Using Electronic Health Records and Clinical Decision Support to Provide Return-to-Work Guidance for Primary Care Practitioners for Musculoskeletal Conditions Not Caused by Work

NIOSH RTW Subject Matter Expert Panel

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FINAL KNOWLEDGE RESOURCE REPORT

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INTRODUCTION/PROJECT BACKGROUND

The Subject Matter Expert Panel (the Panel), charged with identifying return-to-work (RTW)/stay-at-work (SAW) support for a non-work-related musculoskeletal condition commonly seen by primary care providers (PCPs) is focusing on **non-specific acute low back pain (LBP), with or without leg pain, and excluding red flag conditions such as fracture or progressive neurological deficit (see Appendix A for list of red flags).** However, it is the intent of the Panel that this clinical decision support (CDS) tool for in electronic medical recordkeeping (EMR) systems could be later expanded to include chronic LBP and other conditions. The focus is also non-work-related LBP per the direction of the National Institute for Occupational Safety and Health (NIOSH) because this avoids the complications introduced with treatment under the workers' compensation system.

The intended audience includes PCPs and other clinicians who are asked to provide activity restrictions for a work or activity "prescription." A work or activity prescription usually requires a licensed health care provider's signature, particularly when requested by employers and disability payers. Also, the activity prescription can have an impact on the course of treatment. As such, it is appropriate that the CDS tool is aimed primarily at the PCP, who will likely be responsible for the prescription. However, the CDS tool may be useful to other clinicians.

SCOPE OF PROJECT/CLINICAL OBJECTIVE

The project team chose to focus on acute LBP because it is one of the most frequent problems seen by PCPs,[1,2,3] and has a wide range of acuity and severity. An estimated 60-80% of the general population will experience an episode of LBP during their lifetime that is significant enough to disrupt daily activities.[4] Also, LBP represents one of the most common conditions which interferes with activities in and out of work.

Evidence shows that disability is detrimental to a patients' mental, physical, social, and financial well-being.[4,5,6,7] Authors of a recent systematic review and meta-analysis concluded that unemployment has a hazard ratio of 1.6 for premature mortality.[8] Thus, acute LBP that results in intolerance of work can lessen the quality and duration of life of a person's life.

PCPs are expected to write activity prescriptions for patients, and patients with acute LBP often seek specific recommendations from clinicians for activities that they should perform or avoid to facilitate recovery.[9] Systematic reviews show that staying active is beneficial to health; thus, encouraging patients to continue normal activities is good care.[10] Therefore, PCPs should understand the importance of RTW/SAW measures in helping their patients recover and return to activity.

We chose the term "activity prescription" rather than "work activity prescription" or "work prescription" because:

- activity prescription is a broader term that connotes that the provider's prescription is relevant for both in and out of work situations; and
- an activity prescription is more likely to become a routine part of quality care if it is not perceived as being limited to employment.

GOALS/PURPOSE

Goals/purpose of providing a clinical decision support tool/activity prescription are to:

- assist primary care providers prevent medically unnecessary disability;
- improve the quality of medical care by addressing a key aspect of the patient's quality of life (physical and mental health status, economic, social), functional status;
- make a normal provider task easier by facilitating the creation and communication of an activity prescription for which there is already a social, legal, and patient expectation of the PCP;
- reduce the economic burden of disability on society; and
- stimulate consideration for the role of occupation and occupational demands on patients and strive to increase clinicians' interest in capturing occupational health data in their electronic health records (EHRs).

These goals are measurable in a variety of ways (also see Appendix N for more details). Some examples of outcomes that can be measured and are amenable to experiment comparing practices/providers using vs. not using the tool are as follows:

- **Assist** primary care providers prevent medically unnecessary disability;
  - **Measure: days out of work prescribed by providers.**
  - **Measure: prescribed incidence and duration of disability within 30 days.**
  - **Measure: follow trends of total disability days available from state data warehouses.**
- **Improve** the quality of medical care by addressing a key aspect of the patient's quality of life (physical and mental health status, economic, social), functional status using patient-reported outcomes;
  - **Measure: There are many brief questionnaires that assess quality of life and function, e.g., the PROMIS 10; Oswestry Disability Index.**
- **Make** a normal provider task easier by facilitating the creation and communication of an activity prescription for which there is already a social, legal, and patient expectation of the PCP;
  - **Measure: time for providers to complete forms using the CDS tool vs. standard paperwork; audit of time from receipt of patient/3rd party request for activity prescription to completion by provider; count of requests for providers using CDS tool vs. standard paperwork.**
  - **Measure: survey provider experience with tool.**
- **Reduce** the economic burden of disability on society;
  - **Measure: number of disability days times average wage.**
- **Stimulate** PCPs to begin to think about the role of occupation and its demands on their patients and thereby increase their interest in capturing occupational health data in their electronic health records (EHRs).
  - **Measure: survey of providers using the CDS regarding attitudes about utility of occupational health data.**

The CDS also dissuades the clinician from promoting unnecessary disability resulting from simply taking the patient out of work, which may be the easiest, but often is the least desirable approach to provision of an activity prescription; total disability, will require justification in the CDS. Additionally, to reduce prolonged disability as the CDS will:

- provide a date in the report when the patient should be at full duty; and
- contain a field that lists the last date worked and the number of days off work upon return.

"KEY ACTION STATEMENT"

To focus implementation of Panel recommendations, NIOSH administrators asked that the Panel provide a "key action statement," that spells out under WHAT circumstances, WHO (intended audience) OUGHT (level of obligation) TO DO exactly what, and for WHOM the recommendation should be implemented. Additionally, the key action statement should imply the strength of the recommendation using directive words such as "must" (strong directive), "should," and "may" (weak directive), and must also include a discussion of HOW to do it and WHY it is a good idea. The Panel's key action statement is contained in Box 1.

Box 1 – Key Action Statement

IF a patient presents with acute LBP with or without leg pain AND without red flags (potentially serious disorders that include acute fractures, acute dislocations, infection, tumor, progressive neurologic deficit, or *cauda equina* syndrome – see **Appendix A** for a list of red flags) AND has functional limitations AND the patient requests or requires an activity note or instructions about activity;

THEN the treating **primary care provider** SHOULD:

- **discuss the impact of the functional limitations** on the patient's work and other activities AND
- **write an activity prescription for the patient** AND
- **transmit the activity prescription to other stakeholders** who legitimately request the prescription AND **accompany the prescription with a printed education brochure** regarding the value of return to work and/or maintaining and increasing activity during recovery.

See **Appendix B** for the complete Key Action Statement Profile.

Red Flags

The Panel proposes to structure an EMR CDS tool to include an information control (such as a button or hover-activated link) that would provide a summary of red flags in back pain taken from the ACOEM *Occupational Medicine Practice Guidelines* LBP Chapter (see Appendix A). The Panel decided not to require, as part of the CDS tool, that the PCP screen for red flags. This is in order to minimize intrusion of the tool. This approach is also justified as patients presenting with acute LBP and red flags are rare, and screening for red flags is not likely to have an impact on outome.[11-14]

Functional Limitations – We restricted this recommendation to patients who have functional limitations or activity intolerance AND ask for an activity prescription. The PCP is unlikely to need to generate an activity prescription if the patient neither has functional limitations nor requests such a note, except in the case when a third party requests an activity prescription.

A preferred option for a practice is to collect some functional limitation information on every patient who presents with acute back pain. However, a second option for a practice is to postpone any discussion of functional limitations to the point when a patient or other stakeholder requests an activity note. Ideally, all information should be entered by the patient with an interface directly into the medical record. However, considerations for those who do not have fluency in English, or are functionally illiterate, must be made as in some communities this will represent a substantial portion of the population.

There are 2 options, based on practice preference, for collecting this information:

- **Option 1:** Collect this information by paper questionnaire or by tablet in the waiting room. Collection could be executed by a patient service representative with simple question, such as: "Does your back pain currently limit your normal home or work activities?" (See Appendix C for sample questionnaires.) Ideally, this information would be imported into the EMR. This is easy in an EMR such as Epic. Alternatively, a medical assistant or administrative assistant could input into a template in the record as part of the initial note.
- **Option 2:** Postpone any discussion of functional limitations until a patient or other stakeholder requests an activity prescription.

For the PCP who is not familiar with the term "functional limitations," we suggest provision of a table activated by the user through a link or hover-over option in the EMR. This table would provide examples of common limitations such as difficulty bending, kneeling, climbing, or lifting that can be discussed with the patient. (See Appendix D – Functional Limitations: Return-to-Work Restrictions for Patients with Acute Low Back Pain.)

We chose not to be too specific with the types of functional limitations given that the activity prescription is meant to be useful not only for occupational restrictions but also for non-occupational scenarios such as participation in sports or self-directed activities at home or in the community. Whether it will be necessary to provide PCPs with domains for discussion, e.g., work, play, hobbies, activities of daily living, etc., remains to be seen after the tool is tested. Our thought was that the patient would, without too much prompting, indicate those areas of her/his life that are affected by the pain. However, to assist the PCP in discussing the issue of impact with the patient, the CDS tool could include an information control (such as a button or hover-activated link) with advice that the PCP, if so inclined, could provide the patient on his/her first visit:

Advice for Patients with Acute Back Pain:*

Most episodes of back pain resolve by themselves within weeks, sometimes within days. X-rays and other diagnostic studies usually are unrevealing and do not change the treatment approach. In most cases, even when diagnostic studies are performed, there is no reliable diagnosis to explain back pain. The best treatment includes you (the patient) maintaining your normal activities as well as you can; avoiding bed rest, which only weakens you and makes you stiffer; and taking non-steroidal anti-inflammatory drugs (like ibuprofen). Lightweight activity is better for the back than no activity. Applying warm or cold packs may be helpful. For those employed, also see the *Patient Education Brochure: Benefits of Returning to Work As Soon As Possible* for more information.*

***This advice incorporates the SME groups' expertise on the important elements that should be provided to the patient.**

ACTIVITY PRESCRIPTION

When an activity prescription is requested, the CDS supports the clinician in easily generating the prescription using a standard format. When activity prescriptions are not required, but the provider SHOULD write the activity prescription as the patient, an employer, or another stakeholder requests it, the CDS tool will allow timely provision of an activity prescription and support material. The CDS will improve the experiences of the provider, patient, and other stakeholders by allowing a well-considered prescription supported by the best available evidence, and structured in a concise form to be generated in a timely fashion. Failure to generate an activity prescription in a timely fashion may degrade the patient experience, displease stakeholders, impact patient benefits or employment, or in iatrogenic disability or attempts by the patient to perform activity beyond his or her abilities.

RATIONALE

Condition – The rationale for focusing on acute non-work-related LBP with or without leg pain and without red flags is, as previously noted, because LBP is a highly prevalent condition associated with significant disability. It is also, as seen in Box 2, costly.

Box 2 – Impact of Back Pain

Low back pain:

- is common worldwide;[15]
- may be experienced by 17% of U.S. adults in any three-month period;[16]
- is responsible for approximately 15 million office visits to health care providers annually;[17]
- is the fourth most-common discreet complaint or diagnosis for which patients see health care providers;[18]
- the second most common cause of disability in U.S. adults;[19]
- a common reason for lost work;[20,21] and
- cost $100 and $200 billion annually, two-thirds from lost wages and productivity.[20]

The Panel also restricted its focus to acute LBP without red flags because LBP guidelines[4] have different algorithms for LPB with and without red flags, and the presence of red flags may introduce potential safety risks that create medical contra-indications to work. For example, some spinal fractures may create instability that would risk spinal cord injury during activities that apply great force to the back; and spinal cord impingement syndrome, such as *cauda equina* syndrome, may require absence from work for emergent surgery. Additionally, besides a non-work-related problem being specified by NIOSH for this project, a focus on non-work related LBP avoids the complications introduced with treatment under the workers' compensation system. However, the principles of early activity management are identical regardless of whether the problem is or is not deemed work-related.

CDS TOOL – THE ACTIVITY PRESCRIPTION

In the Panel's CDS design, when the **activity prescription tool** is activated, a report specifying permitted activities will be generated using actuarial data and expert consensus consistent with the *Dictionary of Occupational Titles*' job physical demands classifications.[22]

The CDS tool will provide a specific date for elimination of activity restrictions that will limit medically unnecessary restrictions and its associated promotion of disability, or trigger more contact with the provider if the patient wants to extend restrictions and disability beyond CDS date for return to full duty. The CDS tool will include a box that the provider can check to indicate that the activity limitation is permanent, thereby eliminating the need to recreate the activity prescription.

The CDS tool does not *require* the provider to collect occupational health data before generating the activity prescription because:

- job demand information is unlikely to be present in the chart;
- collecting occupational data adds to the provider burden without improving care; and
- discussing the activity prescription (see below) with the patient will probably result in a discussion of whether the prescription will restrict the patient from performing their regular duties and thereby elicit enough information to adjust the activity prescription accordingly.

The CDS tool will include in the activity prescription a closing direction that will state: "Over the next four (4) weeks,* the patient may gradually increase their activity as tolerated to usual activities. If the patient is unable to tolerate the activities as written above, or has not returned to usual activities within four weeks, the employer, insurer, or patient should contact the provider for further guidance."

> *The Panel is not recommending an automatic 4 weeks of disability. The CDS is based on evidence that the majority of people with acute back pain return to full function in 4 weeks or less. For simplicity, it relies on the fact that *most* people want to return to full activity as soon as they feel able to do so. The prescription does not proscribe full activity before 4 weeks; rather it prompts further investigation if the patient has not returned to work by that time. While it *is possible* that some patients will have more disability, by capping disability at 4 weeks and encouraging a graduated increase in activity during that time frame, the CDS will help prevent prolonged disability.
>
> In fact, according to data provided in the Reed Group's *MDGuidelines* (MDG), in the situation of non-work-related degenerative disc condition, the maximum disability is 28 days – and over 75% of patients actually have more days off – thus a cap of 4 weeks is not only reasonable, but it will trigger additional investigation (follow-up visit).[23]

The PCP will not need to select an "out of work" option as the "starting" point is 0 days and the cap is 4 weeks. (See Appendix E for discussion/references regarding disability duration.)

The Panel decided not to automatically specify return visits to the PCP for the purpose of revising the activity prescription because:

- return visits add to the cost of care and patients without insurance or with high deductibles are unlikely to want to return for revisions unless the revisions are required by an employer or insurer; and
- the vast majority of patients with LBP with or without leg pain will naturally resume normal activities within four weeks of evaluation.[24-42]

Patients who do not recover by the date specified for elimination of activity restrictions by the CDS LBP tool should be reassessed.

The CDS tool will have the capability to copy the data from the most recent, previous activity prescription into the activity prescription from a current encounter, and the activity prescription from the current encounter can be edited. This feature should ease the PCPs task of writing activity prescriptions.

Discussion of the Activity Prescription with the Patient – The Panel recommends that the clinician discuss the activity prescription with the patient to assure that the patient:

- understands the prescription; and

- has an opportunity request modification of the prescription to accommodate the patient's circumstances.

The Panel recommends that the activity prescription generated by the CDS be used as the standard response to any request or form given to providers requesting an activity prescription. The CDS activity prescription can be attached to other forms, which should be signed along with a comment on the form to "see attached."

EVIDENCE THAT FORMS THE BASIS OF THE CLINICAL DECISION SUPPORT TOOL

Methods used to collect evidence to support this recommendation included MedLine/PubMed and Google searches information and articles containing the terms:

- disability (prevention OR treat* OR manage*)
- primary care
- musculoskeletal
- return to work and
- risk assessment.

When searches yielded more than 250 articles, the results were limited to studies of humans and studies published in the English language. The search for disability (prevention OR treat* OR manage*) was further limited to systematic reviews or meta-analyses. Material used to form the Panel's conclusions were published in peer-reviewed journals, government documents (similar to those published by the U.S. Centers for Disease Control and Prevention), or from American Medical Association or ACOEM publications. Grading criteria was based on the methodology used to develop the ACOEM *Practice Guidelines*, which is based on the GRADE standards for guideline development. The COOG and the American Academy of Pediatrics Steering Committee on Quality Improvement and Management tools were used for CDS development and classifying recommendations for clinical practice guidelines (see Appendix F – Guideline Quality Appraisal).

There is strong "administrative" (observational) evidence – not amenable to be captured through a randomized controlled trial (RCT) – that the longer patients are disabled or encounter prolonged absence from activities of daily living, including work, the less their potential for successful return to activities of daily living and work based on:

- prima facie evidence indicates that activity prescriptions are required – they are an administrative "fact" of practice[43];
- strong scientific evidence has found that disability is toxic to a patient's health and promoting activity is rehabilitative (Evidence Level B);
- actuarial data is available regarding the mean and range of disability durations associated with low back pain (U.S. Bureau of Labor Statistics data) – however, there is little good evidence beyond expert opinion regarding the appropriate level of default restrictions; and
- expert consensus when there is no published evidence beyond expert opinion to support the value of a default activity prescription in EMR systems to reduce disability. However, there is moderate evidence that setting an expectation for patient and provider allows most patients with LBP to recover within 4 weeks.[44,45]

The Panel believes the Evidence Quality is B as it is supported by "trials or diagnostic studies with minor limitations and is consistent with findings from multiple observational studies. With this evidence quality rating and a balance of benefits over harms, and the Recommendation Strength is Moderate (see Appendix B).

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APPENDICES FOR THE FINAL KNOWLEDGE RESOURCE REPORT FOR THE CLINICAL DECISION SUPPORT TOOL FOR LOW BACK PAIN*

Attached to this RTW Knowledge-Resource Report are the following documents:

***Note: With the addition of the appendices, this report is more than 50 pages. However, the length of the report does not reflect, and is separate from, the length of the CDS tool which is intended to be short and concise.**

Appendix A – Red Flags for Potentially Serious Low Back Disorders
from the American College of Occupational and Environmental Medicine Practice Guidelines Chapter on Low Back Disorders

Red Flags

Potentially serious disorders are referred to as "red flags." These include acute fractures, acute dislocations (e.g., spondylolisthesis), infection, tumor, progressive neurologic deficit, or *cauda equina* syndrome.

The Panel proposes to structure an EMR CDS tool to include an information control (such as a button or hover-activated link) that would provide the PCP with this summary of red flags in back pain taken from the ACOEM *Occupational Medicine Practice Guidelines* LBP Chapter.

Disorder	Medical History	Physical Examination/Diagnostic Testing
SPINAL DISORDERS		
Fracture	Major trauma, such as vehicular accident or fall from height Minor trauma or strenuous lifting in older or potentially osteoporotic patients	Percussion tenderness over specific spinous processes Careful neurological examination for signs of neurological compromise
Tumor and Neoplasia	Severe localized pain over specific spinal processes History of cancer Age >50 years Constitutional symptoms, such as recent unexplained weight loss or fatigue Pain that worsens when patient is supine Pain at night or at rest	Pallor, reduced blood pressure, diffuse weakness Tenderness over spinous process and percussion tenderness Decreased range of motion due to protective muscle spasm History of sciatica for detection of cancer† ▪ Sciatica sensitivity = 58 to 93% ▪ Sciatica specificity = 78% History of paresthesia for detection of cancer† ▪ Paresthesia sensitivity = 58% Plain radiography for detection of cancer‡ ▪ Radiography sensitivity = 60% ▪ Radiography specificity = 90 to 99.5% Magnetic resonance imaging (MRI) for detection of cancer‡ ▪ MRI sensitivity = 83 to 93% ▪ MRI specificity = 90 to 97% Radionuclide scanning for detection of cancer‡ ▪ Planer imaging sensitivity = 74 to 98% ▪ Planer imaging specificity = 64 to 81% ▪ SPECT sensitivity = 87 to 93% ▪ SPECT specificity = 91 to 93%
Infection	Risk factors for spinal infection: recent bacterial infection (e.g., urinary tract infection); IV drug abuse; diabetes mellitus; or immune suppression (due to corticosteroids, transplant, or HIV) Constitutional symptoms, such as recent fever, chills, or unexplained weight loss	Tenderness over spinous processes Decreased range of motion Vital signs consistent with systemic infection (late): ▪ Tachycardia ▪ Tachypnea ▪ Hypotension ▪ Elevated temperature, high white blood cell count ▪ Pelvic or abdominal mass or tenderness Plain radiography for detection of infection‡ ▪ Radiography sensitivity = 82%

		▪ Radiography specificity = 57% Magnetic resonance imaging (MRI) for detection of infection‡ ▪ MRI sensitivity = 96% ▪ MRI specificity = 92% Radionuclide scanning for detection of infection‡ ▪ Radionuclide scanning sensitivity = 90% ▪ Radionuclide scanning specificity = 78%
Cauda Equina Syndrome/ Saddle Anesthesia	Direct blow or fall with axial loading Perianal/perineal sensory loss Recent onset of bladder dysfunction, such as urinary retention, increased frequency, or overflow incontinence Bowel dysfunction or incontinence Severe or progressive neurologic deficit in lower extremities, usually involving multiple myotomes and dermatomes	Unexpected laxity of bladder* or anal sphincter Major motor weakness in hamstrings (knee flexion weakness); ankle plantar flexors, evertors, and dorsiflexors (foot drop). May have more proximal myotomal weakness if higher cord level(s) affected Spastic (thoracic) or flaccid (lumbar) paraparesis Increased (thoracic) or decreased (lumbar) reflexes
Progressive Neurologic Deficit	Severe low back pain Progressive numbness or weakness	Significant and progressive myotomal motor weakness Significant and increased sensory loss – in anatomical distribution Radicular signs
EXTRASPINAL DISORDERS		
Dissecting Abdominal Aortic Aneurysm	Excruciating low back pain History of atherosclerotic disease or multiple cardiovascular risk factors History of hypertension	Pulsatile midline abdominal mass Absent or variable pulses Asymmetric blood pressure Bruits
Renal Colic	Excruciating pain from costovertebral angle to groin, testis, or labia History of urolithiasis Hematuria	Possible tenderness at costovertebral angle
Retrocecal Appendicitis	Right lower quadrant abdominal pain and/or right low back pain Constipation Subacute onset without inciting event Nausea and vomiting variably present	Low-grade fever May have tender right lower quadrant Pain on rectal examination in right lower quadrant
Pelvic Inflam-matory Disease	Vaginal discharge Pelvic pain Prior episode	Uterine tenderness Tender over right and/or left lower quadrants Cervical discharge
Urinary Tract Infection	Dysuria History of urinary tract infections	Fever Suprapubic tenderness Smelly or cloudy urine

Adapted from: †van den Hoogen HM, et al(26); ‡Jarvik JG, Deyo RA(27);*Bigos S, et al.(28)
SPECT = single-photon emission computed tomography

Appendix B – Key Action Statement Profile

Date: October 23, 2014

Key Action Statement:

Condition
IF a patient presents with LBP with or without leg pain AND without red flags AND has functional limitations AND the patient requests or requires an activity note or instructions about activity;

Action
THEN the treating **primary care provider** SHOULD:

- **discuss the impact of the functional limitations** on the patient's work and other activities AND
- **write an activity prescription** AND
- **discuss the activity prescription with the patient** AND
- give the activity prescription **to the patient AND**
- **transmit the activity prescription to other stakeholders** who legitimately request the prescription AND **accompany the prescription with a printed education brochure** regarding the value of return to work and maintaining and increasing activity during recovery.

Aggregate Evidence Quality: B

Level of Confidence in Evidence: Moderate

Benefits:

- encourages continuation of or quick return to a patient's normal activities
- improves quality of care – patient gets better medically and functionally faster
- improves clinician workflow
- eases burden on provider
- more ethical as it promotes equal treatment of patients
- reduces both direct and indirect costs to employer and society
- maintains patient's financial status (no loss of salary), thereby preventing the adverse health effects of declining income
- prevents maladaptive behavior which may lead to permanent disability
- protects/improves patient's emotional state

Risk, Harm, Cost:

- May inadvertently create more disability because we may end up giving more people restrictions
- Might displease some patients as they would prefer stricter work restrictions or more time off work
- Comes with implementation costs
- May result in duplication of work for provider (another form to complete if requesting stakeholder does not accept this automatically generated activity prescription)

Benefit-Harm Assessment: Preponderance of Benefit

Who: treating primary care physician/health care provider

Value Judgments:

Intentional Vagueness:

Role of Patient Preferences:

Exclusions:

Policy Level:

Differences of Opinion:

Notes:
Information button to include the Red Flag Table (Table 5 from ACOEM *Occupational Medicine Practice Guidelines* chapter on Low Back Disorders).

Patient education brochure added regarding the value of progressive activity.

What's the scientific evidence to back up the specific recommendation? In this field, there is strong "administrative" evidence not amenable to be captured by an RCT. However, there is strong evidence that the longer patients are kept out of work, the potential for their successful return to work diminishes in the long term.

Recommendation has 4 parts with different levels of evidence –

1. prima facie evidence that activity prescriptions are required – administrative "fact" of practice.[i]
2. strong scientific evidence that disability is toxic to a patient's health and promoting activity is rehabilitative (Evidence Level B).
3. Although actuarial data regarding the mean and range of disability durations associated with low back pain are available, there is little good evidence beyond expert opinion regarding the appropriate level of default restrictions.
4. There is no published evidence beyond expert opinion to support the value of a default activity prescription in an electronic health record to reduce disability. However, there is moderate evidence that setting expectation for patient and provider that most patients with LBP recover within 4 weeks.[ii,iii]

[i]Merrill RN, Pransky G, Hathaway J, Scott D. Illness and the workplace: a study of physicians and employers. *J Fam Pract*. 1990;31(1):55-8.

[ii]Kapoor S, Shaw WS, Pransky G, Patterson W. Initial patient and clinician expectations of return to work after acute onset of work-related low back pain. *J Occup Environ Med*. 2006;48(11):1173-80. Available at: www.ncbi.nlm.nih.gov/pubmed/17099454. Accessed October 30, 2014.

[iii]Coste J, Lefrançois G, Guillemin F, Pouchot J; French Study Group for Quality of Life in Rheumatology. Prognosis and quality of life in patients with acute low back pain: insights from a comprehensive inception cohort study. *Arthritis Rheum*. 2004;51(2):168-76. Available at: http://onlinelibrary.wiley.com/doi/10.1002/art.20235/pdf. Accessed October 30, 2014.

Appendix C – Sample Patient Functional Limitations Questionnaires

Sample #1

1. Are you restricted in your ability to meet typical physical requirements of your job or usual line of work, social obligations (housework, family life)? If so, specifically, how do your symptoms limit your ability to function? Are you unable to:
   - lift or carry objects required.
   - sustain continuous or prolonged repetitive movement of your arms, hands, or fingers.
   - sustain a continuous or prolonged standing or sitting position.
   - sustain consistent physical work effort.
   - bend or walk up/down stairs?
2. Are you restricted in your ability to tolerate typical psychological stresses in the work environment?
3. Are you unable to tolerate the common environmental conditions found at work?
4. Are you unable to sustain a consistent mental work effort?
5. Are you unable to complete tasks at a pace comparable to other employees doing your work or the expected pace of other activities at home or in the community?
6. Are you unable to drive?
7. Other functional limitations?
8. Do you want or need a note for work, school, sports, or a disability insurer about your ability to continue or return to normal activities?

Sample #2

Question #1 Are you restricted in your ability to meet typical physical requirements of your job or usual line of work, social obligations (housework, family life)?	❑ Yes ❑ No	***If yes*****,** specifically, how do your symptoms limit your ability to function? Are you able to: ▪ Lift or carry objects required ❑ Yes ❑ No ▪ Sustain continuous or prolonged repetitive movement of your arms, hands, or fingers ❑ Yes ❑ No ▪ Sustain a continuous or prolonged standing or sitting position. ❑ Yes ❑ No ▪ Sustain consistent physical work effort. ❑ Yes ❑ No ▪ Bend or walk up/down stairs? ❑ Yes ❑ No
Question #2 Are you restricted in your ability to tolerate typical psychological stresses in the work environment?	❑ Yes ❑ No	If yes, please specify:
Question #3 Are you unable to tolerate the common environmental conditions found at work?	❑ Yes ❑ No	If yes, please specify:
Question #4 Are you unable to sustain a consistent mental work effort?	❑ Yes ❑ No	If yes, please specify:
Question #5 Are you unable to complete tasks at a pace comparable to other employees doing your work or the expected pace of other activities at home or in the community?	❑ Yes ❑ No	If yes, please specify:
Question #6 Are you unable to drive?	❑ Yes ❑ No	If yes, please specify:
Question #7 Do you have other functional limitations?	❑ Yes ❑ No	If yes, please specify:
Question #8 Do you want or need a note for work, school, sports, or a disability insurer about your ability to continue or return to normal activities?	❑ Yes ❑ No	

Sample #3

Question #1 Are you restricted in your ability to meet typical physical requirements of your job or usual line of work, social obligations (housework, family life)? **----------** ***If you answered yes to the above question*,** specifically, how do your symptoms limit your ability to function? Are you able to:	❑ Yes	❑ No
▪ Lift or carry objects required	❑ Yes	❑ No
▪ Sustain continuous or prolonged repetitive movement of your arms, hands, or fingers	❑ Yes	❑ No
▪ Sustain a continuous or prolonged standing or sitting position.	❑ Yes	❑ No
▪ Sustain consistent physical work effort.	❑ Yes	❑ No
▪ Bend or walk up/down stairs?	❑ Yes	❑ No
Question #2 Are you restricted in your ability to tolerate typical psychological stresses in the work environment?	❑ Yes	❑ No
Question #3 Are you able to tolerate the common environmental conditions found at work?	❑ Yes	❑ No
Question #4 Are you able to sustain a consistent mental work effort?	❑ Yes	❑ No
Question #5 Are you able to complete tasks at a pace comparable to other employees doing your work or the expected pace of other activities at home or in the community?	❑ Yes	❑ No
Question #6 Are you able to drive?	❑ Yes	❑ No
Question #7 Do you have other functional limitations?	❑ Yes	❑ No
Question #8 Do you want or need a note for work, school, sports, or a disability insurer about your ability to continue or return to normal activities?	❑ Yes	❑ No

Appendix D – Functional Limitations: Return-to-Work Restrictions for Patients with Acute Low Back Pain

For the PCP who is not familiar with the term "functional limitations," the following table which can be activated by the user through a link in the EMR or as a hover over option, provides examples of common limitations such as difficulty bending, kneeling, climbing, or lifting and modified activity duration times for individuals with new onset regional low back pain.

Activity Level	Restrictions	Job Categories	Modified Activity Duration
Sedentary	No lifting, pushing, or pulling over 10 pounds No twisting of the spine/torso, climbing ladders, or work at heights No more than occasional (less than 25% of the time) bending over at the waist, walking, or standing	Example: worker sits most of the time and only walks or stands for brief periods. TYPICAL JOB: OFFICE WORK	1 day
Light	No lifting, pushing, or pulling over 20 pounds No climbing of ladders or work at heights No more than occasional (less than 25% of the time) bending over at the waist or twisting of the spine/torso No more than intermittent (less than 50% of the time) walking or standing	Example: walking or standing to a significant degree, or sitting constantly but with arm and/or leg controls with exertion of force greater than sedentary. TYPICAL JOB: OFFICE NURSING, LIGHT ASSEMBLY	1-3 days
Light-Medium	No lifting, pushing, or pulling over 30 pounds No more than intermittent (less than 50% of the time) bending over at the waist or twisting of the spine/torso No more than frequent (less than 75% of the time) walking or standing	TYPICAL JOB: HOUSEKEEPER	4-7 days
Medium	No lifting, pushing, or pulling over 50 pounds No more than frequent (less than 75% of the time) bending over at the waist or twisting of the spine/torso	TYPICAL JOB: RETAIL SALES ASSOCIATES	8-14 days
Heavy	No lifting, pushing, or pulling over 75 pounds	TYPICAL JOB: MATERIAL HANDLING; SHIPPING AND RECEIVING	14-30 days*
Very Heavy	No lifting, pushing, or pulling over 100 pounds	TYPICAL JOB: CONSTRUCTION, LABORER	30-60 days*

*With the caveat that the number of days are not based on evidence, the Panel recommends these durations as the risk of re-injury could be very high with this level of physical demand.

Appendix E – Disability Duration Discussion/References

According to the ReedGroup's *MDGuidelines,* 5-12 weeks is the median length of disability from low back disorders*; therefore, 4 weeks is a conservative length of disability for acute low back pain. Four weeks encompasses only the acute phase of low back pain (ACOEM Practice Guidelines). Screening approaches for delayed recovery in low back pain may not be helpful when applied or are not evaluated in the acute phase of low back pain (see references below).

> *Low back pain – Mean disability days = 62; median disability days = 39 (see http://www.mdguidelines.com/low-back-pain; accessed June 21, 2015
>
> Displacement, lumbar intervertebral discomfort without myelopathy – Mean disability days = 88; median disability days = 66 (see http://www.mdguidelines.com/displacement-lumbar-intervertebral-disc-without-myelopathy; accessed June 21, 2015)
>
> Degeneration, lumbar intervertebral disc – Mean disability days = 122; median disability days = 84 (see http://www.mdguidelines.com/degeneration-lumbar-intervertebral-disc; accessed June 21, 2015)

References:

Low back disorders. In: Hegmann K, ed. *Occupational Medicine Practice Guidelines*. American College of Occupational and Environmental Medicine. Denver CO: ReedGroup; 2015 (in press).

Schultz IZ, Crook J, Berkowitz J, Milner R, Meloche GR, Lewis ML. A prospective study of the effectiveness of early intervention with high-risk back-injured workers: a pilot study. *J Occup Rehabil*. 2008;18(2):140-51.

Verkerk K, Luijsterburg PA, Miedema HS, Pool-Goudzwaard A, Koes BW. Prognostic factors for recovery in chronic nonspecific low back pain: a systematic review. *Phys Ther*. 2012;92(9):1093-108.

Reme SE, Hagen EM, Eriksen HR. Expectations, perceptions, and physiotherapy predict prolonged sick leave in subacute low back pain. *BMC Musculoskelet Disord*. 2009;10:139.

Du Bois M, Donceel P. A screening questionnaire to predict no return to work within 3 months for low back pain claimants. *Eur Spine J*. 2008;17(3):380-5.

Lötters F, Burdorf A. Prognostic factors for duration of sickness absence due to musculoskeletal disorders. *Clin J Pain*. 2006;22(2):212-21.

	Describe the primary disease/condition and intervention/service/technology that the guideline addresses. Indicate any alternative preventive, diagnostic or therapeutic interventions that were considered during development.
	No-specific low back pain with or without leg pain but without red flags. Presentation non-complicated, date of onset/exacerbation very recent; no more than a week lost time from work
	Describe the goal that following the guideline is expected to achieve, including the rationale for development of a guideline on this topic.
	Goals and recommendation are to: ▪ assist primary care providers prevent medically unnecessary disability; ▪ improve the quality of medical care by addressing a key aspect of the patient's quality of life (physical and mental health status, economic, social), functional status; ▪ make a common provider task easier by informing and facilitating the creation and communication of an activity prescription for which there is already a social, legal, and patient expectation of the PCP; ▪ reduce the economic burden of disability on society; and ▪ stimulate PCPs to begin to think about the role of occupation and its demands on their patients and thereby increase their interest in capturing occupational health data in their electronic health records. We are focusing on non-work-related low back pain with or without leg pain and without red flags because as already noted it is a highly prevalent condition seen by primary care providers (PCPs) and is associated with significant disability in the general population. We also chose to restrict our focus to back pain without red flags because low back pain guidelines (cite ACOEM, others) have created different algorithms for LBP with red flags. Also, the presence of certain red flags may introduce potential safety risks that create medical contra-indications to work – for example, some spinal fractures may create instability that would risk spinal cord injury, while other red flags require absence from work because they require emergency surgery – e.g., cauda equina or dissecting abdominal aortic aneurysm. We decided to present an information button that would supply Table 5 – Red Flags from ACOEM's Low Back Chapter for the PCP who wants to be reminded about the range of red flags and their associated signs and symptoms. However, we decided not to prompt the PCP to screen for these red flags earlier in the visit to minimize the burden of the clinical decision support. In addition, patients presenting with red flags are rare.
	Describe the intended users of the guideline (e.g., provider types, patients) and the settings in which the guideline is intended to be used.
	Primary care physicians (PCPs) in the clinical setting
	Describe the patient population eligible for guideline recommendations and list any exclusion criteria.
	Patients with non-specific low back pain (with or without leg pain). Initial presentation of acute, non-complicated low back pain without red flags; date of onset very recent with no more than a week out of work; low self-efficacy.
	Identify the organization(s) responsible for guideline development and the names/credentials/ potential conflicts of interest of individuals involved in the guideline's development.
	ACOEM
Funding source/sponsor	Identify the funding source/sponsor and describe its role in developing, and/or reporting the guideline. Disclose potential conflict of interest.
Source of Funding	NIOSH grant/contract #212-2014 -M-59014.

Conflict of Interest	None
	Describe the methods used to search the scientific literature, including the range of dates and databases searched, and criteria applied to filter the retrieved evidence.
	MedLine/PubMed search: disability (prevention OR treat* OR manage*) "primary care," musculoskeletal, return to work, risk assessment. Filters: Humans, English. Limited the search further to systematic reviews or meta-analyses reported in articles with abstracts. Range of dates – June 2008 to August 22, 2014.
Recommendation Grading Criteria	Describe the criteria used to rate the quality of evidence that supports the recommendations and the system for describing the strength of the recommendations. Recommendation strength communicates the importance of adherence to a recommendation and is based on both the quality of the evidence and the magnitude of anticipated benefits or harms.
Recommendation Grading Criteria	ACOEM Practice Guidelines Methodology; The GRADE (Grading of Recommendations Assessment, Development and Evaluation) standards for guideline development, which are used by many guideline developers; COGS; AAP.
Evidence Quality Rating Scheme	Schiffman RN, Dixon J, Brandt C, et al. The GuideLine Implementability Appraisal (GLIA): development of an instrument to identify obstacles to guideline implementation. BMC Med Informatics Decision Making. 2005;5:23. GLIA v.2.0 see www.cdc.gov/od/science/quality/docs/GLIA_v2.pdf; AAP's scheme -- American Academy of Pediatrics Steering Committee on Quality Improvement and Management. Classifying recommendations for clinical practice guidelines. Pediatrics. 2004;114(3):874–877
Recommendation Strength Rating Scheme	IBID
	Describe how evidence was used to create recommendations, e.g., evidence tables, meta-analysis, decision analysis.
	IBID
Pre-release review	Describe how the guideline developer reviewed and/or tested the guidelines prior to release.
External Review	X
Pilot testing	X
Formal Appraisal	X
	State whether or not there is a plan to update the guideline and, if applicable, an expiration date for this version of the guideline.
	X
	Describe the role of patient preferences when a recommendation involves a substantial element of personal choice or values.
	X

Appendix G – Primary Care Scenarios for Cases Involving Activity Prescriptions for Patients with Acute Low Back Pain

CASE #1 – A 46-year-old female presents with gradual onset increasing low back pain after 2 days of extended driving; she just returned to New Hampshire from Florida by car. **HISTORY:** Patient has pain in her right lower back, radiating to the lateral right leg. The pain is increased with prolonged sitting and bending forward, and she has difficulty finding a comfortable position. She also has difficulty walking, lifting, and sitting, although she feels okay standing for a short period of time. Lying down seems to be most comfortable. She is uncomfortable driving for more than a short distance. She denies numbness or tingling, weakness, bowel or bladder problems. She has had several prior episodes of low back pain, the last one about 5 years ago, with similar symptoms. Past medical history is significant for mild obesity, hypertension treated by hydrochlorothiazide; review of systems is otherwise negative. **PHYSICAL EXAMINATION:** Physical examination shows pain on palpation in the right lateral lumbosacral the area, increased by bending forward. Patient has decreased range of motion of her lower back, limited by pain. Her sensory and motor examination is normal, and SLR is negative. (Physician "clicks" on Red Flag Information Tab to view list and to eliminate any potential serious disorders.) No red flags found. Patient notes that she is an insurance underwriter and her work involves being seated at a computer workstation for 8 hours per day. Patient indicates to the PCP that she is not sure how she can do her job in her current state as prolonged sitting is painful, **and requests a sick leave note/activity prescription (ACTIVITY PRESCRIPTION TRIGGER).** PCP inquires about functional limitations, completes history and physical and now proceeds to completing the order set. If desired, PCP may access "functional limitations" table via link in EMR. Table provides examples of common limitations, e.g., difficulty bending, kneeling, climbing, or lifting. Patient indicates she has functional limitations which affect her work, which involves being seated at a computer workstation for 8 hours per day. Order set includes an Activity Prescription tab which opens into the activity. (Or PCP's program has a separate Activity Prescription tab.)

Step	Process/Work Flow	Action/Outcome
1	Patient presents with low back pain (LBP) with or without leg pain	Patient could complete a questionnaire at check-in which asks how condition that is the reason for the visit is affecting her activities of daily life (functional limitations).
2	PCP takes detailed history to evaluate LBP, including previous episodes and/or injuries	Enter patient history and chief complaint (back pain) into EMR.
3	PCP conducts physical examination: Rules out red flags Option #1: Notes functional limitations if any based on questionnaire and patient complaints (Step 1) and may enter into EMR	Enter findings into EMR. PCP accesses information (e.g., button/hover-activated link) that provides **summary of red flags in back pain** PCP accesses "functional limitations" table via link in EMR. Table provides examples of common limitations, e.g., difficulty bending, kneeling, climbing, or lifting. Discusses with patient now or in Step 7 (Option #2).
4	PCP completes history/exam and proceeds to completing order set	Opens order set
	Activity Prescription Trigger	
5	**Patient asks for Activity Prescription/note for employer.**	Order set includes an Activity Prescription tab which opens into activity or PCP **activates Activity Prescription Tool tab NOW**.
	Activity Prescription	
6	Generate Activity Prescription	**Activity Prescription report auto-populates** with permitted activities and provides a specific date for elimination of activity restrictions that will limit medically unnecessary restrictions or trigger more contact with the provider if patient wants to extend restrictions and disability beyond CDS date for return to full duty.

		Activity prescription includes closing direction that states: "Over the next four (4) weeks, the patient may gradually increase their activity as tolerated to usual activities. If the patient is unable to tolerate the activities as written above, or has not returned to usual activities within four weeks, the employer, insurer, or patient should contact the provider for further guidance."
7	Discussion of Activity Rx	During discussion, PCP may overwrite machine recommended restrictions based on review of functional limitations with patient by interview with or without (Option #2) the use of a Functional Limitations questionnaire as per Step 1. CDS tool also includes a box that PCP can check to indicate that the activity limitation is permanent, thereby eliminating the need to recreate the activity prescription. PCP discuss Activity Prescription with patient to assure that patient: • understands the prescription; and • has an opportunity request modification of prescription to accommodate his/her circumstances. In addition to generating a detailed Activity Prescription for the patient (which can be shared with the employer or other stakeholder), the CDS tool generates a patient education brochure which discussed the value of returning to work and/or maintaining/increasing activity during recovery (see Appendix L).
	Transmit Activity Prescription to stakeholders	In this case, providing to patient may be sufficient. She can then copy and provide to any other requesting stakeholders.

CASE #2 – A 22-year-old male presents to a primary care physician on Monday morning for acute onset severe midline low back pain yesterday, after moving a large stone at home while building a stone wall. Now, he is very uncomfortable sitting, bending over, or twisting. **HISTORY:** As a new patient, he is asked to complete a questionnaire to screen for red flags or to assess how low back pain is affecting his life at home and at work. Patient has never had significant back pain in the past, and has a negative past medical history. He has some numbness in his right lateral leg, but no bowel or bladder problems. He thinks he might have some weakness in his right leg, but is not sure. His review of systems is otherwise negative. **PHYSICAL EXAMINATION:** On physical examination, patient is uncomfortable and stands, without sitting. He has lumbosacral midline back pain which increases significantly if he bends forward a few degrees, and is unable to flex more than 40°. He feels slightly better if he bends backwards. He has difficulty bending from side to side without increasing his pain. His distal motor and sensory examination is normal, and SLR is negative. No red flags for fracture, etc., found. **TREATMENT:** PCP prescribes medication which may impair function. Physician discusses drug dosage, side effects, which include functional impairment, and contra-indications with patient. **ACTIVITY PRESCRIPTION TRIGGER:** Impairing med Rx triggers functional limitation discussion – how will this medication impact your activities such as driving or operating dangerous and **triggers Activity Prescription tab as part of order set**. In discussing the effects of the medication, the patient is concerned about his work, as he is a general laborer for a construction firm and this involves moving lumber, bags of concrete, and other heavy materials, and operating heavy machinery. Patient thinks that his company occasionally allows light duty, **but he has spoken to his supervisor and that person has requested the patient provide a note (Activity Prescription) from his doctor explaining what work activities the patient can and cannot do with this condition and while on this medication and for how long.**

Step	Process/Work Flow	Action/Outcome
1	Patient presents with low back pain (LBP) with or without leg pain	Patient could complete a questionnaire at check-in which asks how condition that is the reason for the visit is affecting his activities of daily life. Alternatively, the practice could decide to leave this assessment until after the activity prescription is triggered (see comment on prior scenario)
2	PCP takes detailed history to evaluate LBP, including previous episodes and/or injuries	Enter patient history and chief complaint into EMR.
3	Conduct physical examination: Rule out red flags Note functional limitations if any and enter into EMR	Enter findings into EMR. PCP accesses information (e.g., button/hover-activated link) that provides **summary of red flags in back pain** PCP accesses "functional limitations" table via link in EMR. Table provides examples of common limitations, e.g., difficulty bending, kneeling, climbing, or lifting.
4	PCP completes history/exam and proceeds to completing order set	Opens order set
	Activity Prescription Trigger	
5	Prescribe Treatment Plan/Write Order Set Discussion of medication side effects leads to patient and/or employer requesting activity prescription	**Activity Prescription activated as part of the order set.** PCP prescribes treatment – e.g., medication prescription activates Activity Prescription Tool NOW to generate Activity Prescription report.
	Activity Prescription	
6	Generate Activity Prescription	**Activity Prescription report** specifies permitted activities and provides a specific date for elimination of activity restrictions that will limit medically unnecessary restrictions or trigger more contact with the provider if the patient wants to extend restrictions and disability beyond CDS date for return to full duty. Activity prescription includes closing direction that states: "Over the next four (4) weeks, the patient may gradually increase their activity as tolerated to usual activities. If the patient is unable to tolerate the activities as written above, or has not returned to usual activities within four weeks, the employer, insurer, or patient should contact the provider for further guidance." CDS tool also includes a box that PCP can check to indicate that the activity limitation is permanent, thereby eliminating the need to recreate the activity prescription.
7	Discuss Activity Prescription with Patient Patient reports that he has spoken to his supervisor and that person has requested the patient provide a note (Activity Prescription) from his doctor explaining what work activities the patient can and cannot do with this	Reviewing the Activity Prescription with patient ought to result in a discussion of whether the prescription will restrict the patient from performing regular duties and elicit enough information to adjust the Activity Prescription accordingly. PCP discuss Activity Prescription with patient to assure that patient: • understands the prescription; and

	condition and while on this medication and for how long.	• has an opportunity request modification of prescription to accommodate his/her circumstances. • During discussion, PCP may also overwrite machine recommended restrictions based on review of functional limitations with patient by interview with or without the use of a Functional Limitations questionnaire as per Step 1. In addition to generating a detailed Activity Prescription for the patient (which can be shared with the employer or other stakeholder), the CDS tool generates a patient education brochure which discussed the value of returning to work and/or maintaining/increasing activity during recovery (see Appendix I).
	Transmit to requesting stakeholders	In this case, in addition to providing to patient, it is often appropriate to provide directly to requesting supervisor.

CASE #3 – A 35-year-old male was seen in the emergency room 1 week ago with acute low back and leg pain after sliding into first base at a softball game. He says that his x-ray was negative and was told that he had a back strain. Patient sent home with ibuprofen and instructions to take it easy for a week (has not been to work) and see his PCP for follow-up if necessary. **HISTORY:** Patient not much improved better, although he can sit, stand, and walk for short periods of time if he changes his position frequently. His pain increases significantly if the bends over or tries to pick anything up. He can drive short distances. Past medical history is negative. **PHYSICAL EXAMINATION:** Patient uncomfortable sitting, has limited range of motion in all directions due to pain, and has lumbosacral tenderness on palpation. Neurological exam shows slight decrease in sensation in the right lateral leg, but no weakness and reflexes are normal. Physician "clicks" on Red Flag Tab to view list and to eliminate any potential serious disorders. No red flags found. To determine if the patient's symptoms can be considered "functional limitations," the PCP clicks on/hovers over "Functional Limitations" tab which brings up a table providing examples of common limitations such as difficulty bending, kneeling, climbing, or lifting. (Alternatively, the PCP can identify the functional limitations later in process.) **DIAGNOSIS:** Severe lumbar strain with functional limitations. **ACTIVITY PRESCRIPTION TRIGGER:** PCP has completed history and physical and enters a diagnosis of severe lumbar strain in the EHR. **Diagnosis automatically triggers an Activity Modifications treatment template** and PCP selects level of physical restrictions based on functional limitations. Physician selects "Sedentary" and the system then auto populates a list of restrictions (Activity Prescription) and allows access to disability duration guides. Physician discusses Activity Prescription functional limitations with patient. Patient is employed as a groundskeeper at a local hospital and his job involves planting, mowing, and moving heavy bags. As he has been out of work for a week, he **requests a doctor's note to so that he can apply for short-term** disability (presents PCP with short-term disability form for physician's signature). **PCP identifies the functional limitations and discusses with the patient. The PCP signs form and adds note to see attached Activity Prescription.** By "clicking" on **Disability Duration, an activity prescription/disability duration letter is generated for the employer,** AND **the prescription is accompanied by a printed patient education brochure** regarding the value of return to work and maintaining and increasing activity during recovery.

Step	Process/Work Flow	Action/Outcome
1	Patient presents with low back pain (LBP) with or without leg pain	Patient could complete a questionnaire at check-in which asks how condition that is the reason for the visit is affecting his activities of daily life (see comments on other scenarios).
2	PCP takes detailed history to evaluate LBP, including previous episodes and/or injuries	Enter patient history and chief complaint into EMR.
3	Conduct physical examination:	Enter findings into EMR.

	Rule out red flags Note functional limitations if any and enter into EMR either at this point in the examination or in Step 7.	PCP accesses information (e.g., button/hover-activated link) that provides **summary of red flags in back pain** PCP accesses "functional limitations" table via link in EMR. Table provides examples of common limitations, e.g., difficulty bending, kneeling, climbing, or lifting. Or, this assessment occurs only after patient requests a note.
4	PCP completes history/exam and proceeds to completing order set	Opens order set
	Activity Prescription Trigger	
5	Patient requests a note for work.	Entering Dx **activates Activity Prescription Tool tab NOW**.
	Activity Prescription	
6	Generate Activity Prescription	**Activity Prescription report** specifies permitted activities and provides a specific date for elimination of activity restrictions that will limit medically unnecessary restrictions or trigger more contact with the provider if the patient wants to extend restrictions and disability beyond CDS date for return to full duty. Activity prescription includes closing direction that states: "Over the next four (4) weeks, the patient may gradually increase their activity as tolerated to usual activities. If the patient is unable to tolerate the activities as written above, or has not returned to usual activities within four weeks, the employer, insurer, or patient should contact the provider for further guidance." CDS tool also includes a box that PCP can check to indicate that the activity limitation is permanent, thereby eliminating the need to recreate the activity prescription.
7	Discuss Activity Prescription with Patient Patient **requests a doctor's note to so that he can apply for short-term disability (presents PCP with short-term disability form for physician's signature).**	PCP identifies/discusses functional limitations now that patient has requested the note (alternatively, see Step 3) and reviews Activity Prescription with patient to assure that patient: • understands the prescription; and • has an opportunity request modification of prescription to accommodate his/her circumstances. **PCP signs disability form and adds note to "see attached Activity Prescription."** By "clicking" on **Disability Duration, an activity prescription/disability duration letter is generated noting short-term disability.** In addition to generating a detailed Activity Prescription for the patient (which can be shared with the employer or other stakeholder), the CDS tool generates a patient education brochure that discussed the value of returning to work and/or maintaining/increasing activity during recovery (see Appendix L).
8	Transmit to stakeholders	In some cases, in addition to providing to patient, may send attached to the disability form directly to the insurer.

CASE #4 – A semi-retired self-employed 65-year-old male accountant who works out of his home was seen in the emergency room 1 week ago with acute low back and leg pain after slipping and falling at home. He says that his x-ray was negative and was told that he had a back strain. Patient sent home with ibuprofen and instructions to take it easy for a week and see his regular PCP for follow-up if necessary. **HISTORY:** Patient not much improved, although he can sit, stand, and walk for short periods of time if he changes his position frequently. His pain increases significantly if he bends over or tries to pick anything up. He can drive short distances. Past medical history is negative. **PHYSICAL EXAMINATION:** Patient uncomfortable sitting, has limited range of motion in all directions due to pain, and has lumbosacral tenderness on palpation. Neurological exam shows slight decrease in sensation in the right lateral leg, but no weakness, and reflexes are normal. No red flags found. **DIAGNOSIS:** Lumbar strain. **ACTIVITY PRESCRIPTION TRIGGER:** PCP has completed history and physical and now proceeds to completing the order set. **Patient asks about mobility limitations**, specifically if climbing stairs to second floor home office permissible. PCP discusses impact of functional limitations on patient's activities of daily living. PCP activates Activity Prescription tab and selects an activity level and the system auto populates a list of restrictions (Activity Prescription) which are reviewed with the patient. Patient also receives education brochure on benefits of physical activity/increasing function.

Step	Process/Work Flow	Action/Outcome
1	Patient presents to his regular PCP with low back pain (LBP) with or without leg pain	Reason for "special" visit (LBP) noted in record.
2	PCP takes history of injury/LBP	Enter patient history and chief complaint into EMR.
3	Conduct physical examination: Rule out red flags Note functional limitations if any and enter into EMR	Enter findings into EMR. PCP accesses information (e.g., button/hover-activated link) that provides **summary of red flags in back pain** PCP accesses "functional limitations" table via link in EMR. Table provides examples of common limitations, e.g., difficulty bending, kneeling, climbing, or lifting. Or, this assessment occurs only after the patient requests a note.
4	PCP completes history/exam and proceeds to completing order set	Opens order set
	Activity Prescription Trigger	
5	Patient asks about mobility limitations, specifically if climbing stairs to second floor home office is permissible. This request triggers PCP to generate activity prescription.Physician discusses impact of functional limitations on patient's activities of daily living.	**PCP activates separate Activity Prescription tab** and selects an activity level and the system auto populates a list of restrictions (Activity Prescription) which are reviewed with the patient. During discussion, PCP may also overwrite machine recommended restrictions based on review of functional limitations with patient by interview with or without the use of a Functional Limitations questionnaire as per Step 1. Note: patient could complete a questionnaire at check-in which he is asked how the condition that is the reason for the visit is affecting his activities of daily life (see comments in other scenarios). Patient also receives education brochure on benefits of physical activity/increasing function.

Appendix H – GENERATING THE ACTIVITY PRESCRIPTION

ACTIVITY PRESCRIPTION

When an activity prescription is requested, the CDS tool allows the clinician to generate the prescription using a standard format. When activity prescriptions are not required, but the provider SHOULD write the activity prescription as the patient, an employer, or another stakeholder requests it, the CDS tool will allow timely provision of an activity prescription and support material. The CDS tool will improve the experiences of the provider, patient, and other stakeholders by allowing a well-considered prescription supported by the best available evidence, and structured in a concise form to be generated in a timely fashion. Failure to generate an activity prescription in a timely fashion may degrade the patient experience, displease stakeholders, impact patient benefits or employment, or in iatrogenic disability or attempts by the patient to perform activity beyond his or her abilities.

Step	Process/Work Flow	Action/Outcome
1	Patient presents with low back pain (LBP) with or without leg pain	Patient could complete a questionnaire at check-in which asks how condition that is the reason for the visit is affecting his/her activities of daily life.
2	PCP takes detailed history to evaluate LBP, including previous episodes and/or injuries	Enter patient history and chief complaint into EMR.
3	Conduct physical examination: a. Rule out red flags b. Note functional limitations if any and enter into EMR	Enter findings into EMR. PCP accesses information (e.g., button/hover-activated link) that provides **summary of red flags in back pain** PCP accesses "functional limitations" table via link in EMR. Table provides examples of common limitations, e.g., difficulty bending, kneeling, climbing, or lifting.
	Activity Prescription Triggers	
4a or	Assessment of function limitations leads to discussion of impact on work/life activities; **patient asks for Activity Prescription/note for employer**	PCP **activates Activity Prescription Tool tab NOW**. Go to Step 6 . . . *Or*
4b or	Diagnosis based on history and physical examination entered in EMR	Entering Dx **activates Activity Prescription Tool tab NOW**. *Or*
4c	Prescribe Treatment Plan/Write Order Set a. medications b. other nonsurgical treatment (e.g., exercise, heat, etc.)	**Activity Prescription activated as part of the order set.** PCP prescribes treatment – e.g., medication prescription activates Activity Prescription Tool NOW to generate Activity Prescription report.
	Activity Prescription	
5	Generate Activity Prescription	**Activity Prescription report tab can open in one of the three scenarios discussed above in Step 4.** Report specifies permitted activities and provides a specific date for elimination of activity restrictions that will limit medically unnecessary restrictions or trigger more contact with the provider if the patient wants to extend restrictions and disability beyond CDS date for return to full duty. Activity prescription includes closing direction that states: "Over the next four (4) weeks, the patient may gradually increase their activity as tolerated to usual activities. If the patient is unable to tolerate the activities as written above, or

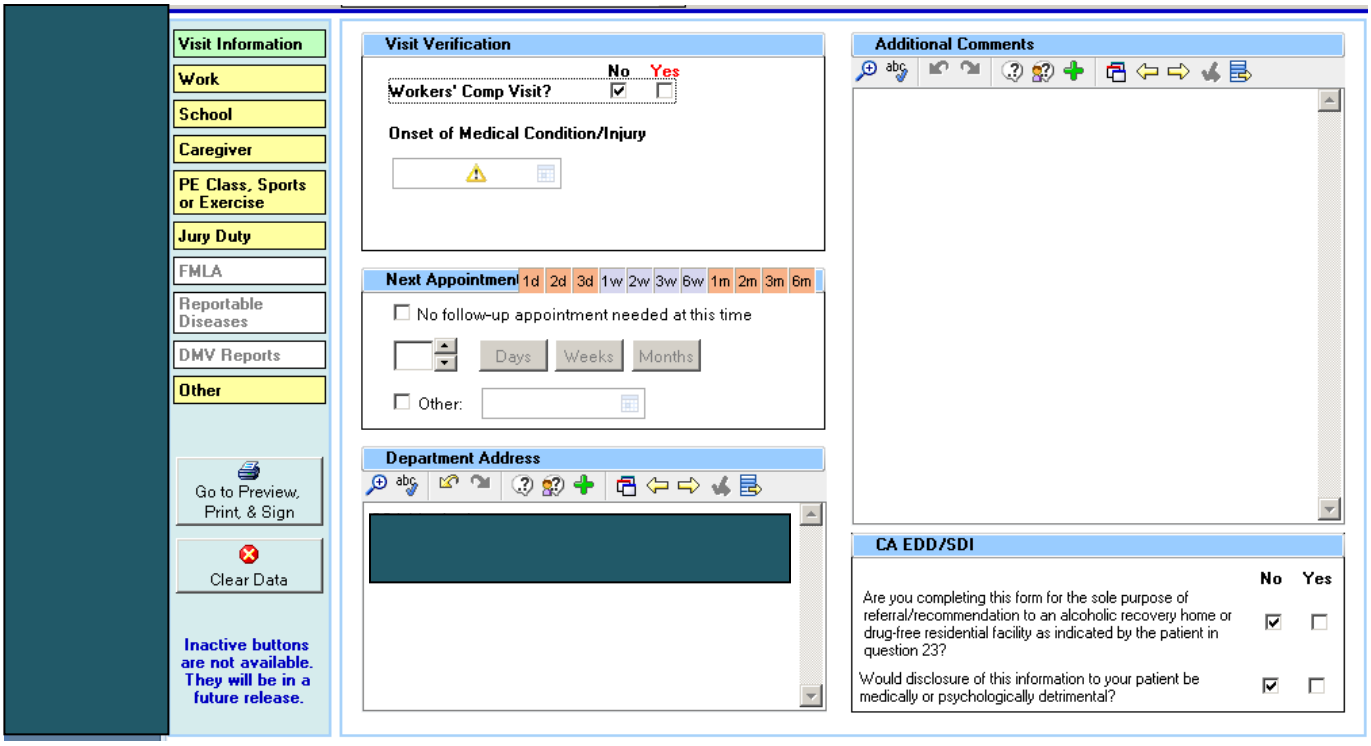
		has not returned to usual activities within four weeks, the employer, insurer, or patient should contact the provider for further guidance." CDS tool also includes a box that PCP can check to indicate that the activity limitation is permanent, thereby eliminating the need to recreate the activity prescription.
6	Discuss Activity Prescription with Patient (if not already done in Step 4a)	Reviewing the Activity Prescription with patient ought to result in a discussion of whether the prescription will restrict the patient from performing regular duties and elicit enough information to adjust the Activity Prescription accordingly. PCP discuss Activity Prescription with patient to assure that patient: • understands the prescription; and • has an opportunity request modification of prescription to accommodate his/her circumstances. In addition to generating a detailed Activity Prescription for the patient (which can be shared with the employer or other stakeholder), the CDS tool generates a patient education brochure which discussed the value of returning to work and/or maintaining/increasing activity during recovery (see Appendix I).
7	Follow-up	The CDS tool will not to automatically specify return visits to the PCP for purpose of revising activity prescription because: • return visits add to the cost of care and patients without insurance or with high deductibles are unlikely to want to return for revisions unless the revisions are required by an employer or insurer; and • the vast majority of patients with LBP with or without leg pain will naturally resume normal activities within 4 weeks of evaluation. However, patients who do not recover by the date specified for elimination of activity restrictions by the CDS tool should be reassessed.

Appendix I – Example of a CDS Tool for Generating Activity Prescriptions for LBP

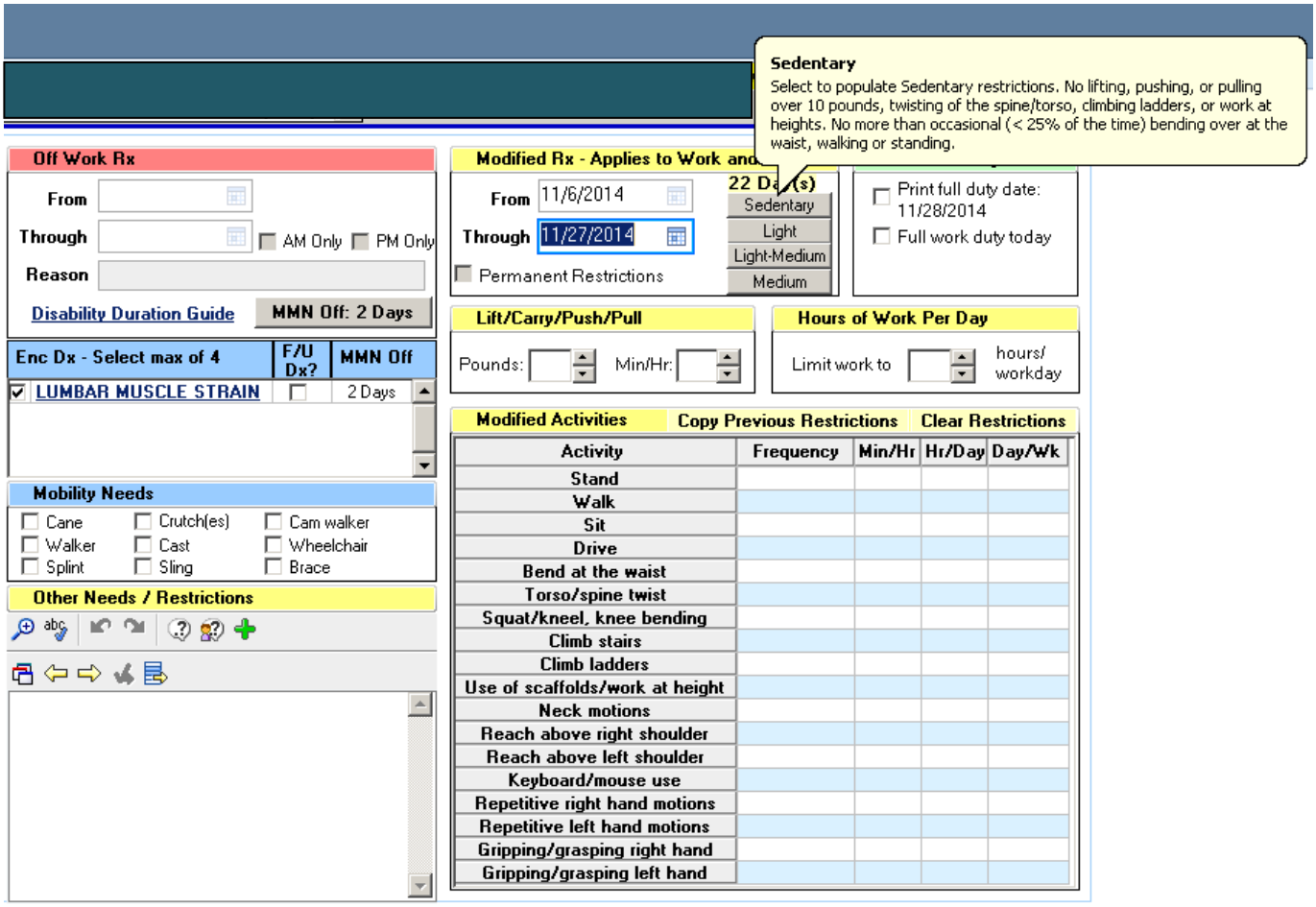
The computer-aided assistance is the 4 levels of recommended activity available for the physician. This will auto populate by clicking the activity level the physician feels is most appropriate. By auto populating the form, the Work/Activity recommendations will be transferred to the Work/Activity form for the patient. The 4 levels are generic enough the will work in the majority of conditions. Editing can occur with specific conditions or exceptions.

Embedded is recommended maximal days off work.

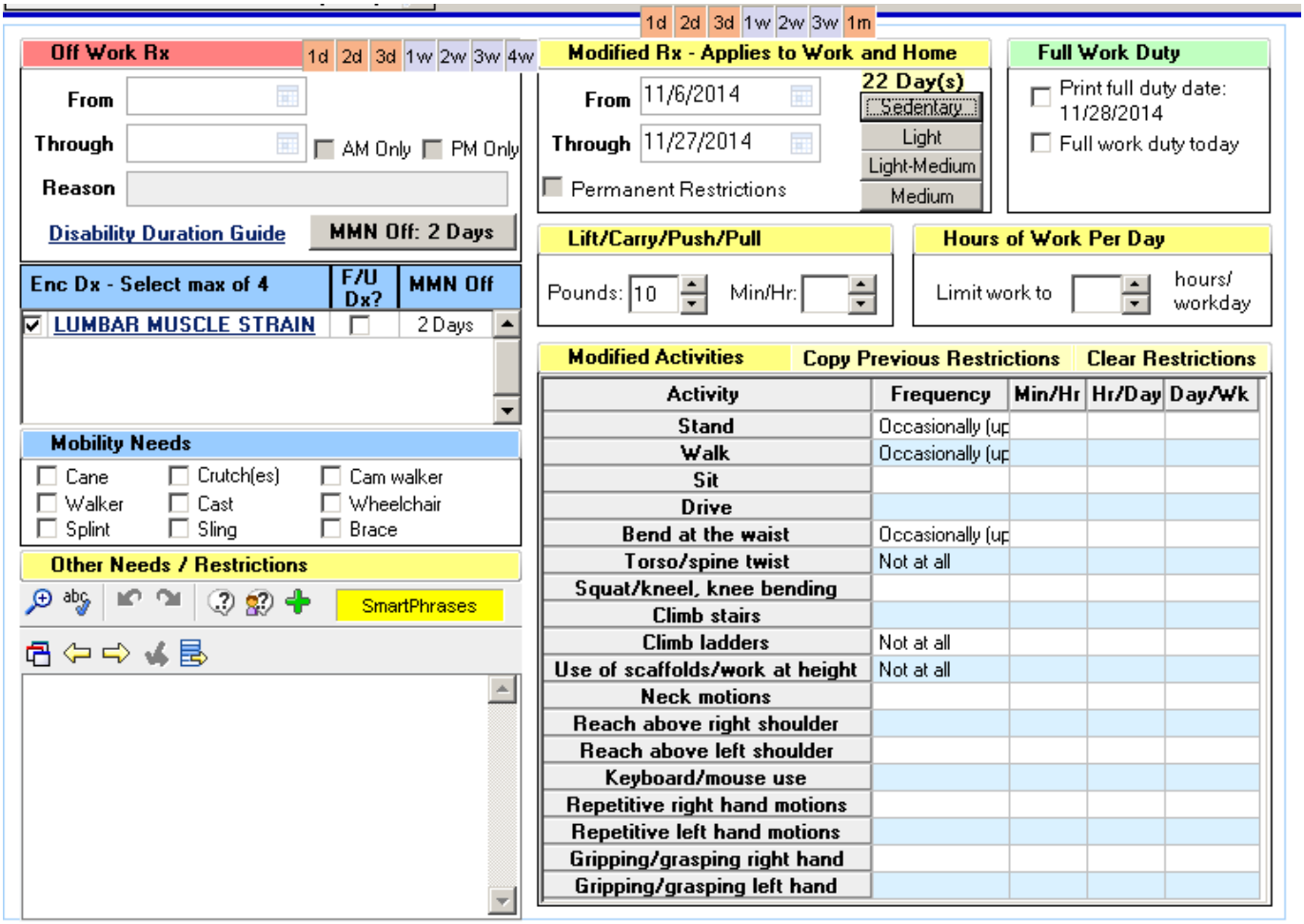
When the diagnosis is entered into the EHR, the diagnosis is automatically uploaded to a Work/Activity Slip.



Dx: Lumbar strain, in this case very severe.
Click sedentary work and it will auto populate the work note.



After clicking, this will be auto populated format



This is the print out for the patient.

[redacted]

Encounter Date: 11/13/2014

Please see below for this health care provider's directives and information relating to this encounter.

Work Status Report

Date onset of condition:
Next Appointment Date:

DIAGNOSIS: LUMBAR MUSCLE STRAIN

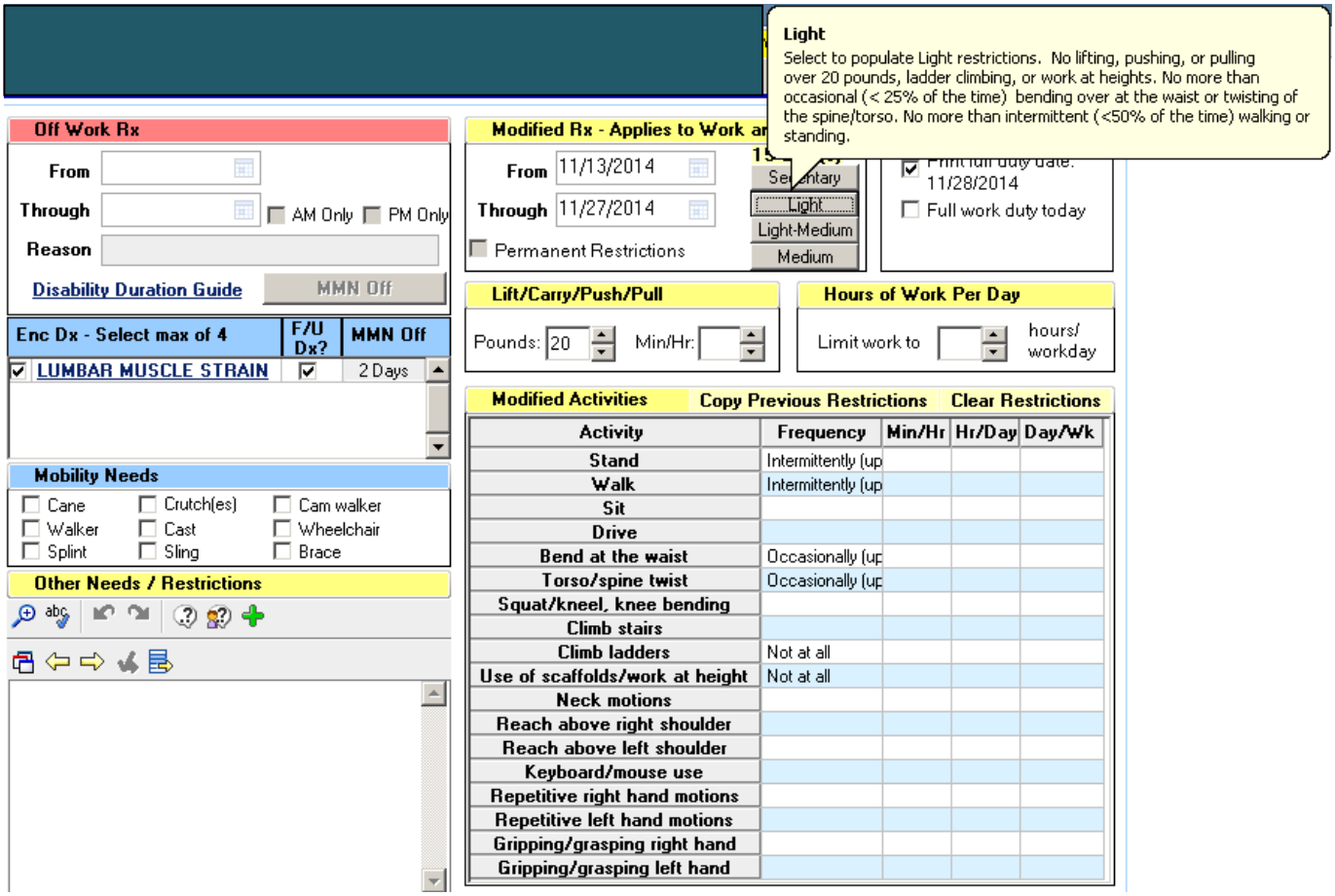
Modified Activity (Applies to work and home)
This patient is placed on modified activity at work and at home from 11/6/2014 through 11/27/2014.

If modified activity is not accommodated by the employer then this patient is considered temporarily and totally disabled from their regular work for the designated time and a separate off work order is not required.

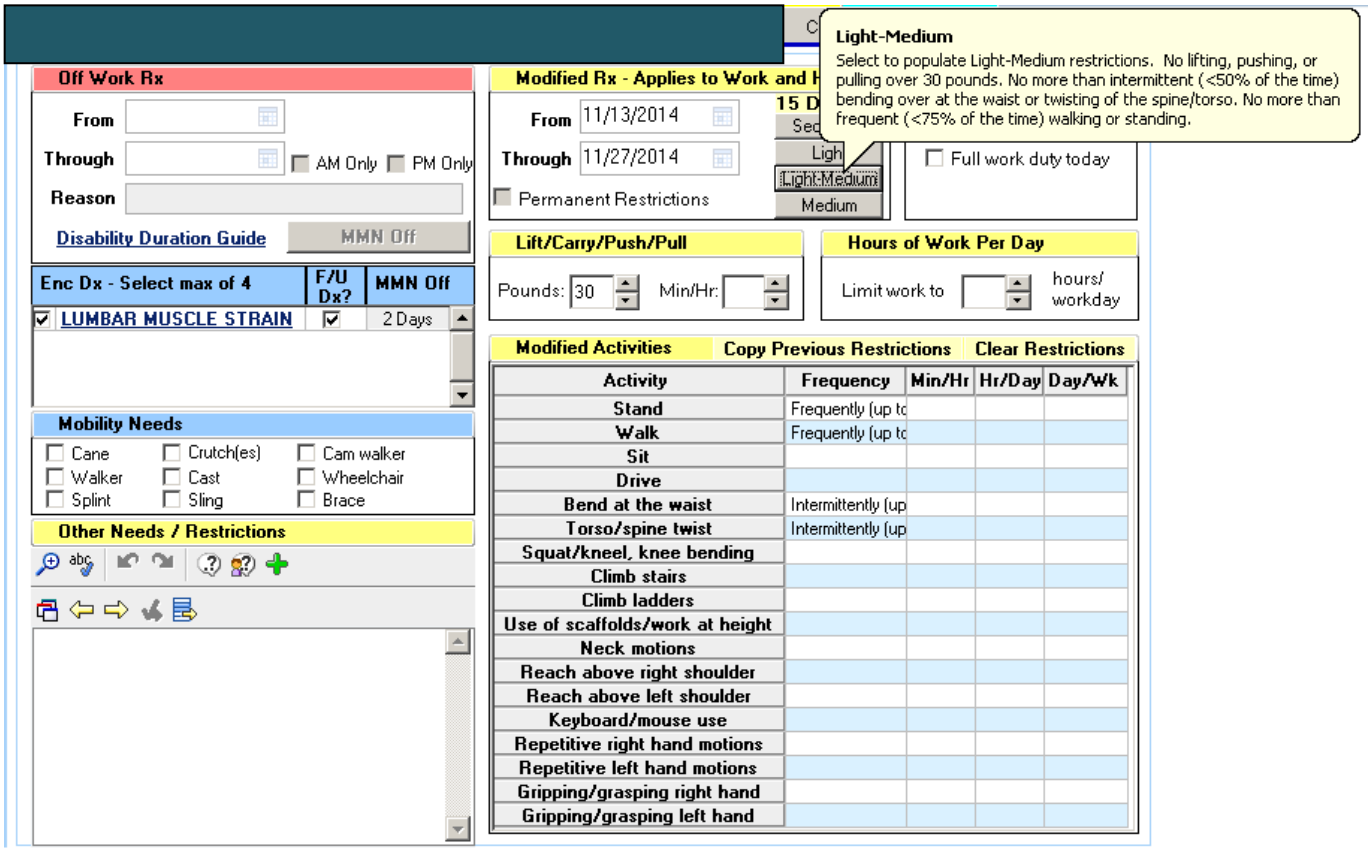
This patient's activity is modified as follows:
- Stand: Occasionally (up to 25% of shift).
- Walk: Occasionally (up to 25% of shift).
- Bend at the waist: Occasionally (up to 25% of shift).
- Torso/spine twist: Not at all.
- Climb ladders: Not at all.
- Use of scaffolds/work at height: Not at all.
- Lift/carry/push/pull no more than 10 pounds.

Full Duty:
The patient was evaluated and deemed able to return to work at full capacity on 11/28/2014

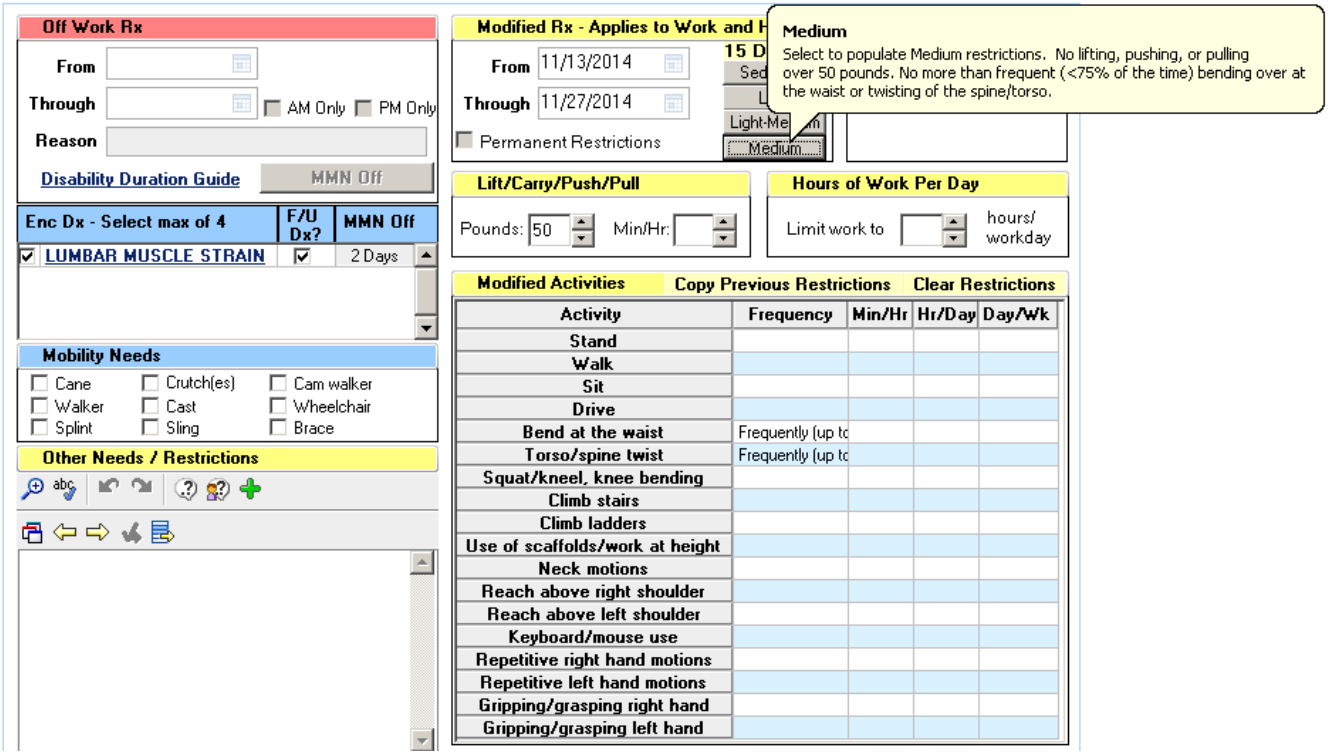
Less severe injury, light work recommended, has more activity recommendation.



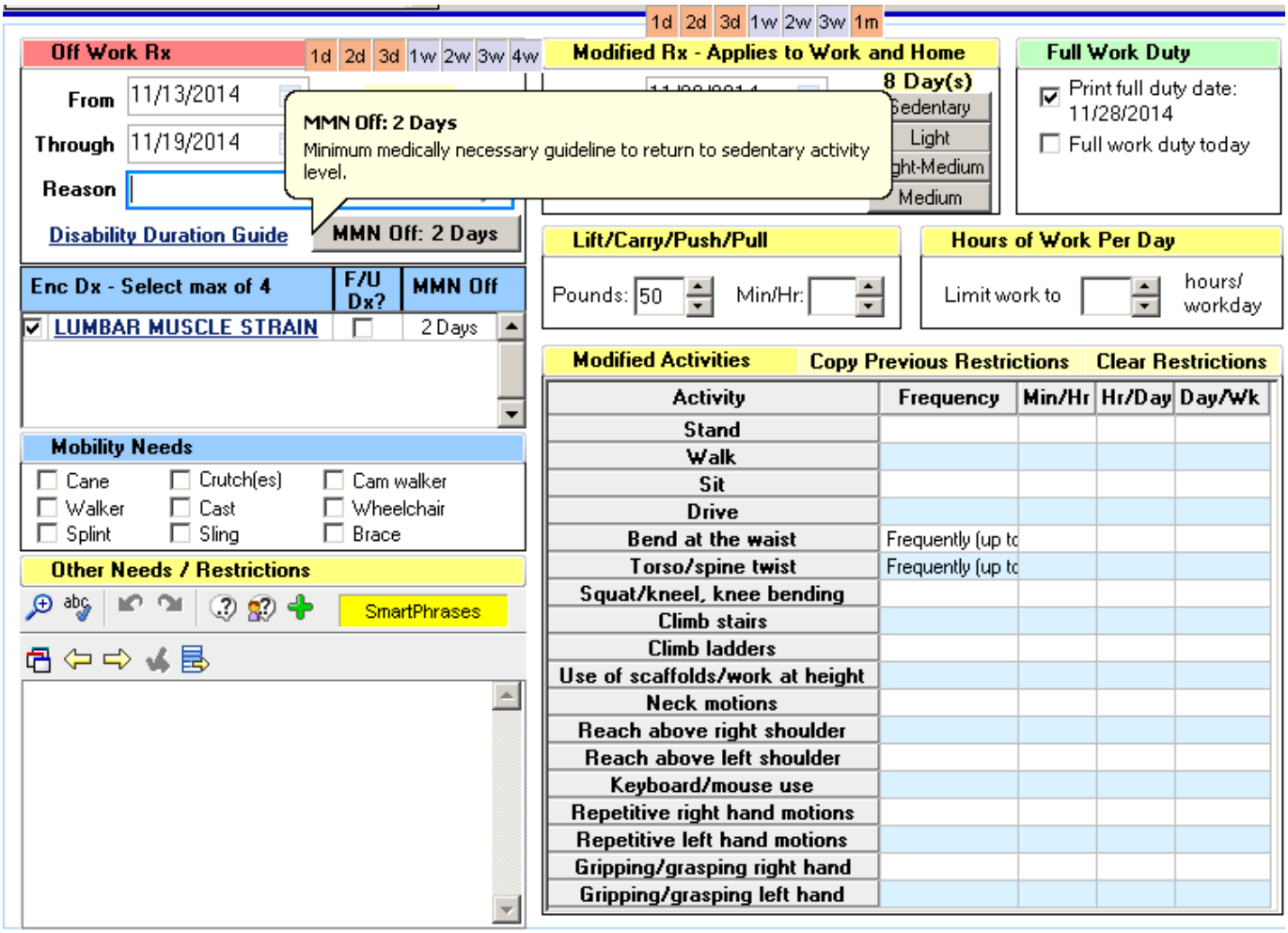
Even less restrictions recommended.



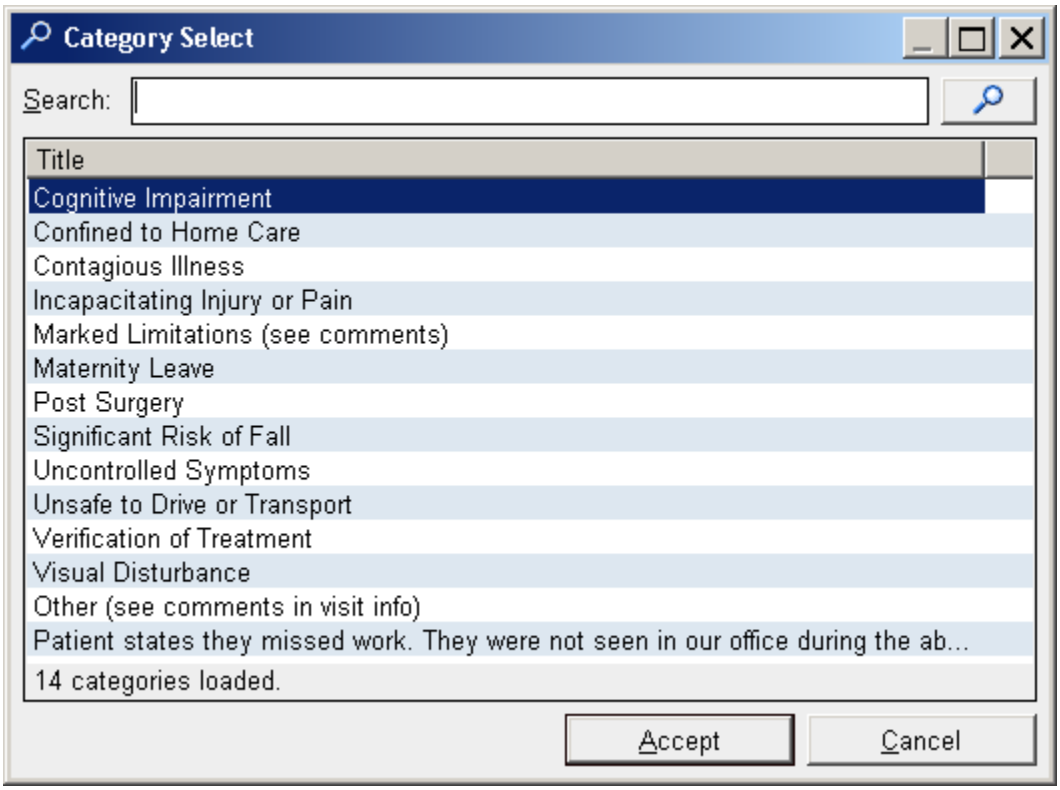
Less restrictive recommendations/restrictions



Minimally Medically Necessary Guideline imbedded to return to sedentary activity – e.g., maximum total disability/time off



If time off recommended, forces one to select why as off work should be the exception.



The computer aided assistance is the 4 levels of recommended activity available for the physician that when used will auto-populate the Work/Activity form. The 4 levels are generic enough the will work in the majority of conditions. Editing can occur with specific conditions or exceptions. Embedded is recommended maximal days off work.

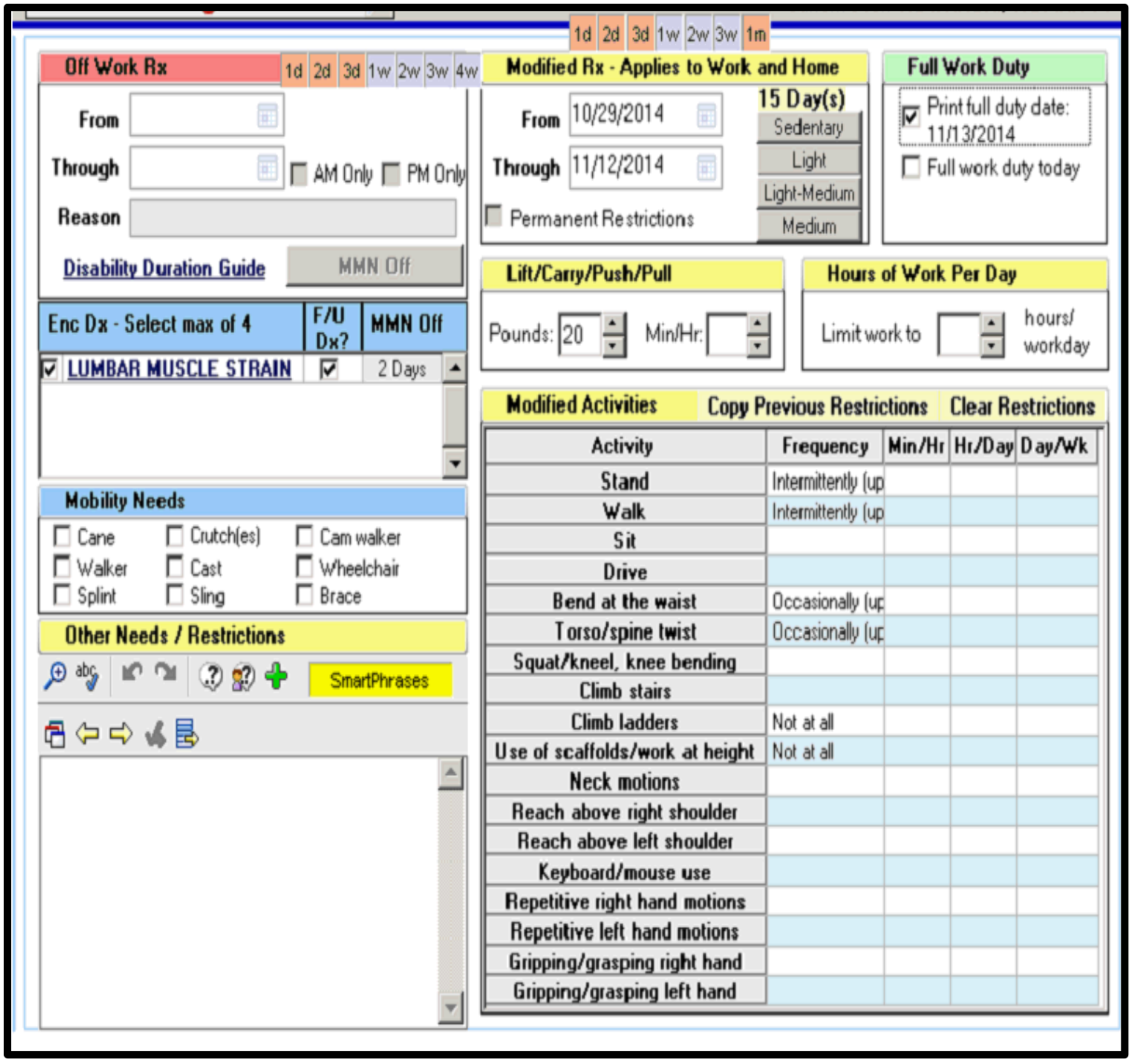
Appendix J – Kaiser-Permanente Clinical Decision Tool
for Activity Prescriptions for Primary Care and Other Practice Environments with Sample Activity Prescription Sample Letters

Below are a figure with the current clinical decision support tool used in the electronic medical record system at Kaiser-Permanente for activity prescriptions for primary care and other practice environments and a sample activity prescription that uses the three-day disability duration as default.

Evidence for 3-day disability duration is based on Reed Guidelines and expert opinion/consensus panel opinion. Consensus on 3 days as per:

1. Reed Disability Duration guides
2. It is a sufficient amount of time for the vast majority of patients
3. It should accomplish the purpose of making the visit efficient for both the patient and the provider
4. Can always be downgraded to lesser duration (2, 1, or 0) if the person is willing

Electronic Medical Record Window Frame for Clinical Decision Support Tool



Sample Activity Prescription

This form contains your diagnosis.

[redacted]

Patient Name: [redacted]
Encounter Date: 9/16/2014

Please see below for this health care provider's directives and information relating to this encounter.

Work Status Report

Date onset of condition: 10/26/2014
Next Appointment Date: No follow-up appointment needed at this time

DIAGNOSIS: LUMBAR MUSCLE STRAIN

Modified Activity (Applies to work and home)
This patient is placed on modified activity at work and at home from 10/29/2014 through 11/12/2014.

If modified activity is not accommodated by the employer then this patient is considered temporarily and totally disabled from their regular work for the designated time and a separate off work order is not required.

This patient's activity is modified as follows:
- Stand: Intermittently (up to 50% of shift).
- Walk: Intermittently (up to 50% of shift).
- Bend at the waist: Occasionally (up to 25% of shift).
- Climb ladders: Not at all.
- Use of scaffolds/work at height: Not at all.
- Lift/carry/push/pull no more than 20 pounds.

Full Duty:
The patient was evaluated and deemed able to return to work at full capacity on 11/13/2014

This form has been electronically signed and authorized by [redacted] (M.D.)

This form contains your private health information that you may choose to release to another party; please review for accuracy.

Appendix K – Examples of Activity Prescriptions that Have Deficiencies

The following table contains examples of letter that are vague and have questions arising from the vagueness of the letters that may impact optimal return to or staying at work.

Letter Content	Questions Arising from Content
"John may return to work on light duty."	Problems with this letter: • What is light duty? • When does light duty end? • On what day may John return?
"Please excuse John from work because of back pain."	Problems with this letter: • When will John be able to return to work? • Might he be able to do alternate work while he recovers?

Appendix L – Education Brochure for Working Patients: Benefits of Returning to Work As Soon As Possible

This advice incorporates the SME groups' expertise on the important elements that should be provided to the patient.

The Benefits of Returning to Work As Soon As Possible

Considerable research has proven that for most people physical activity, including work, is central to a person's well-being and is beneficial in maintaining health. An important goal of your treatment will be to increase your ability to function so that you can fully participate in life activity as soon as possible – including work. We want to help you return to normal activities (including work) for several reasons:

- People who stay more active despite low back pain have better outcomes – regardless of pain level. Being inactive makes the problem worse, and patients also become even more unhappy and often depressed.
- Long periods away from work are associated with a 20% increased rate of mortality, and if you have been off work due to a disabling condition for more than 6 months, you have less than a 50% chance of ever getting back to work.
- Long-term disability also often leads to other aspects of health declining. At the same time, for a variety of reasons other family members' health is often detrimentally affected as well. Being off work tends to intensify, not diminish symptoms. It is generally in your best interest to stay at work or return to work as soon as possible. Avoidance of work tends to increase anxiety about the job, and risks of long-term unemployment and poverty. Time off may subject you to greater scrutiny by your employer and may jeopardize your job security.
- If your clinician documents that you can return to work with an activity restriction, it is your responsibility to share this with your employer and to participate in a good faith discussion about the accommodations that may or may not allow you to work. Ultimately, these decisions are between you and your employer.

The American Medical Association encourages physicians everywhere to advise their patients to return to work at the earliest date compatible with health and safety. The reason is that returning to work is good both for your physical, and also your mental and financial health. Therefore you are encouraged to live an active life both on and off the job.

Appendix M – Response to Reviews of Interim Knowledge Resource Report by Other SME Work Groups

RTW Panel: Formal Response to Asthma Group Critique – June 2015

A. Intro/Background

Paragraph 1 seems unnecessary.

Agreed. We will eliminate/merge into paragraph 2.

Since Kaiser already uses a very similar approach, why not save considerable effort/$ and simply evaluate outcomes there?

Although based on an approach used by Kaiser, the RTW CDS is different in a number of important ways:

- It is not dependent on linking to a proprietary, costly disability data base.
- It is meant to provide an approach that can be scaled across the country in a short time frame.
- Generalizability is unknown.
- The Kaiser Permanente electronic system is an example of an assist device that has been implemented across a large physician community. This was meant to demonstrate that computer decision support for return-to-work issues is possible and is scalable across a network of over 10,000 physicians in all specialties. This was not meant to suggest that the program is the end product or the complete answer. Rather it was an example of what can be considered an early prototype to demonstrate the concept of return-to-work tools they can be further enhanced to assist physician's decision regarding return-to-work issues.

Also, this tool does not recreate what ACOEM has already done in its Practice Guidelines.

Should clarify throughout acute vs. chronic low back pain.

We chose acute low back pain because it is quite common and our interest was providing a tool to PREVENT disabling chronic back pain. We can edit the report to clarify – i.e., mention acute throughout, for example, in the introduction and scope, etc. “focus in non-specific ACUTE low back pain.” That said, this CDS could later be easily expanded to include chronic back pain and other conditions.

B. Scope/Objective

Should NIOSH use limited resources on this versus work-related issues no one else is devoting resources to, has expertise to address?

Because back pain is so prevalent and is associated with so much disability, from a Total Worker Health perspective, it is exactly to the point that workers bring non-work-related medical problems to work that can profoundly impact their ability to work productively unless the problem is managed well. Also, although there is a lot of research on and clinical interventions for back pain, there are few clinical interventions available to primary care providers to support the prevention and management of low back pain.

Regarding acute vs. chronic, see response above under Introduction

C. Goals/Purpose

Extremely broad (e.g., reduce economic burden, encourage PCPs to consider occupation). Therefore, not measurable.

Although these goals are broad, they are measurable in a variety of ways. In fact, these goals would seem to provide more, not fewer, opportunities, to measure process/outcomes. Some examples of outcomes that could be measured and are amenable to experiment comparing practices/providers using vs. not using the tool are as follows:

Goals/purpose of providing a clinical decision support tool/activity prescription are to:

- **Assist** primary care providers prevent medically unnecessary disability;
  - **Measure: days out of work are routinely measured**
- **Improve** the quality of medical care by addressing a key aspect of the patient's quality of life (physical and mental health status, economic, social), functional status;
  - **Measure: There are many easily measured of quality of life and function besides disability days, for example: the PROMIS 10; Oswestry Disability Index**
- **Make** a normal provider task easier by facilitating the creation and communication of an activity prescription for which there is already a social, legal, and patient expectation of the PCP;
  - **Measure: time for providers to complete forms using the CDS tool vs standard paperwork; audit of time from receipt of patient/3rd party request for activity prescription to completion by provider**
- **Reduce** the economic burden of disability on society;
  - **Measure: number of disability days times average wage**
- **Stimulate** consideration for the role of occupation and occupational demands on patients and strive to increase clinicians' interest in capturing occupational health data in their electronic health records (EHRs).
  - **Measure: survey of providers using the CDS re: attitude about utility of occupational health data**

D. Key Action Statement

Is the default recommendation of 4 weeks partial work disability supportable? Will this actually increase total disability days?

The CDS is based on evidence that the majority of people with acute back pain return to full function in 4 weeks or less. For simplicity, it relies on the fact that *most* people want to return to full activity as soon as they feel able. The prescription does not proscribe full activity before 4 weeks; rather it prompts further investigation if someone hasn't returned by then. It *is possible* that patients will have more disability; this needs to be studied. Our hypothesis is that by capping disability at 4 weeks and encouraging a graduated increase in activity during that time frame, we will prevent prolonged disability.

Recommendation appendix B says to use DOL Dictionary of Job Titles as basis of activity prescriptions. I don't think this has been updated since 1991.

The DOL DOT division of the spectrum of job demands from sedentary to very heavy remains in common use.

Should this be vetted with the EEOC to be sure that use of a default value of either four weeks or drawn from a table of average lost work days be automatically applied to the class of LBP patients?

Again, the key point is that the 4 week time frame is a disability cap that is meant to trigger additional investigation. Patients can return to full duty before that time if able to do so. Also, the activity prescription is being written by the patient's PCP. It is the employer who is obligated to provide accommodations per the ADA.

"PCP accesses functional limitations" and generates report. How does PCP access limitations?

We answered this question in addressing a previous critique as follows:

Patient Questionnaire on Functional Limitations

Q. Will this information be recorded electronically (i.e., at registration, via a tablet, etc.).

Response:
Ideally yes, all information should be entered by the patient with an interface directly into the medical record. However, for those who are not fluent in English or who are functionally illiterate, consideration must be made as in some communities this will represent a substantial portion of the population.

There are 2 options based on practice preference:

- **Option 1:** Collect this information by paper questionnaire or by tablet in the waiting room. Ideally, this information would be imported into the EMR. This is easy in an EMR such as Epic. Alternatively, a medical assistant or administrative assistant could input into a template in the record as part of the initial note.
- **Option 2:** Postpone any discussion of functional limitations until a patient or other stakeholder requests an activity prescription. In this case, we suggest that while on the activity prescription page, the provider be able to mouse over a link to a table with examples of functional limitations that can be discussed with the patient. In this case, the activity prescription itself becomes the sole documentation of functional limitations.

Q. What are the questions that will be asked?

Response:
A list of questions regarding functional limitations is attached in different formats (see Appendices A, B, & C).

Note: patient responses to questions regarding functional limitations should **NOT** be used to autofill the activity prescription, but rather should inform the discussion between provider and patient as the provider is finalizing the prescription.

Impact of restrictions on person's job warrants more attention – if no light duty available worker could get let go – no job.

This should be part of the discussion that occurs between the PCP and patient as the PCP discusses the activity prescription with the patient. In spite of legal protections such as the FMLA and ADA, there is always a risk that a patient may lose his/her job if he/she cannot perform all duties in a standard way, but by returning a person to regular work as soon as it is tolerated, the risk of job loss is decreased.

Do primary care docs need more education re work/modified duty? Some jobs – light/modified duty not available and/or employer doesn't want to accommodate.

We are trying to be realistic; educating primary care doctors about occupational health principles and about how to take an occupational history has not been effective over many decades.

"Discuss the impact" seems a little vague. Would give the PCP specific questions that could help in "discussing the impact"?

We chose not to be too specific given that the activity prescription is meant to be useful for non-occupational scenarios such as participation in sports or self-directed activities at home or in the community. Whether it will be necessary to provide PCPs with domains for discussion, e.g., work, play, hobbies, activities of daily living, etc., remains to be seen after the tool is tested. Our thought was that the patient would, without too much prompting, indicate those areas of her/his life that are affected by the pain.

However, we will consider adding the following to the tool to assist the PCP in discussing the impact:

"Advice to Patients" (as the contents of a computer link or hover feature):

Counseling for Patients with Acute Back Pain:
Most episodes of back pain resolve by themselves within weeks, sometimes within days. X-rays and other diagnostic studies usually are unrevealing and do not change the treatment approach. In most cases, even when diagnostic studies are performed, there is no reliable diagnosis to explain back pain. The best treatment includes you (the patient) maintaining your normal activities as well as you can; avoiding bed rest, which only weakens you and makes you stiffer; and taking non-steroidal anti-inflammatory drugs (like ibuprofen). Lightweight activity is better for the back than no activity. Applying warm or cold packs may be helpful. Please see the "Patient Education Brochure: Benefits of Returning to Work As Soon As Possible" for more information.

E. Evidence

Most important recommendation that needs support/justification is the default activity prescription for a month (or less if improved). The 2 references cited refer to acute onset low back pain, one acute onset work-related low back pain. However this CDS excludes work-related back pain. (The main justification is that the vast majority of patients with LBP will resume normal activities within 4 weeks. This statement should be better referenced.

Agreed, we will supply the reference – Reed's *MDGuidelines*.

Have generated reports been field tested?

Activity prescriptions have been tested and used by Kaiser.

I don't understand what "prima facie" evidence is. "Prima facie" evidence is a legal term. Needs clarification.

The point is that it is a fact that patients and 3rd parties request activity prescriptions.

The ">250 articles" reviewed are not referenced. Did the committee grade each article?

We did not grade each article. Our effort was not meant to recreate the work done by various organizations' guideline committees. Nor did NIOSH instruct us to conduct grading.

GENERAL QUESTIONS

RETURN TO WORK

Still a little uncertain as to how the PCP is to discuss the impact of the functional limitations

Agree that we might want to add more about how to discuss activity limitations, but am not sure what's going to be most useful for PCP's. See previous discussion under D – "Advice to Patients" (as the contents of a computer link or hover feature).

Lengthy

Can't see how we could meet NIOSH's requirements and shorten this significantly, although it does become long as a result. Document length separate for tool. Tool is concise and will make PCP's job easier.

Appendix M – Response to Reviews of Interim Knowledge Resource Report by Other SME Work Groups

Return to Work CDS Decision Logic Response to Diabetes Panel – March 2015

Questions/Comments

1. Patient Questionnaire on Functional Limitations

Q. Will this information be recorded electronically (i.e., at registration, via a tablet, etc.).

Response:

Ideally yes, all information should be entered by the patient with an interface directly into the medical record. However considerations for those who do not have fluency in English, or are functionally illiterate, consideration must be made as in some communities this will represent a substantial portion of the population.

There are 2 options based on practice preference:

- **Option 1:** Collect this information by paper questionnaire or by tablet in the waiting room. Ideally, this information would be imported into the EMR. This is easy in an EMR such as Epic. Alternatively, a medical assistant or administrative assistant could input into a template in the record as part of the initial note.
- **Option 2:** Postpone any discussion of functional limitations until a patient or other stakeholder requests an activity prescription. In this case, we suggest that while on the activity prescription page, the provider be able to mouse over a link to a table with examples of functional limitations that can be discussed with the patient. In this case, the activity prescription itself becomes the sole documentation of functional limitations.

Q. What are the questions that will be asked?

Response:

A list of questions regarding functional limitations is attached in different formats (see Appendices A, B, & C). Note: patient responses to questions regarding functional limitations should **NOT** be used to autofill the activity prescription, but rather should inform the discussion between provider and patient as the provider is finalizing the prescription.

2. Red Flags

Q. Will any information on the red flags assessment be recorded in the system or will "no red flags" be assumed?

Response:

The EMR CDS tool need not record red flags. It is assumed that the provider will screen for red flags as part of the routine medical assessment (driven by medical history). The tool should assume "no red flags."

The Panel proposes to structure an EMR CDS tool to include an information control (such as a button or hover-activated link) that would provide a summary of red flags in back pain taken from the ACOEM *Occupational Medicine Practice Guidelines* LBP Chapter. The Panel decided not to require, as part of the CDS tool, that the PCP screen for red flags. This is in order to minimize intrusion of the tool. This approach is also justified as patients presenting with LBP and red flags are rare, and screening for red flags in not likely to have an impact on outcome.

3. Patient Request of Activity Prescription

Q. What will be the trigger for this (i.e., how will the system and/or PCP know the patient needs an activity prescription)?

Response:
The patient or another stakeholder will request one.

Q. Could this be determined through a question on the patient questionnaire?

Response:
Yes, if the option of asking a patient to complete a functional limitations questionnaire is used. However, another stakeholder may have requested an activity prescription, verbally or by requesting a form be completed.

4. *Where will onset date and last date worked be captured? Should these fields be on the patient questionnaire?*

Response:
See Appendix F of the Interim Report. This form can be modified to include these data elements in the top left corner in the box currently labelled as "Off Work Rx." For initial visits, onset date should default to today's date of visit and last date default to the day before. However, this information can be manually adjusted as necessary on the activity prescription form.

Regarding whether these fields should be on the patient questionnaire, if the option of using a patient questionnaire is used, these fields can be captured on this form/electronic template. If captured electronically, this data **can** autofill the appropriate fields on the activity prescription.

5. On page 3, it states "The PCP is unlikely to need to generate an activity prescription if the patient neither has functional limitations nor requests such a note, except in the case when a third party requests an activity prescription."

Q. Will patient permission be needed to authorize this? If so, how will this authorization be acquired and recorded?

Response:
Yes, patient permission is needed. In many cases, the activity prescription will be handed directly to the patient, who then can choose whether to provide it to another party. In other cases, such as short-term disability or workers' compensation, the provider will require a release, though usually this release is provided by this external stakeholder or is incorporated into the form requesting this information. Authorization is through the patient. If a third party is requesting the release or generation of this information, the patient needs to submit the request. This ensures all release forms are signed, and the patient is aware of the request. If authorization is required, this form should be scanned into the EMR.

6. Follow-up/Return Visit

Q. Regarding a return visit – could the decision logic/flow be streamlined and covered through a phone call?

Response:

Maybe. Sometimes. In certain scenarios the absence is brief, or the period of modified duty is brief, and a phone call "I'm OK now" permits the doctor/provider to sign a new note that full-duty return to work is now okay. Alternatively, sometimes the employer doesn't even need a note permitting full duty, and the chart would only document a 3 day "light duty" note was written at the first visit.

In OTHER scenarios, the employee is off work (no modified duty available with this employer) or on modified duty for a long time. Disability insurance or employer-funded time-out-of-work means money is changing hands due to the back pain, and insurance/employer forms must be completed. This many times mandates ongoing evaluations (office visits).

Appendix N – Quality Measures/Outcomes

Scope/Objective

From a Total Worker Health perspective, back pain is extremely prevalent and is associated with a huge amount of work disability. Employees bring non-job-related medical problems to work and these problems can profoundly impact their ability to function productively unless the problem is managed well. Although there is considerable research on and clinical interventions for back pain, there are few clinical interventions available to primary care providers to support the prevention and management of low back pain, and associated work disability. And, preventing work disability is important for a clinical, public health, and societal standpoint – as prolonged work disability leads to poor health, negative economic consequences, and secondary impacts of income loss on health, self-esteem and well-being (see Waddell G, Burton AK, Kendal N. *Vocation Rehabilitation: What Works, For Whom, and When? Report for the Vocational Rehabilitation Task Group).*TSO: London. 2008. Available at: http://www.kmghp.com/assets/hwwb-vocational-rehabilitation.pdf).

The RTW Panel chose to focus on **acute** low back pain because it is quite common, and frequently associated with work disability that is often preventable. We hope to provide a clinical decision support (CDS) tool to treat low back pain at the **acute** stage and PREVENT it from becoming disabling **chronic** back pain. That said, this CDS could later be easily expanded to include chronic back pain and other conditions.

Goals/Purpose

Goals/purpose of providing a clinical decision support tool/activity prescription are to:

- assist primary care providers to prevent medically unnecessary disability;
- improve the quality of medical care by more effectively addressing a key aspect of the patient's quality of life (physical and mental health status, economic, social), functional status;
- make a provider task easier by facilitating the creation and communication of an activity prescription for which there is already a social, legal, and patient expectation of the PCP;
- reduce the economic burden of disability on society; and
- stimulate PCPs to begin to think more about the role of occupation and its demands on their patients' health, and thereby increase their interest in capturing occupational health data in their electronic health records (EHRs).

These goals are measurable in a variety of ways. Some examples of outcomes that can be measured and are amenable to experiment comparing practices/providers using vs. not using the tool are as follows:

- **Assist** primary care providers' effectiveness in preventing unnecessary work disability;
  - **Measure: days out of work prescribed by providers**
  - **Measure: prescribed incidence and duration of disability within 30 days**
  - **Measure: follow trends of total disability days available from some state data warehouses**
    We found that some states are collecting out-of-work data which potentially could be used to track trends in disability days. The following are existing systems for tracking out-of-work data:

    New Jersey has mandatory state temporary work disability insurance (for all employees) available at http://lwd.dol.state.nj.us/labor/forms_pdfs/tdi/WPR-117.pdf. Temporary disability forms (available at http://lwd.dol.state.nj.us/labor/forms_pdfs/tdi/WDS1.pdf) include questions on – "What was the first day you were unable to work due to present disability: (Include Saturday, Sunday, or Holiday) Do not list future dates." And, "If you have recovered or returned to work from this disability, list date: (Do not use dates in the future)."

    New Hampshire has a mandatory reporting form for work-related injuries that all physicians must use. Somewhat similar in intent to what we are trying to accomplish, it is available at: http://www.nh.gov/labor/documents/medical-forms.pdf.

Another source of data for a more long-term study is quarterly earnings from unemployment insurance; in many states, this data enables researchers to see long-term impact on earnings. For an example of this type of investigation, see https://www.dir.ca.gov/chswc/Reports/2014/Earnings_Losses_2014.pdf.

- **Improve** the quality of medical care by addressing a key aspect of the patient's quality of life (physical and mental health status, economic, social), functional status using patient reported outcomes;
  - **Measure: There are many brief questionnaires that assess quality of life and function; for example, the PROMIS 10; Oswestry Disability Index.**

    Functional outcomes: A search of AHRQ for back pain found that the most common tool cited is the Oswestry Disability Index (ODI), a patient-reported outcome which is a commonly used tool in research and specialty clinics for quantifying functional status of LPB. However, it would require a separate survey than those usually deployed by PCPs and would add to patient survey burden. While many PCPs are starting to incorporate patient surveys routinely into practice given the advent of EHRs with this ability, once built into the system, the survey can be triggered by the chief complaint and/or scheduler. It therefore seems feasible. The alternative might be to go with PROMIS 10 which is used widely by PCPs who are trying to measure any type of outcomes and would not require building a new questionnaire in the dictionary.

    ODI – *pros*: it is short (10 questions) questionnaire, widely used and functionally based; *cons:* it is an additional questionnaire to be added to our tool; it does not objectively measure time out of work; it is not strongly correlated with disability.

    PROMIS 10 (the Patient Reported Outcome Measurement Information System) – *pros:* NIH initiative widely used and easily accessible (www.nihpromis.org) also in Spanish and other languages; commonly used in primary care; *cons:* it does not specifically query the patient about time out of work; it adds to patient survey burden; it is patient reported.

    A review of **National Quality Forum (NQF)** found that the ODI is the only non-proprietary outcome measure of functional status for patients with lumbar impairments endorsed by NQF.

    Canada's Institute for Work & Health (IHW) webinar held April 28, 2015, on "*A scoping review of Clinical Decision Support tools for managing disabling MSDs*" (http://www.iwh.on.ca/plenaries/2015-apr-28) reviewed the PRICE survey for patients with back pain which addresses red flags as does our tool. However, PRICE consists of 46-questions and takes approximately 5-10 minutes to complete – additional patient burden These support tools do not specifically provide guidance for writing work prescriptions, rather they guide clinical care.

- **Make** a normal provider task easier by facilitating the creation and communication of an activity prescription for which there is already a social, legal, and patient expectation of the PCP;
  - **Measure: time for providers to complete forms using the CDS tool vs standard paperwork; audit of time from receipt of patient/3rd party request for activity prescription to completion by provider; count of requests for providers using CDS tool vs. standard paperwork.**
  - **Measure: survey of provider/clinic staff experience with tool.**
- **Reduce** the economic burden of disability on society;
  - **Measure: number of disability days times average wage.**
- **Stimulate** PCPs to begin to think about the role of occupation and its demands on their patients and thereby increase their interest in capturing occupational health data in their electronic health records (EHRs).
  - **Measure: survey of providers using the CDS re: attitude about utility of occupational health data.**

Recommended Quality Measures

Based on conversations with NIOSH personnel, we understand that the measures chosen should not be for research purposes and/or required substantial resources. Therefore of the options we reviewed, we suggest that the following measures could be collected without significant burden to either practices, providers, staff, or patients:

- **Measure: days out of work prescribed by providers**
  This should be a report that could be easily extracted from the practice electronic health record.
- **Measure: prescribed incidence and duration of recurrent disability within 30 days**
  This should be a report that could be easily extracted from the practice electronic health record.
- **Measure: time for providers to complete forms using the CDS tool vs standard paperwork.**
  This can be collected by survey or time/activity audit
- **Measure: audit of time from receipt of patient/3rd party request for activity prescription to completion by provider**
- **Measure: survey of provider and clinic administrative staff experience with tool regarding process improvements – number of employers/WC insurer complaints, record requests, phone calls related to activity prescription, etc.**

Appendix O – Response to the Clinic Visit Report

In reviewing the report, the RTW Panel did not find too much to respond to as many of the issues raised by the clinic visits are already discussed in the actual report (the respondents were not asked to read the report). The Panel went through the list of issues and addressed each of the main issues raised:

Don't give providers more work to do
Response: Our tool is meant to decrease the burden on providers

Work sensitivity – work is a sensitive topic
Response: This is true, but so are other medical/social issues)

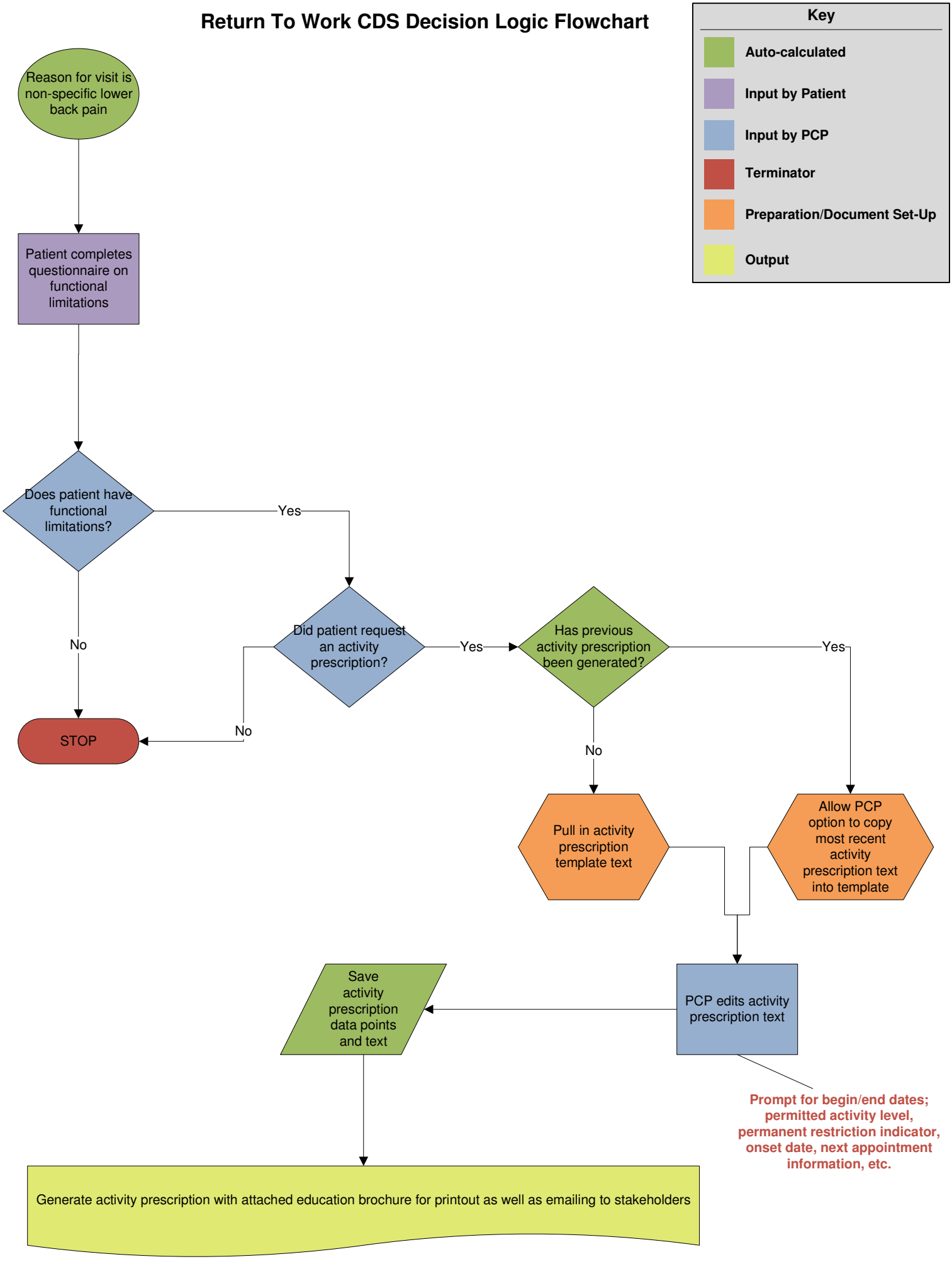
Providers need help in determining functional assessments
Response: This is true, but again that is the point of the tool … 90% of the time it should work without need for functional assessments and job descriptions)

The Panel will add to the tool (Appendix D) additional information to assist PCPs choose the correct activity level.

Alert fatigue
Response: Again, this is true, but not sure what we can do about this (per NIOSH, this doesn't apply to what we are trying to accomplish)

Patient survey burden
Response: We chose not to include a formal survey of functional limitations, other than asking the patient if his/her activities are impacted, or a quality measure, such as ODI which if used would add an additional burden. Alternatively PROMIS 10 or a similar tool already in use by many PCPs could be employed).

Return To Work CDS Decision Logic Flowchart



This flow diagram was developed by Stacey Marovich, MS, MHI, of NIOSH based upon the information in this report.