.8. At the end of the development, the Service Provider should handover the code bases and necessary sources including knowledge transferring to the KDU team which enables the KDU team to make sure the continuation of the system and enhancements of the application.
- 4.1.9. The Service Provider should conduct a proper QA test. (Which needs to cover Functional, Non-functional, and Performance testing).
- 4.1.10. The Service Provider should upload the mobile application to App Store and Play Store. KDU will provide necessary access to App Store and Play Store.
- 4.1.11. The Service Provider should implement all nonfunctional requirements (security, governance *including* role-based security, user lifecycle management and complete audit trails, etc.) mentioned in Annex - 6.
- 4.1.12. The Service Provider should study existing integrations with the key system implemented at the Ministry of Health and carry out any enhancements needed for the proposed solution in order to provide a more comprehensive service.
- 4.1.13. The proposed mobile applications must be developed to be compatible with all major mobile platforms (Android, iOS).
- 4.1.14. The Service Provider should be able to provide evidence of involving a Consultant Health Informatician (HI) accepted by the Ministry of Health and should provide recommendations to integrate APIs that enable seamless functionalities.
- 4.1.14.1. The Consultant (HI) should recommend the most suitable solution/s to implement and maintain a solution with regard to the data policy acceptable to the Ministry of Health.



- 4.1.14.2.. The consultant (HI) should provide expertise when designing, collecting and analyzing of data in order to draw up meaningful information as and when required.
- 4.1.15. The mobile application should be compatible with latest technological components and best practices.
- 4.1.16. The Service Provider should follow the proper coding standard and maintain project source code in the ICTA GIT, SVN system and upload all the relevant documents to the ICTA, Document Management System together with accepted health standards.
- 4.1.17. The proposed application should be available in tri-languages (Sinhala, Tamil and English) and the healthcare workers and patients will be able to choose the language at their convenience.
- 4.1.18. The service provider is free to decide on the type of software to be used to develop the pain App.
- 4.1.19. The mobile application should be device independent supporting Android and iOS.
- 4.1.20. The Service Provider should conduct security assessments before finalizing the product
- 4.1.21. The Service Provider should derive the UAT test cases in collaboration with KDU.
- 4.1.22. The Service Provider should obtain user acceptance for the implemented solution collaboratively with the committee appointed by the KDU.
- 4.1.1. The Service Provider should accommodate change requests (CR) after obtaining approval from the Change Control Board and as per the CR rate agreed in the contract.
- 4.2 Adhere to KDU research policies and project management practices.
- 4.3 Participate in Project Review Committee meetings and Project management committee Meetings as and when required.
- 4.4 The Service Provider as well as the Consultant (HI) who engages with the assignment should sign a Non-Disclosure Agreement (NDA) where applicable.



4.5 The intellectual property rights of the solution and all artifacts are in accordance with the conditions of the contract.

4.6 Refer following Annexes which form a part and parcel of the Terms of Reference (TOR).

Annex 1 – COMPLIANCE METRIX For features

Annex 3 – SAMPLE DEMONSTRATION SCREENS

**5. Minimum Qualifications of key professional staff**

The Service Provider shall provide the team of professionals with their curriculum vitae and the team organization.

No	Key Professional Staff	Job description
1	Consultant (HI)	
2	Project Manager & BA	
3	Tech Lead	
4	Senior Software Engineer (Mobile Application)	
5	Lead QA Engineer	
6	QA Engineer	

5.1. The Service Provider should ensure to allocate Project Management professionals for this assignment either full-time or part-time on a need basis.

5.2. The Service Provider should ensure adequate professionals and support staff to assist the Project Management.

**6. Final outputs, Reporting Requirements, Time Schedule for Deliverables**

No	Key Professional Staff	Academic & Professional qualifications	Experience in the proposed role	Specific Qualifications/ Requirements
1	Consultant HI	Medically qualified HI	5	
2	Project Manager & BA	PMP or Prince2 or equivalent	3	
3	Tech Lead	BSC or equivalent, Mobile Technology Expertise	3	



4	Senior Software Engineer (Mobile Application)	BSC or equivalent, Mobile Technology Expertise	2	
5	Lead QA Engineer	BSC or equivalent	3	
6	QA Engineer	BSC or equivalent	2	

6.1. The total project duration is approximately nine (9) months. The Service Provider firm is required to submit the following list of deliverables to the KDU for the Mobile application solution.

No	Deliverables	Phase	Duration
1	1.1. Project Plan 1.2. Detailed Software Requirement Specification (DSRS) 1.3. QA Test Plan	Inception	Commencement + 2 weeks
2	2.1. Detailed Software Technical Documentation (DSTD)	Elaboration	Commencement + 4 weeks
3	3.1. Test Cases and Test scripts	Construction	Commencement + 2 Weeks
4	4.1. Proper maintenance of source code in SCM 4.2. Successful UAT acceptance of the Mobile application and publication to both app stores.	Transition	Commencement + 2 Weeks
5	5.1. Successful Operational Acceptance	Acceptance	Go Live + 2 Weeks

## 7. Services and Facilities Provided by the KDU

- 7.1. Identified Features and details will be provided by the KDU.
- 7.2. Arrange meetings between the stakeholders and the 'Service Provider'.

## 8. Review Committees and Review Procedures

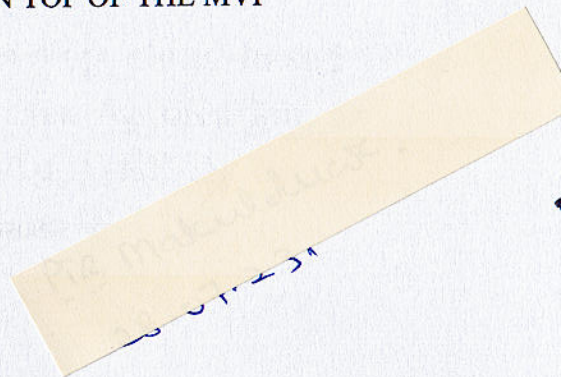
The Service Provider is required to work closely with the KDU research team.

All versions of deliverables will have to be reviewed and accepted by the team appointed by the KDU (including the research team).



9. References:

- [ANNEX 1] – COMPLIANCE METRIX FOR MVP
- [ANNEX 2] - ADDITIONAL FEATURES TO DEVELOP ON TOP OF THE MVP
- [ANNEX 3] – CONTENTS (TENTATIVE) OF EPA
- [ANNEX 4] – FEATURES OF EPA





## ANNEX 1 - COMPLIANCE METRIX

### What is e.ChrPain App (EPA)?

e.ChrPain.App is a smartphone-based App used for SELF-PAIN ASSESSMENT & RECORD KEEPING AND PAIN MANAGEMENT.

### Development and usage of an Electronic Chronic Pain App

The content of an EPA will be based on the already developed and validated paper version of the follow-up pain assessment diary and further will be refined by the opinion of experts in the field of pain medicine to suit its intended distant use. The technical assistance will be taken from an expert in software for the development of electronic versions. The EPA will be unique in its ability to collect data on pain intensity, duration, location, and the impact pain has on a patient's quality of life (ie; physical, social, psychological and spiritual well-being). Users are encouraged to keep regular records of their pain experience using EPA and there will be a function to alert the pain team/ research team if the pain was moderate to severe for 2 consecutive entries or any changes in significant pain characteristics. Alternatively, patients themselves can send an alert to a member of the pain/ research team. The pain assessment data will be only accessible to the members of the pain/ research team. The database will be developed enabling username, and password protected in a network secure environment functions. For further details, please see the slide show attached.

Table 1 (below) explains the identified bare minimum features that the Service Provider (consultant firm) needs to be delivered.

TABLE 1

Number	Feature	Requirements	Compliance (Y/N)	Remarks
01	Loading Page (Splash Screen)	Application Splashing page with government emblem		
02	Sign in and Sign Out			
03	Basic application Component			
	My Profile View	User can access Profile services		





Number	Feature	Requirements	Compliance (Y/N)	Remarks
04		through his/her profile		
05	Support Center	FAQ tab		
		Email Option		
06	My Requests	Mock: Display all the services that user required to action on		
		Mock: User Authentication with UDI required based one the security sensitivity of the Services - Simple authentication request - Request Digitally stored documents (Digi locker)		

High-level descriptions for the above requirements listed below to provide more clarity

### 1. Loading Page

Once the user accesses the specific mobile app, the splashing screen will be loaded with the government emblem.

Please describe the features in detail

Handwritten notes on a yellow sticky note, partially visible and illegible.



## Electronic Chronic Pain App (e.ChrPain.app)

- Smart phone based app
- for adult patients with cancer pain and other chronic pain conditions
- for routine follow up of pain
- for emergency access to pain team for advice

✓



# Objectives of Research

## □ General objective

1. To develop, validate and evaluate the effectiveness of an electronic pain app (EPA) for adult patients with chronic pain conditions in Sri Lanka

## □ Specific Objectives

1. To develop an electronic pain app (EPA) for the follow up assessment, recording of pain experience at home and to provide access to pain services for emergency advice, for adult patients with chronic pain conditions in Sri Lanka.
2. To validate electronic pain app among the adult patients with chronic pain conditions in Sri Lanka.
3. To evaluate electronic pain app among the end-users and the members of pain team with regard to effectiveness, feasibility, compliance and satisfaction.
4. To perform an economic evaluation of the app



# Electronic Chronic Pain App (e.ChrPain.app)

- ▶ Patient interphase
- ▶ Doctor interphase



- ▶ Terms of conditions/ agreement to use the app



▶ Selection of the language

Sinhala

English

Tamil



# Selection of required Window

(A) Demographics

(B) Patient records  
for routine follow  
up

(C) Emergency  
access and advice



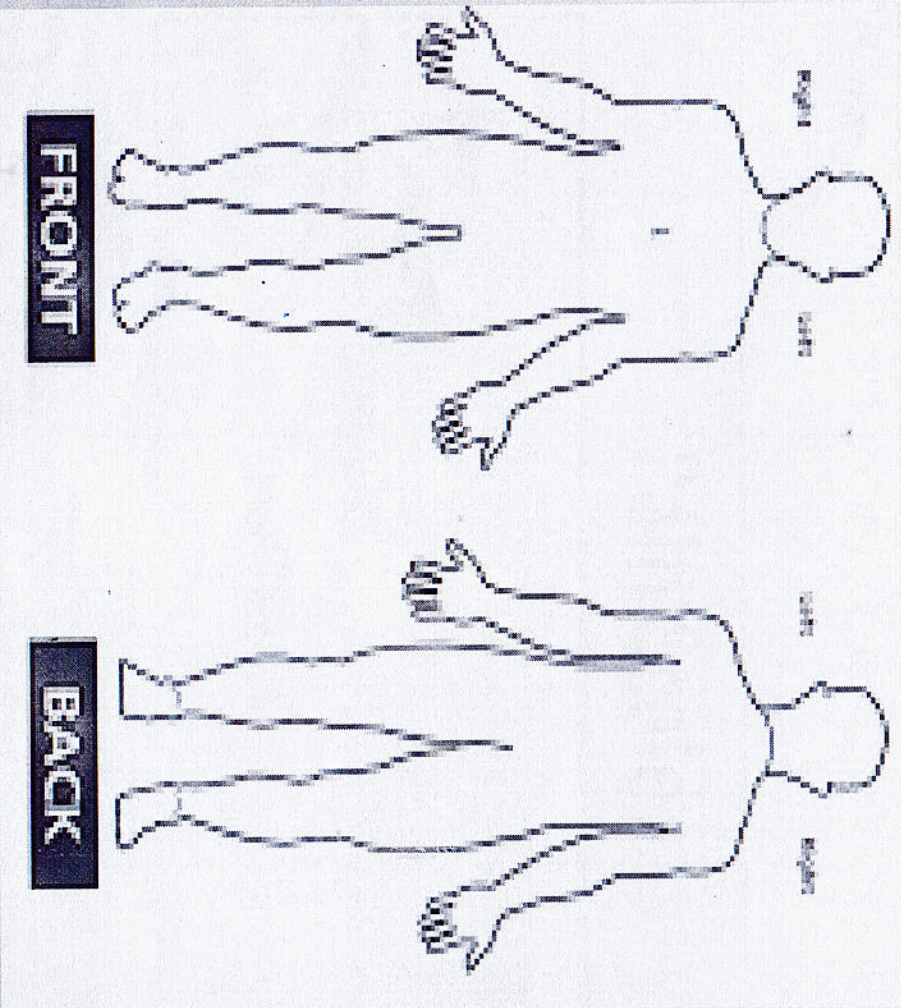
# (A) Demographics

- ▶ Clinic Reg No:
- ▶ Date of registration:
- ▶ Name:
- ▶ Age:
- ▶ Gender:
- ▶ Address
- ▶ Occupation
- ▶ comorbidities (cancer/ arthritis/ )



# (B) Pain details

- ▶ Mark the location/s and severity of pain on a body map

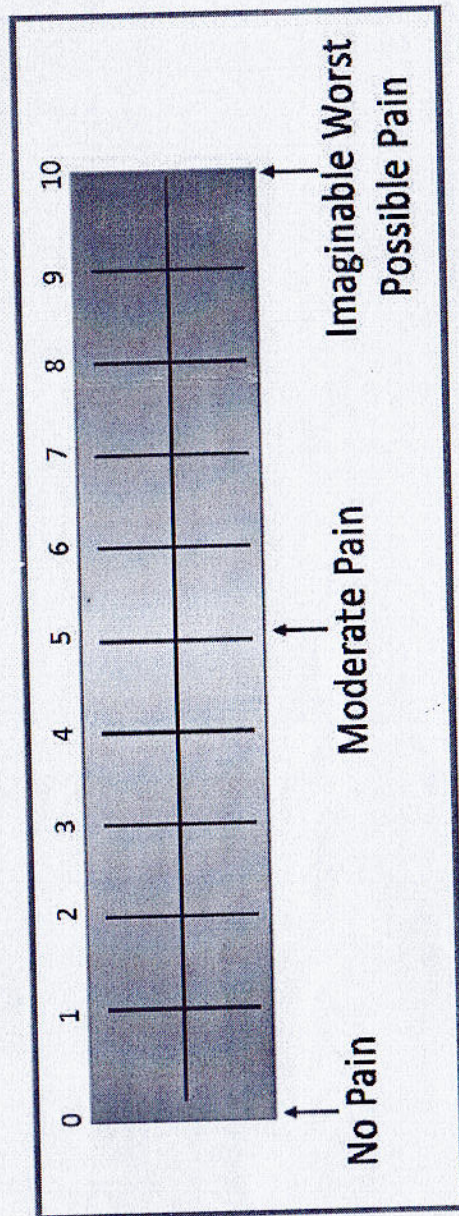




# Severity of pain

- ▶ Pain now
- ▶ Worst pain/least pain/ average pain in the last week

## Pain Scale





► Duration of pain (drop down menu)

Months

years

► Timing of pain

Persistent

intermittent

Break-through



# What words best describes your pain (Characteristics of pain)



Aching pain



Throbbing pain



Cramping pain

Electric shock like

numbness

burning sensation of pain

sharp pain

pins and needles like pain

Electric shock like

Itching

stabbing pain



# What made pain worse (aggravating factors)

standing

sitting

walking

spontaneous  
pain

walking

Negative  
mood

light touch

Talking/ chewing/  
swallowing

exposure to  
warmth/ sun light

exposure to cold  
/ AC/ wind

Lack of sleep



# What ease your pain (relieving factors)

Applying ice

Applying lotions/  
balm/ointment

Massage

Rest

Applying heat

Engage in  
hobbies

Distraction

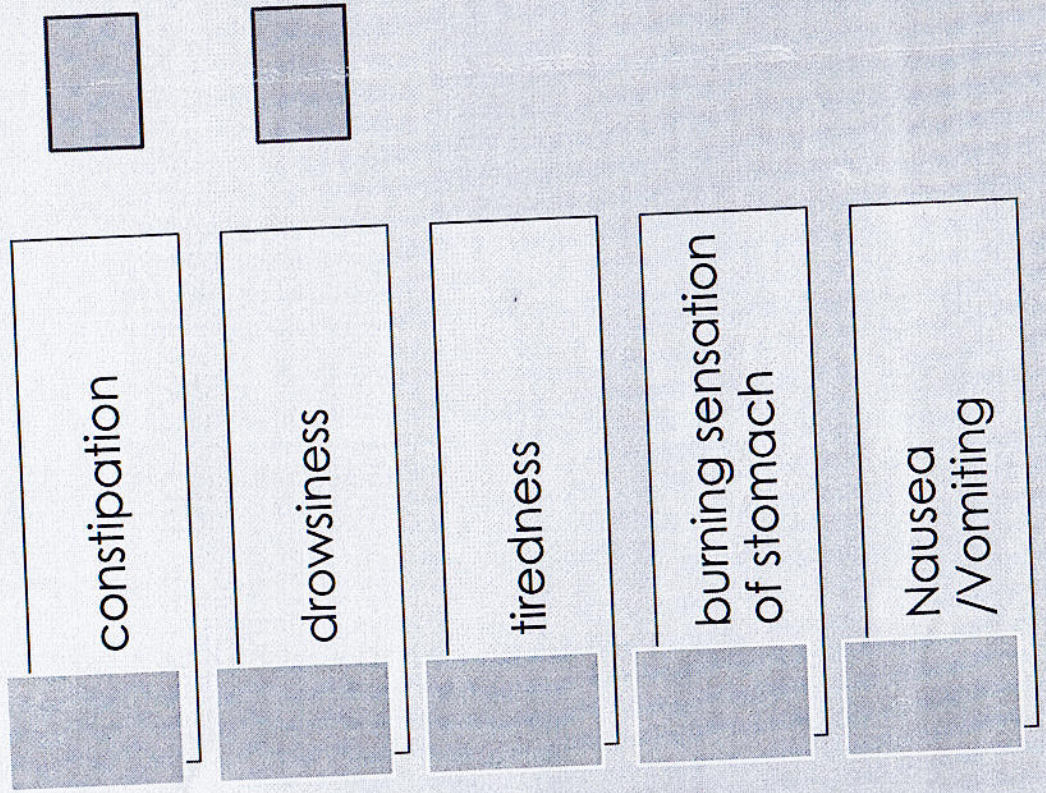
Talking to  
someone

Applying ice

sleep



# Other pain related symptoms





# Pain interferences (mark the level of interference to each due to pain in 0-10 scale)

- ▶ Own works
- ▶ General house hold works/ occupation
- ▶ Walking ability
- ▶ Food intake
- ▶ Sleep
- ▶ Relationship with family members
- ▶ Relationship with others
- ▶ Enjoyment of life
- ▶ Mood
- ▶ Ability to concentration
- ▶ Quality of life



# Pain medications/ side effects etc

Paracetamol	Pregabalin
Panadine	Amitriptyline
Diclofenac Sodium	Sy. Lactulose
Tramadol	Domperidone
SR/IR Morphine	Famotidine
Gabapentine	Omeprazole



## (C) Emergency access and advice Send an alert to pain team

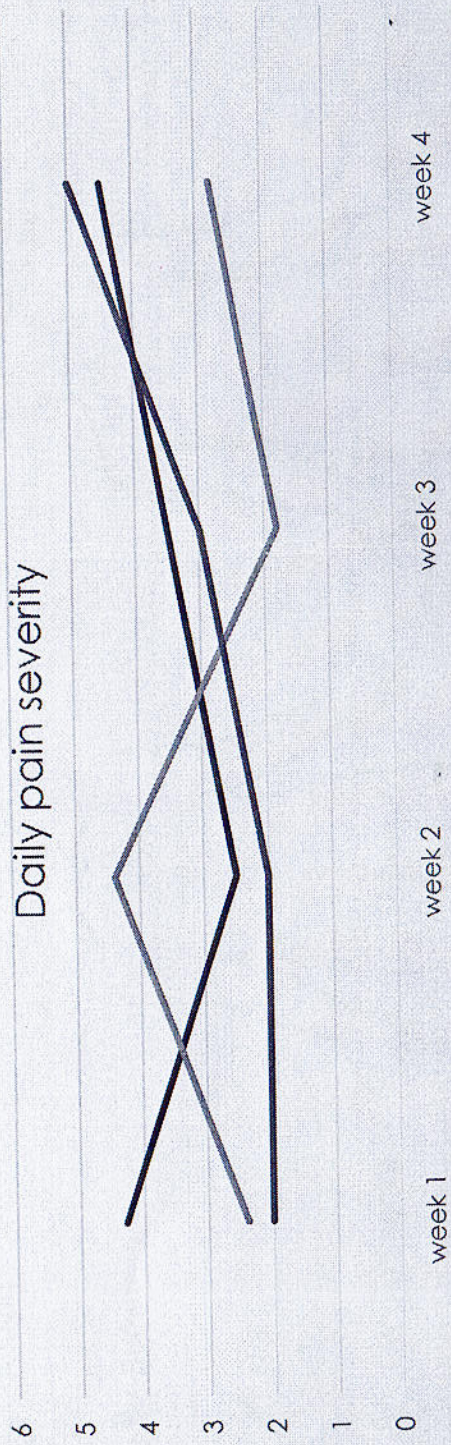
- ▶ Reasons for emergency access
  - ▶ worsening of pain,
  - ▶ side effects of drugs,
  - ▶ run-out of drugs,
  - ▶ others etc
- ▶ Pain details
  - ▶ - location,
  - ▶ severity,
  - ▶ aggravating factors
- ▶ Problems related to medications?
- ▶ Others?








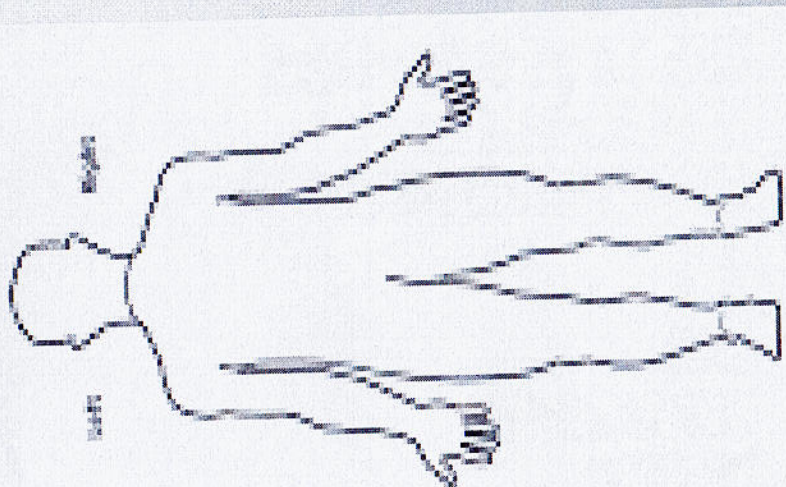

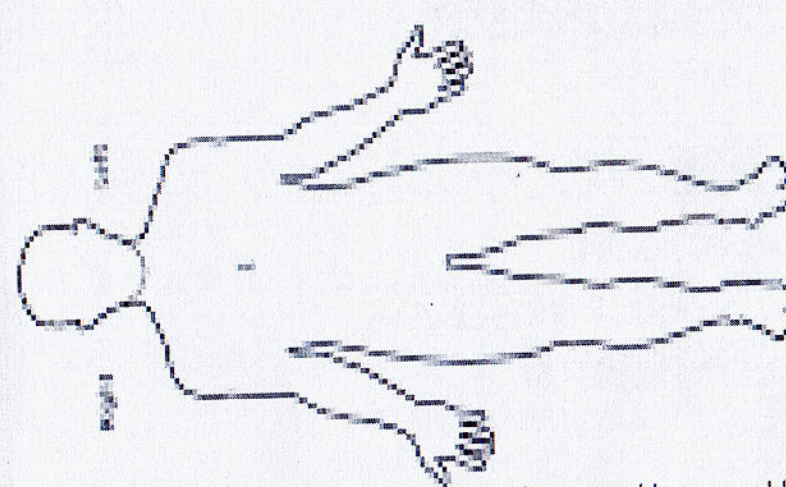







# Pain severity



— pain now 1 — worst pain 2 — Average pain 3



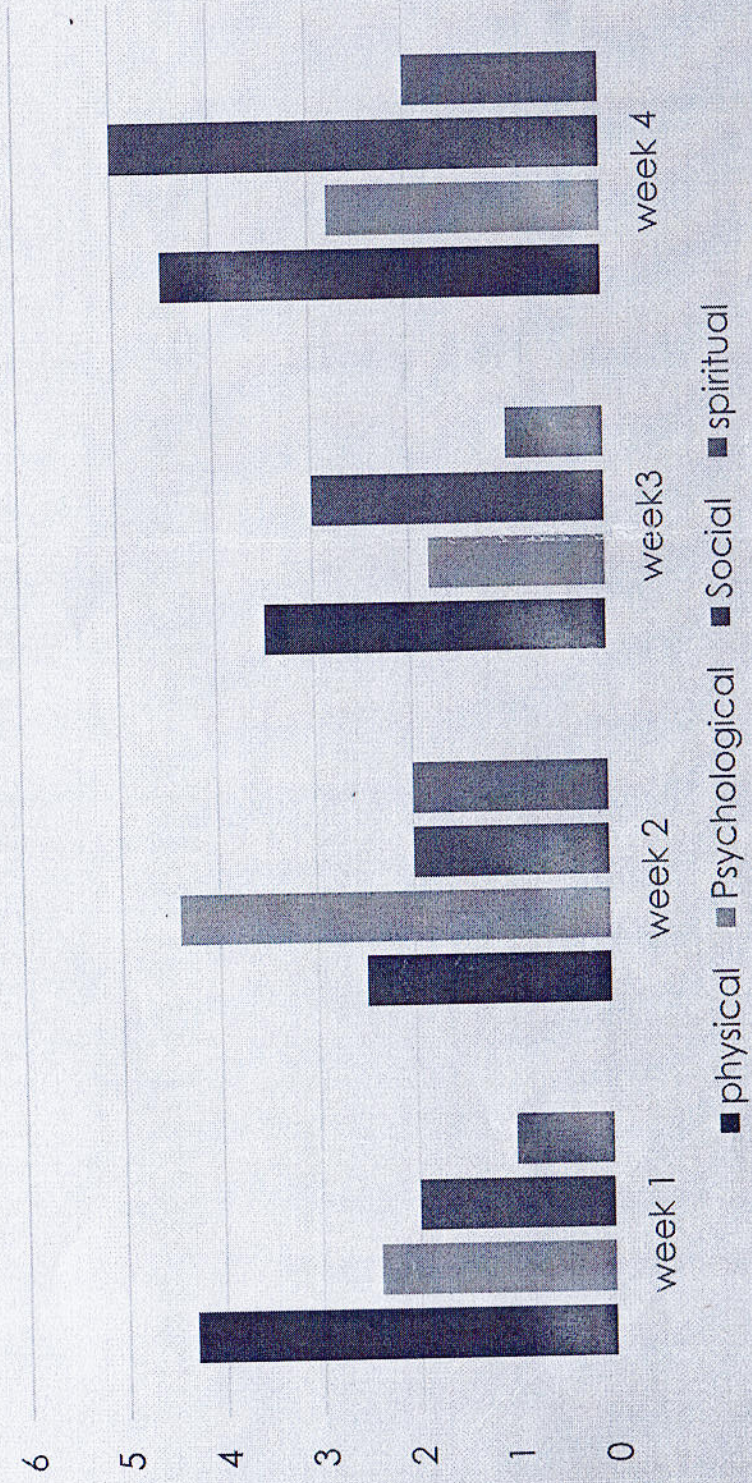
# Pain location and characteristics

 Aching		 Burning	
 Dull		 Electric Shocks	
 Pins and Needles		 Sharp	
 Throbbing			



# Pain interferences

Chart Title





**Tentative structure of e.pain app (e.ChrPain.app) (EPA)**

\* e.ChrPain.app will be developed with two interphases; patient interphase and pain team interphase

**1. Patient interphase**

- a) User agreement
- b) Selection of the language (Sinhala, English, Tamil)
- c) Selection of required window (to navigate through windows according to the requirement)
  - a. Demographic data (only for the first time)
  - b. Patient records for routine follow-up (to be completed by the patient daily basis)
  - c. Emergency access to pain team for advice (use only in emergency situations; real-time access to pain team with alert sent immediately)

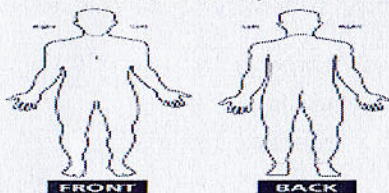
**A) Demographics**

- Clinic Reg No:
- Date of registration:
- Name:
- Age:
- Gender:
- Address
- Occupation
- Comorbidities (medical problems)

**B) Details of Chronic pain condition (cancer/ non-cancer)**

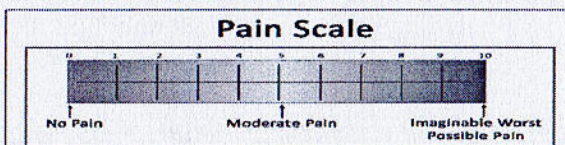
**C) i. Pain details**

Mark the location/s and severity of pain on a body map



**ii. Severity of pain**

- Pain now
- Worst pain/least pain/ average pain in the last week



**iii. Duration of pain (drop-down menu)**

Months/years



iv. **Timing of pain**

Persistent / intermittent / breakthrough

v. What words best describe your pain (Characteristics of pain) (to tick only the characteristics and mark the severity on the drop-down menu (scale 0-10))

- Aching pain
- Throbbing pain
- Cramping pain
- Electric shock like pain
- Numbness
- Burning sensation
- Sharp pain
- Pins and needles like pain
- Itching
- Stabbing pain

vi. What brings on/worsens your pain (precipitating/ aggravating factors)

- Standing
- Sitting
- Walking
- Negative mood
- Light touch
- Talking/ chewing/ swallowing
- exposure to warmth/ sunlight
- exposure to cold / AC/ wind
- Lack of sleep
- Spontaneous pain

vi. What eases your pain (relieving factors)

- Applying ice
- Applying lotions/ balm/ointment
- Massage
- Rest
- Applying heat
- Engage in hobbies
- Distraction
- Talking to someone
- Applying ice
- Sleep

vii. Other pain/drug-related symptoms (tick only the symptoms and mark severity on the drop-down menu (scale 0-10))

- constipation
- drowsiness
- tiredness
- burning sensation of the stomach



- Nausea /Vomiting

viii. **Pain interferences** (mark the level of interference to each due to pain on a scale of 0-10)

- Own works
- General household works/ occupation
- Walking ability
- Food intake
- Sleep
- Relationship with family members
- Relationship with others
- Enjoyment of life
- Mood
- Ability to concentration
- Earning capacity and own/ family finances
- Quality of life

ix. **Pain medications** (tick the medications that are currently used)

Paracetamol	Gabapentin	State the Non-drug interventions
Panadeine	Pregabalin	
Diclofenac Sodium	Carbamazepine	
Tramadol	Amitriptyline	
SR/IR Morphine	Ketamine	
Fentanyl patches	others	

x. **Compliance with drug/ non-drug interventions** (if poor, specify drugs/ non-drugs and give reasons)

xi. **How satisfied are you with current drug and non-drug treatment interventions** (mark the level of satisfaction on a scale of 0-10)

**D) For emergency access and advice, send an alert to the pain team**

➤ **Reasons for emergency access**

- worsening of pain,
- side effects of drugs,
- run-out of drugs,
- others etc.

➤ **Pain details**

- location,

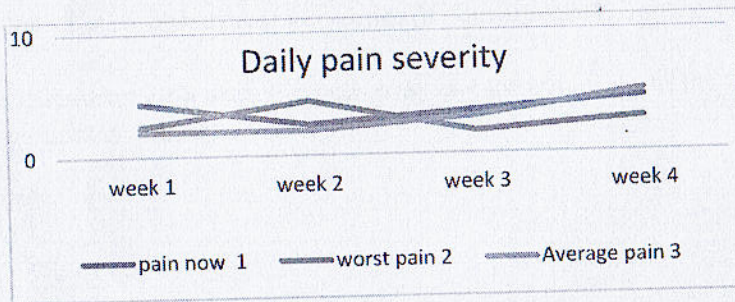


- severity,
- precipitating/ aggravating factors/ events
- Problems related to medications?
- Others?

2. a) Pain team (doctor/ nurse) interface (summary of the patient details)

No	Clinic No	name	Age	gender				
1								
2								
3								

b) Pain severity (graphical outcome of the pain severity)

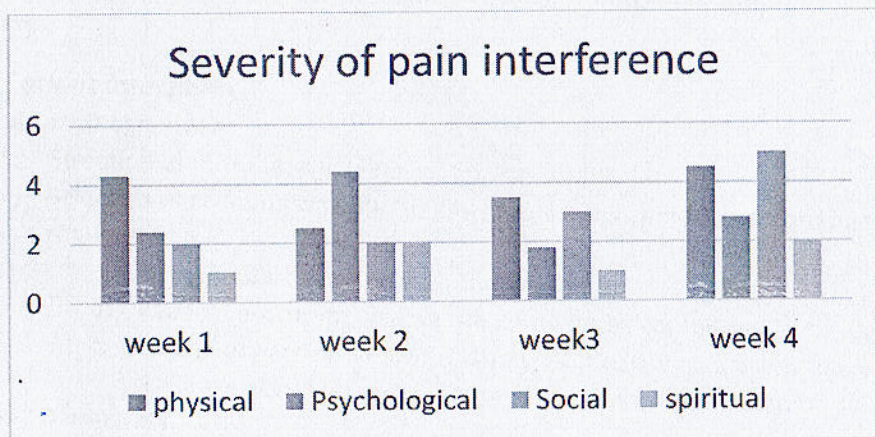


c) Pain location and characteristics (point out the pain locations with characteristics and severity)

- Aching
- Burning
- Dull
- Electric Shocks
- Pins and Needles
- Sharp
- Throbbing



d) Pain interferences (summary of the pain interferences in graphical mode)



e) Compliance with drugs/ non-drugs (if poor, specify drugs/ non-drugs and show reasons)

f) Satisfaction with drug and non-drug pain interventions in the last 4 weeks (summary in a graphical mode)

g)

*[Handwritten notes on a yellow sticky note, partially obscured and illegible.]*





Pain app  
e.ChrPain.app

**Features**

- **real-time updating** - the ability to provide up-to-date data
- cross-platform accessibility (interoperability)- medical applications should be available for a variety of devices, from patients' smartphones to doctors' computers
- Monitoring and analytics will be done under the supervision of researchers - powerful analytics of patient's data are useful during medical checkups. This way, medical professionals will be able to predict possible threats, complications etc.
- Both synchronous (real-time) and asynchronous (store and forward) communication modes will be used.
- Two way communication for pain advice
- Push notifications - the application can send an automatic notification to both patients and doctors when alarming signs are detected or provide the user with various reminders.
- Schedule appointments – patients will be given access to schedule their appointments in available slots. Any change in appointments will be notified.
- Patient profiles - all data will be organized in user profiles that can be viewed by doctors as required.
- EPA shall be upgraded as and when requested by the research team.
- Emergency hotline number will be provided to contact for emergency pain services.
- A data log will be available indicating the timing of data entry and by whom and if any alteration made the details of time and person.

**Facilities** (two types of data - for the research as well as pain management):

1. At registration: allow patients to enter selected demographic data and update as required.
2. Allow patients to record their pain experience at regular intervals.
3. Allow pain team to validate and quality checking
4. Facilitate the pain team to follow progress of the patient's health condition and response to treatment patient satisfaction with treatment interventions.





5. When the alarm signs are detected generate automatic alert to pain team, allowing pain team to take immediate actions.
6. Allow two way communication between patients and the pain team directly in an emergency and obtain pain services.
7. Allow both patients and pain team to access record information as and when required.
8. Data will be displayed graphically and in a table form enabling to visualize information accurately and effectively for easy referencing (data analytics).

PTC Halliday  
28.07.22



SPECIMEN FORM OF BID SECURITY

By this Bond we ..... (hereinafter called "the Bidder") and We (name of bank or insurance company) whose registered office is at ..... (hereinafter called "the Surety") are held and firmly bound onto ..... (hereinafter called the Authority") in the sum of ..... for the payment of which sum the Bidder and the Surety bind themselves their successors and assigns jointly and severally by those presents.

Whereas the authority has invited the Tender and other persons to compete tenders in similar terms for the supply of ..... and to submit the same for the consideration of the Authority, and the Bidder proposes to submit to the Authority a Bid (hereafter called "the Bid") in accordance with such invitation, the Bond shall provide security to the Authority that the Bidder will honour certain obligations to be undertaken by him in the Tender in accordance with the following conditions.

**Now the Conditions of this Bond are:**

- (a) That it shall remain in full force and effect until the earliest of
  - (i) (Date), being ( ) days from (submission date), the date stipulated by the Authority for the submission of tenders, or any prolongation of such date above notified to the Authority by the Bidder and the Surety in writing.
  - (ii) In the event of acceptance of the Tender by the Authority, the date upon which the Bidder provides a performance security to the Authority in accordance with the terms of the contract thereby made between them, or
- (b) Subject to this Bond being in full force and effect, the Surety shall pay the full amount specified in this Bond upon receipt of first written demand form the Authority stating that:
  - (i) The Bidder has withdrawn his Tender during the validity of this Bond, or
  - (ii) The Bidder has failed to provide a performance security to the Authority in accordance with the terms of the tender within 14 days from receipt of intimation of award of the Tender.

No alteration in the terms of the Tender, nor any forbearance of forgiveness in or in respect of neither any matter or thing concerning the Tender on the part of the Authority, nor any objection from the bidder shall in any way release the Surety from any liability under this Bond.

The benefit of this Bond shall not be assignable by the Authority and upon its ceasing to be in full force and effect the Authority shall return the same to the Bidder.

This Bond shall be governed by the laws of Sri Lanka

I executed as a deed on this ( ) day of ( ) 20 ( )

For and on behalf of the Bidder

-----

-----

Signed by -----

In the capacity of -----

and by -----

In the capacity of -----

Seal (where applicable)

Seal (where applicable)



ANNEX "D"

DELIVERY SCHEDULE

(IT IS MANDATORY TO FILL THE FOLLOWING SCHEDULE BY THE BIDDER)

TENDER NO :

ITEM : .....

QTY : .....

DURATION	QTY
EX STOCK QTY (WITHIN 01 WEEK)	
01 MONTH	
02 MONTHS	
03 MONTHS	
04 MONTHS	
<b>TOTAL</b>	

NAME OF THE BIDDER : .....

SIGNATURE OF BIDDER : .....

DATE : .....

COMPANY SEAL : .....