

Transforming management of Musculoskeletal Low Back Pain (MSK LBP) in the Emergency Department (ED); using the self-management app getUBetter (gUB)

April 2022



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About

Lower back pain (LBP) has huge socioeconomic implications and is the leading cause of disability globally. It is the most common musculoskeletal (MSK) complaint in UK Emergency Departments with very few patients requiring specialist input or hospital admission. There is widespread acknowledgement that most people with LBP should be able to self-manage if are supported appropriately; yet currently people with LBP attending the ED receive inconsistent discharge care plans that may impact on sustained recovery.

The opportunity to deliver a digital solution that supports self-management in LBP whilst also reducing unnecessary attendances to healthcare services and reducing the health economic impact of patients with LBP developing chronic pain, is hugely important given the NHS Long Term Plan's commitment to digitally enable care.

Our primary aim was to evaluate the impact of a self-management tool getUBetter (gUB) on the recovery of patients' with MSK back pain in the ED. Secondary aims were to explore the patients' experience of the new pathway and clinicians' views, looking at the acceptability of the tool and any barriers to implementation in this setting.

Executive summary

Overview

The digital self-management tool, getUBetter was provided to patients diagnosed with uncomplicated MSK LBP in St George's Hospital ED over a 6-month period. gUB is a tool which provides patients with evidence based digital information for all common MSK conditions. The aim of the project was to evaluate three areas:

1. What is the impact of use of the gUB app on the recovery of patients with MSK LBP?
2. What is the experience of using gUB in patients with MSK LBP?
3. What are the views of ED clinicians on the gUB app?

Key findings

- Use of the gUB app in this patient cohort had high patient and clinician satisfaction
- 154 patients were referred to the app and of these 90 activated: giving an activation rate of 58%
- Referral rates were lower than expected, highlighting areas for improvement in the implementation and clinician training processes. There were up to around 900 patients in the pilot period who were eligible to be given the app.
- 73% of clinicians agreed that gUB helps them provide better care for these patients and 73% agreed that it helps support patients to self-manage their condition. 87% of clinicians thought that gUB was easy to use
- 77% of patients found it easy to register on the app and 64% thought that being 'easy to use' was the most likeable thing about the app
- Use of the app as part of an ED clinical pathway is feasible but implementation was challenging due to high levels of ED staff turnover and clinical workload
- Patient identifiable data linking NHS medical records and gUB app use was not available which impacted on the ability to determine the impact on app use on patient recovery

Conclusion

Digital self-management tools can be provided to patients with LBP as part of their discharge plan in the ED setting, to support their recovery. Feedback from clinicians and patients has been positive, overall, yet the referral rates were lower than expected. This leaves a clear area for development in the implementation and training processes.

This evaluation has added to the growing body of evidence on the use of self-management apps in general and has demonstrated the potential positive impact of their delivery from the ED setting, for the first time.

Recommendations

We can make a recommendation to support the use of the gUB app in this patient group based on patient and clinician feedback. We have been able to demonstrate that the app can be used as part of an ED clinical pathway for LBP in a single ED and the potential for roll out across other Trusts. Given the limitations in the data, in particular the size of the sample, we make a recommendation for further evaluation and implementation support.

Background

Overview of the innovation/intervention

'getUBetter' is a registered medical device with a NICE Digital Health Technology framework 3a level evaluation. It has been independently evaluated for its economic impact already demonstrating savings of £1.96m per year per CCG. It has been devised by NHS physiotherapists, who are experts in LBP and integral in its management in line with current ED best management, NICE guidelines, the National Back Pain Pathway and Getting it Right First Time (GIRFT) guidelines. It is in widespread use for multiple MSK conditions across primary care and Physiotherapy services in South-West London, including St Georges Hospital.

The gUB app features key self-management concepts, personalised behaviour changes techniques and referral to local services and signposting if it is needed. Patients in ED were supported to connect to the app prior to leaving, using their e-mail address, and thus providing immediate access (see Figure 1: 2 page user guide.)

Evaluation purpose and design

Purpose

The purpose of this evaluation was to determine if the gUB app could be introduced as part of a pathway for MSK LBP in the ED. The evaluation design aimed to investigate the following three questions (see Figure 2 for more information):

1. What is the impact of use of the gUB app on the recovery of patients with MSK LBP?
2. What is the experience of using gUB in patients with MSK LBP?
3. What are the views of ED clinicians on the gUB app?

Scope

The ED at St George's Hospital sees around 160,000 patient per year of whom around 100 per month have uncomplicated MSK lower back pain.

Redesign of an existing clinical pathway for this patient group provided an opportunity to incorporate the use of the gUB self-management app as part of discharge advice for patients (Figure 3). Patients were given a unique link or QR Code that enabled them to be identified within the app data as referred by St George's ED so that we were able to identify if they used the app. This was the first time that the app has been used in the ED and offered an opportunity to evaluate its use in this novel setting. A small-scale implementation plan was developed to support roll-out, including online resources, individual staff training and posters (Figure 4). We were attentive to the fact that there would be some limitations to changing behaviour in a busy, stressed working environment.

Practical issues and constraints of the project, including a short timeframe, meant that it was not feasible to do a before/after or user/non-user comparison using validated outcome measures with the surveys. We also did not have the resource in this project to conduct telephone/face to face interviews. Some open/free text questions were included to capture insights because the sample size and response rate was likely to be small and so less helpful with quantitative analyses.

Furthermore, being an 'evaluation' project, rather than a 'research' design meant that forming significant conclusions about the effectiveness of the intervention was not going to be possible. However, gaining some understanding about the demographics, level of patient engagement and healthcare resource would form a foundation for future research.

Design

The evaluation took place between July 2021 and January 2022 and used a multi-method approach consisting of 3 components:

User uptake

We performed a retrospective medical records review of all patients who registered with 'back pain' or who had an assigned discharge code relating to a diagnosis of MSK lower back pain to ascertain the number of patients suitable to be given the app. Patients were excluded if they were under the age of 18 or were admitted to hospital. Suitability was determined by a senior clinician reviewing each case against the guidance within the back pain pathway (figure 3). We determined user uptake by establishing the number of patients who were referred the app using the unique St George's ED referral code, and then how many subsequently went on to activate and use the app.

Patient experience/acceptability survey

Patients who were registered consented to be contacted and were sent an e-mail with a link to the MS forms survey 4 weeks after being referred. If they had not responded after a following 2 weeks, they were sent a reminder e-mail, and then again at 4 weeks. We were able to get a small prize fund from St Georges Hospital Charity who kindly supplied us with £30 of vouchers for the winner of the draw. Patients who completed the survey were entered into a random number generator to choose the winner.

The survey consisted of 16 questions; 4 multiple choice, 1 yes/no, 2 likert scales, 3 open ended, 1 5 star rating scale and 5 were 'about you' questions. Answers were collated on an excel spreadsheet for analysis.

Clinical experience/acceptability survey

Clinicians in the ED were all sent an e-mail with a link to the MS forms survey 4 months after the pilot launched. Reminder e-mails were sent around 1 month after this. We were able to get a small prize fund from St Georges Hospital Charity who kindly supplied us with £20 of vouchers for the winner of the draw. Clinicians who completed the survey were entered into a random number generator to choose the winner.

The survey consisted of 14 questions; 2 multiple choice, 2 yes/no, 2 likert scales, 2 open ended, 1 5 star rating scale and 5 were 'about you' questions. Answers were collated on an excel spreadsheet for analysis.

For the purposes of this evaluation, acceptability is defined as:

'A multifaceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate. Based on anticipated or experiential cognitive and emotional responses to the intervention' (Sekhon et al 2017). For both patient and clinician survey questions were mapped to the Theoretical Domains Framework of Acceptability (TFA, Sekhon et al 2017) with elements of the Theoretical Domains Framework (TDF) v2 (Michie et al 2014, Atkinson et al 2017) weaved throughout to capture key constructs in behaviour related to the use (patients) and prescription (clinicians) of gUB. In addition, we included recommendations from Perski and Short (2021) for capturing acceptability of digital health interventions.

Findings

1. What is the impact of use of the gUB app on the recovery of patients with MSK LBP?

In the data collection period (July 2021 – Jan 2022) there were 905 attendances with musculoskeletal back pain in 874 individual patients. 29 patients attended more than once in the period with the same condition.

Characteristics	Number	%
Age, years		
18 – 30	169	19.34%
31 – 50	388	44.39%
51 – 70	254	29.06%
> 70	63	7.21%
Sex		
Male	375	42.91%
Female	499	57.09%
Referral		
Self	689	78.83%
GP	114	13.04%
NHS 111	35	4.00%
Physiotherapist	33	3.78%
Other	3	0.34%
Ethnic description		
African	33	3.78%
Any Other Asian Background	82	9.38%
Any Other Black Background	44	5.03%
Any Other Mixed Background	30	3.43%
Any Other White Background	174	19.91%
Bangladeshi	4	0.46%
British	179	20.48%
Caribbean	38	4.35%
Chinese	2	0.23%
Indian	10	1.14%
Irish	4	0.46%
Not Known	28	3.20%
Not Stated	104	11.90%
Other	118	13.50%
Pakistani	16	1.83%
White And Asian	1	0.11%
White And Black African	1	0.11%
White And Black Caribbean	6	0.69%

Lowest numbers of patients with back pain presented at the weekend (Figure 1), with peak attendances on all days between 1100 and 1200 (Figure 2).

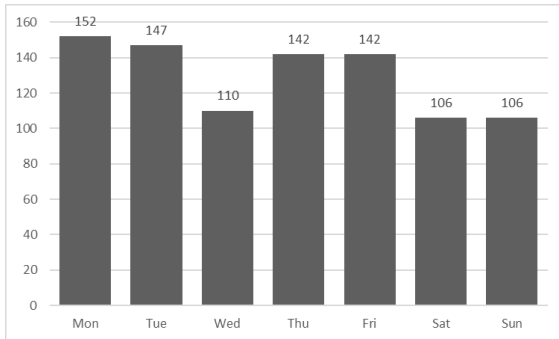


Figure 1: attendances by day of week

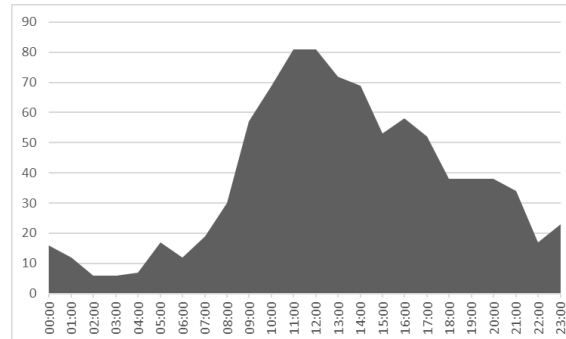


Figure 2: attendances by hour

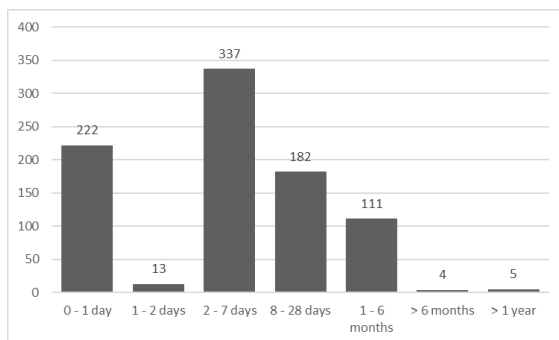
The most common referral source to the ED was the patient (78.83%), followed by GP (13.04%) and physiotherapists (3.38%, 33 patients). The majority of patients were residing within the South West London Clinical Commissioning Group (CCG) locality (76.32%) with patients attending from 24 other CCGs.

All patients were discharged from the ED. Of these 420 were referred for review by their GP, 43 to physiotherapy and 26 for a neurosurgical out-patient appointment. Documentation of advice given to patients on discharge was inconsistent, with 'verbal' information recorded in 131 cases and 'written' information in 28.

Back pain presentation characteristics

Of the 874 patients, 45% (392) patients reported a previous history of back pain, with duration ranging from 1 month to more than 10 years. Musculo-skeletal back pain, disc herniation and sciatica were the most recorded previous diagnoses. Most patients presenting to the ED with back pain did so within 7 days of their symptoms starting (Table 3), with pain and/or leg numbness or weakness reported most frequently as a reason for attendance.

Table 3: duration of symptoms in patient episode



GetUBetter app referral

Eligibility for patients to be given the app by the ED clinician was determined using the criteria in the local back pain clinical guideline/pathway based on the entry written in the notes. Of the 905 patient episodes, 836 (95.65%) were suitable for discharge with the app, in 141 (16.8%) of these were referred to the app using the QR code or login. 90 of these patients went on to register with the app, giving an activation rate of 63.8%. Nine patients reattended to the ED with back pain within 6 weeks of being referred to the app. It is not possible to determine if these patients activated the app or not.

Data limitations

All data was collated retrospectively from medical records and is therefore prone to missing data and interpretation by the project team. In cases where there was not enough information to determine if the patient was eligible for the app this was recorded as 'not suitable', so the number of eligible patients is likely to be an under-estimate.

2. What is the impact on the experience of patients with MSK LBP?

- There were 14 responses to the survey (response rate 9%).
- 11 of 14 patients understood the purpose of gUB
- 10 out of 14 patients thought it was easy to register on gUB
- 9 out of 14 patients thought that it being 'easy to use' was the most likeable thing about the app
- 6 out of 14 patients believed gUB provided the support and advice to help them self-manage their condition
- Only 2 out of 14 patients would not recommend gUB to their family or friends
- The average rating out of 5 stars was 4 out of 5
- Open responses revealed positive experiences for most users, particularly in increasing their confidence to manage their own back pain and the usefulness of the educational materials within the app (Table 4). Only one patient felt that the app was not easy to use.

Table 4: Direct Quotes from Patients' Survey

<i>"Helped me understand my condition"</i>
<i>"The App gives you confidence that what you are doing is correct and won't make your injury worse. The presentation is clear, professional and very calming. You feel like you had the support you need immediately available to you and that is very powerful and reassuring."</i>
<i>"Made me realise it was normal to recover at this pace"</i>
<i>"Easy to follow videos and instructions"</i>

3. What are the views of clinicians on the revised pathway and of the getUBetter app?

- There were 15 responses to the clinicians' survey
- 12 out of 15 clinicians had heard about the app prior to completing the survey
- 12 out of 15 clinicians agreed that it supported self-management day-by-day, it supported the whole care pathway from triage to prevention and it was configured to their local MSK pathway
- 11 out of 15 clinicians were aware it allowed patients to keep connected to their local health services and that patients could self-refer to the app
- 9 out of 15 clinicians agreed that it can support new OR recurrent conditions and that it can be offered to patients as an adjunct to needing physiotherapy OR medical management
- 11 of out 15 clinicians agreed that it helped them provide better care for patients with LBP and the other 4 were 'neutral'
- 11 out of 15 clinicians agreed that it could reduce the number of follow up appointments that these patients have and supported them to self-manage their recovery
- 10 out of 15 clinicians said it was easy to refer patients to gUB
- The average rating out of 5 stars was 4 out of 5
- Open responses from clinicians reflected a positive experience in being able to offer easily accessible

information for patients at the time of discharge (Table 5).

Table 5: Direct Quotes Clinicians Survey

<i>"Give them the right information"</i>
<i>"Provides ready answers to patient questions (without needing to contact someone)"</i>
<i>"It is literally at their fingertips"</i>
<i>"Lasting benefit beyond ED"</i>
<i>"Able to offer advice and recovery suggestions"</i>
<i>"Patients like having information to take away with them so that they can understand more about their back pain"</i>
<i>"Something you can give them on the spot to try and help... gives the power back to them"</i>
<i>"Patients have access to exercises and self-care advice after leaving ED"</i>
<i>"Lack of physio appointments helps patients feel that they have some coping strategy in the meantime"</i>
<i>"Because they will have more time to explore their options and to follow up their progress and self-refer to physio if needed"</i>
<i>"Ability to access information/exercises on the go/when is most convenient for the patient"</i>
<i>"Easy to use. A patient recently was able to download the app there and then in clinic- really speedy"</i>

The results of the evaluation show that that it is possible to incorporate the gUB app as part of a clinical pathway for patients discharged from the ED with MSK lower back pain. We were not able to establish if use of the app reduced unplanned reattendance to ED or to other health services due to the inability to link identifiable patient data across gUB and clinical IT systems.

Conclusions

To conclude, feedback from patients and clinicians was positive overall for using a the getUBetter tool for patients being discharged from ED with LBP. The integration of this into an ED pathway for LBP was achievable in the 12-month period in which this was delivered, and we have now provided a structure to the planning and delivery processes to be able to share with others for similar projects.

This evaluation has raised some questions as to what to consider when delivering similar interventions in the future to improve the implementation and training process to increase the referral rates.

Some of the barriers to uptake which have been discussed through the project are highlighted below:

- The project team felt that implementation and roll-out of the app in the ED was challenging due to the turnover of clinical staff on training rotations and the pressures of the busy environment. departments were over-stretched, and clinicians were often busy; meaning time for training and then changing their practice was difficult
- There were frequent changeovers of staff meaning that more time was required at different intervals to provide the right support
- There was still some lack of awareness later into the project from some clinicians as to what the app was and what it provided; meaning sharing of information was not always successful
- There was poor IT infrastructure in the departments, including lack of Wi-Fi or mobile data, meaning referring a patient was less easy
- Using QR codes on business cards simplified the process for clinicians', but this was only changed later in the project
- Changing the IT systems to set reminders or tasks for clinicians to see was not possible during this length of project, but is likely to improve the uptake and improve the ability to evaluate the impact of the tool

Recommendations

- Completing a research study with a robust design, over a longer period would provide more meaningful conclusions into the impact.
- When applying a similar study design, it is recommended to improve the IT processes to simplify the steps and mesh it into the computer systems. More support and training at regular intervals to the departments would also be recommended.
- We would also recommend feedback via telephone interviews to gain further insight into views of patients and clinicians.
- Expanding the use of the gUB app to paramedic teams who have access to a different cohort of patients with LBP would be a sensible, based on feedback from these practitioners, and would need financial support.
- Expanding the use of gUB to other MSK conditions, which is already configured, in the ED would only require support from St Georges Hospitals' ED leads and training delivery support.
- Raising awareness of this project through digital health, MSK and emergency medicine conferences is recommended, to gain further support.
- Writing up of the project in a journal article style is also recommended, for publication and to ensure the correct future actions are undertaken.
- Based on the findings of the project, considering presenting a formal business case to SWL Integrated Care System (ICS) to continue funding the app in this setting is recommended. Following on from this, use in other EDs across the U.K could be endorsed.

Appendices

1) Registration

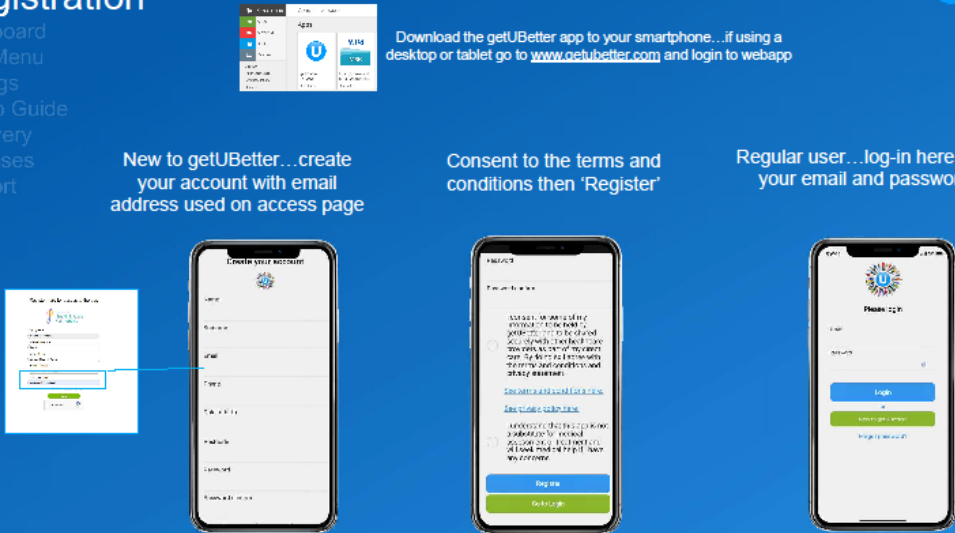
- 2) Dashboard
- 3) Side Menu
- 4) Settings
- 5) Tips to Guide
- 6) Recovery
- 7) Exercises
- 8) Support

Download the getUBetter app to your smartphone...if using a desktop or tablet go to www.getubetter.com and login to webapp

New to getUBetter...create your account with email address used on access page

Consent to the terms and conditions then 'Register'

Regular user...log-in here with your email and password



Contact@getUBetter.com

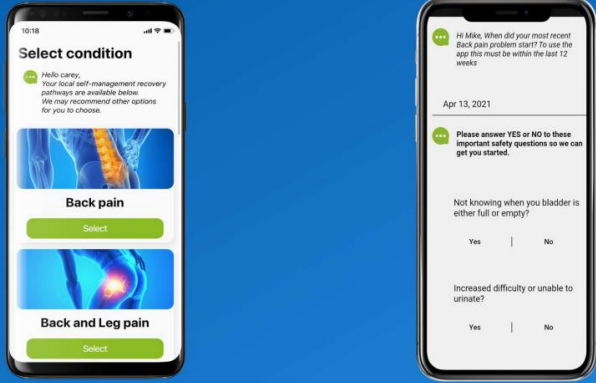
1) Registration

- 2) Dashboard
- 3) Side Menu
- 4) Settings
- 5) Tips to Guide
- 6) Recovery
- 7) Exercises
- 8) Support

Once you've registered, select your condition

Tap 'Yes' or 'No' to the symptom questions. If you have a symptom the app will ask if you have seen a clinician...

...these questions are included to make sure you're safe to use the app



Contact@getUBetter.com

Figure 1: 2 page user guide

Evaluation question / objectives	Measure(s)/metrics	Data source / collection method	Notes on source	Person(s) responsible
What is the impact on the recovery of patients with musculoskeletal back pain?	<ul style="list-style-type: none"> No. patients presenting at ED with LBP (who meet and don't meet eligibility criteria) No. people prescribed gub No. people activated gub No. ED re-attendances No. physiotherapy referrals and/or appointments 	iCLIP	<p>Comparisons</p> <p>Current cohort:</p> <ul style="list-style-type: none"> People eligible and using gub People eligible and not activating gub <p>Current cohort</p> <p>Historical dataset (covid and pre-covid) [check with colleagues about what else was happening in the system at the time that may influenced ED attendance for LBP – to note as a sense check against trends in historical data]</p>	SGH
	<p>No. GP follow ups</p> <p>Demographic data on all patients:</p> <ul style="list-style-type: none"> Age Gender Ethnicity <p>Level of patient engagement and activity with gub e.g.</p> <ul style="list-style-type: none"> Frequency of use Duration of use (number of days used) Etc. 	EMIS via remote access portal/system	<p>It is important to know who is/isn't using the app to understand any potential inequalities. It may be beyond the scope of this project – but if using gub in the pathway continues you'll need to understand more about who doesn't use the app and why</p>	gub
What is the impact on the experience of patients with musculoskeletal back pain?	<p>Patient reported benefits:</p> <ul style="list-style-type: none"> Health and wellbeing Behaviour-related Satisfaction Health utilisation? 	Patient online survey – one-off questionnaire sent to patients via email (?) X weeks after activating gub account.	<p>Based on questionnaire developed by HIN</p> <p>Practical issues/constraints of the project mean it is not practical to do a before/after or user/non-user comparison using validated PROM</p>	SGH
What are the views of clinicians on the revised pathway and of the getUBetter app?	Acceptability of app	online survey – one-off questionnaire sent to staff 3-4 months into pilot (once initially teething problems resolved). Consider second survey is large proportion of staff rotate in/out.	Based on questionnaire developed by HIN	SGH
	Barriers/facilitator to implementation (level of individual, service, pathway)	<p>Ad hoc semi-structured 'mini interview' with staff asking about:</p> <ul style="list-style-type: none"> Are they awareness of gub in ED? What's working well? What's not working well? How could things be improved? 	<p>Consider using some open/free text questions to capture insights because sample size and response rate likely to be small a quantitative analysis may be less useful.</p> <p>Important to capture:</p> <ul style="list-style-type: none"> Date of conservation – because responses may relate to stage of implementation How long person has been in service - because Profession – see if differences based on what people do. 	SGH

Figure 2: Evaluation Design Framework

ED Adult Low back pain management pathway

ALWAYS CHECK FOR THESE RED FLAGS

CONSIDER CAUDA EQUINA WITH ANY OF :

- Bilateral sciatica
- Impaired power
- Sensory loss/paraesthesia - genital/saddle/anal
- Bladder dysfunction – difficulty initiating, impaired flow sensation, incontinence, incomplete emptying
- Bowel incontinence
- Sexual dysfunction – can't get an erection

CONSIDER SPINAL INFECTION WITH ANY OF :

- Fever / night sweats
- Tuberculosis
- Urinary tract infection.
- Diabetes.
- Intravenous drug use.
- HIV infection / Immunocompromised

CONSIDER MALIGNANCY WITH ANY OF:

- 50 years of age or more.
- Gradual onset of symptoms.
- Severe unremitting pain that remains when the person is supine, aching night pain that prevents or disturbs sleep, pain aggravated by straining (for example, at stool, or when coughing or sneezing), and thoracic pain.
- Localised spinal tenderness.
- No improvement after four to six weeks of simple analgesia.
- Unexplained weight loss.
- Past history of cancer

CONSIDER FRACTURE WITH ANY OF :

- Sudden onset of severe central spinal pain relieved lying down.
- Major trauma, minor trauma, or strenuous lifting with osteoporosis or corticosteroid use.
- Structural deformity of the spine (such as a step from one vertebra to an adjacent vertebra).
- Point tenderness over a vertebral body.

CONSIDER ABDOMINAL AORTIC ANEURYSM IF:

- Age > 55yrs

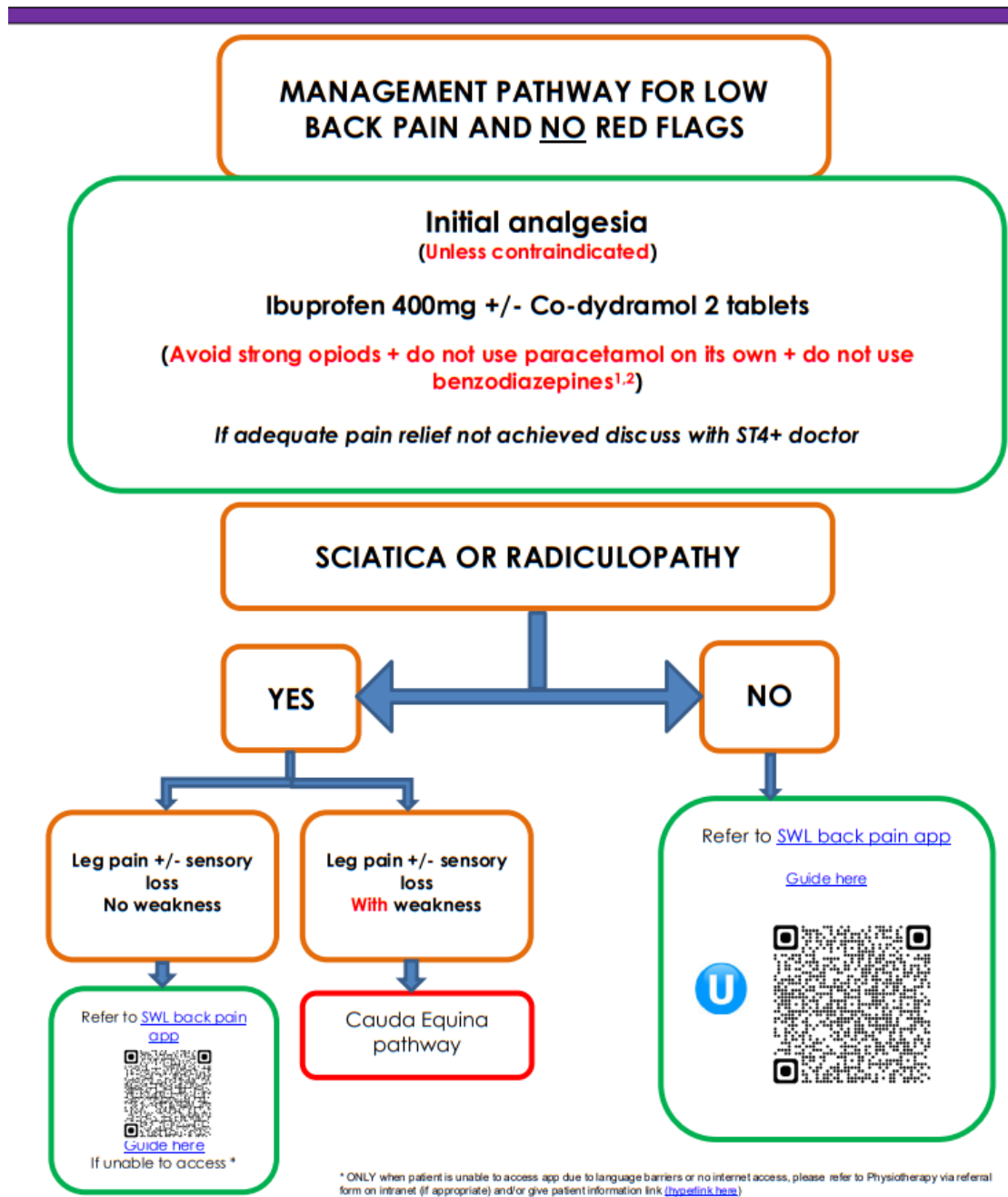
REMEMBER RENAL COLIC PRESENTS WITH BACK PAIN

**IF ANY PRESENT DISCUSS WITH ST4 OR ABOVE ED DOCTOR AND
ARRANGE APPROPRIATE INVESTIGATIONS AND REFERRAL
[For ? Cauda equina use the Cauda equina pathway]**

IF NO RED FLAGS SEE PATHWAY PAGE 2

Author (s):	Standard/Reference	Patient group:	Version	Review date
Ben Wanless Consultant Physiotherapist Phil Moss Consultant EM				
Update: Nov 2021 ED Senior Team Approval Date: April 2021	NICE NG59 2016 [1] doi:10.1016/j.janmgmed.2016.10.002 [2] doi:10.1016/j.pain.2010.02.015	Adult	Version 1.1 (update to getUbetter)	April 2023

ED Adult Low back pain management pathway



Author (s):	Standard/Reference	Patient group:	Version	Review date
Ben Wanless Consultant Physiotherapist Phil Moss Consultant EM	NICE NG59 2016 [1]doi:10.1016/j.jannemergmed.2016.10.002 [2]doi:10.1016/j.jpain.2010.02.015	Adult	Version 1.1 (update to getUBetter)	April 2023
Update: Nov 2021 ED Senior Team Approval Date: April 2021				

Figure 3: ED Adult LBP Management Pathway

Free Low Back
Pain App



Figure 4: QR Code Business Card