

Cost-Effective Treatments for Back Pain

1. Low back pain is a significant socioeconomic burden worldwide

Since 1990 when the Global Burden of Disease Project was launched, low back pain has consistently ranked among the top ten causes of disability in the world [1]. The latest Global Burden of Disease Project data published in 2017 estimated that over 550 million people are affected by low back pain at any point in time [24]. Low back pain, headache disorders and depressive disorders are the 3 leading causes of years lived with disability (YLDs) in both males and females. The geographical spread, of low back is extensive, and is the leading cause of YLD in over 120 countries [12].

2. The prevalence of low back pain in low- and middle-income countries is increasing. There's an urgent need to find effective low-cost strategies which are culturally sensitive.

The prevalence of low back pain in high income countries is said to be higher than in low and middle income countries [6]. However, the prevalence is increasing and latest evidence shows the point prevalence of low back pain in Africa to be comparable (39%) with estimates in high income countries [17]. The impact of YLD on the fragile economies of low- and middle-income countries highlights the need to urgently find effective low cost and culturally sensitive strategies to tackle this problem and address this leading cause of YLD.

3. The most common form of low back pain is non-specific low back pain.

The burden of low back pain has been well documented [9 12; 24], but in most cases, a pathoanatomical cause of the pain cannot be found and it is referred to as non-specific low back pain (NSLBP) [16]. This raises ethical issues of why patients should be subjected to multiple investigative tests, with the inherent cost implications when a structural cause is unlikely to be found. The use of a biopsychosocial approach to the investigation of low back pain to identify or rule out 'red flags' (history or clinical pointers to serious disease) [10] and identify 'yellow flags' (psychological contributors) [19], may help prevent requesting of investigations that may not impact diagnosis and treatment.

4. Strategies for effectively managing chronic back pain may not be transferrable between developed countries and low- and middle-income countries.

International guidelines for the management of back pain are largely similar and most of these are based on data from high-income countries [13]. The management modalities employed are non-pharmacological, pharmacological, interventional and surgical depending on the specific diagnosis. Current evidence-based treatments for non-specific low back pain (NSLBP) recommend non-pharmacological therapies as 1st line treatments. However, the adoption of these recommendations in LMICs may be hampered by out-of-pocket costs to the users as well as reduced capacity of health care systems to provide non-pharmacological therapies [8].

5. Self-management programmes for back pain should be encouraged to prevent unnecessary tests and treatments and ultimately reduce cost.

Evidence-based clinical practice guidelines recommend the use of campaigns that promote self-

management and functional improvement of back pain [2; 8; 11; 21]. These campaigns address unhelpful beliefs about back pain and pain coping mechanisms by employing easy-to-understand messages based on best evidence available, aimed at ultimately stimulating a change in risky health behaviour [20]. The added benefits of using self-management programs is their potential to reduce cost, and unnecessary tests and treatments that may be harmful to the patient.

6. Early return to physical activity and promotion of healthy lifestyles reduce disability and cost of treatment for low back pain.

Current recommendations for the management of low back pain include encouraging patients to avoid bed rest for prolonged periods, stay active and continue with daily activities including returning to work [18]. In addition, exercise programmes which are patient-centred and individualized, taking into consideration the capabilities of the patient are recommended over specific types of exercise as there isn't evidence to show superiority of one type of exercise over another [8].

7. Exercise works and is a cost-effective treatment for chronic low back pain.

In a recent review of the cost-effectiveness of guideline-endorsed treatments for low back pain, good evidence was found for exercise, spinal manipulation, interdisciplinary rehabilitation and cognitive behavioural therapy [22].

8. Regular reminders to primary care physicians about appropriate indications for imaging is effective in reducing the cost of treatment for back pain.

Most people with low back pain do not require imaging and an even smaller percentage require specialised imaging like MRI [7]. In a landmark study on first time imaging in low back pain, over 90% of the patients who were asymptomatic of low back pain had findings on imaging [3], questioning the association between imaging findings and symptoms. Imaging is an important driver of LBP costs, and this is a very important factor to consider in LMICs where such costs can be quite prohibitive. Therefore, an effective low cost strategy should include regular reminders to primary care physicians that, imaging in the absence of serious disease may lead to additional tests and invasive procedures which may be harmful and offer no added benefit to the patient [25]. The cost-effectiveness of using primary care physicians in the treatment of low back pain has also been demonstrated in a recent review [15].

9. Epidural steroid injections do not provide long-term relief and may not be cost-effective in chronic low back pain.

A recent study found lumbar epidural steroid injections (LESI) were not cost-effective as the cost per Quality Adjusted Life Year (QALY) gained was insignificant [4]. Current guidelines [18; 21; 23] on management of low back pain also do not recommend the use of epidural steroid injections except in cases of severe radicular pain, as they have been found to only provide short term relief (<4 weeks) and do not reduce the long-term risks of surgery [5].

10. Cognitive behavioural therapy in combination with physical therapy is a cost-effective treatment in low back pain.

Recent guidelines from the North American Spine Society (NASS) suggest there is good evidence backing the use of cognitive behavioural therapy (CBT) and/or psychosocial interventions and/or

neuroscience education to effectively reduce the duration and intensity of pain as well as improve functional outcomes in low back pain [14]. The cost-effectiveness of CBT has been confirmed in a recent review of treatments for low back pain [22].

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REFERENCES

- [1] Buchbinder R, Blyth FM, March LM, Brooks P, Woolf AD, Hoy DG. Placing the global burden of low back pain in context. *Best practice & research Clinical rheumatology* 2013;27(5):575-589.
- [2] Buchbinder R, van Tulder M, Öberg B, Costa LM, Woolf A, Schoene M, Croft P, Hartvigsen J, Cherkin D, Foster NE, Maher CG, Underwood M, Anema JR, Chou R, Cohen SP, Menezes Costa L, Ferreira M, Ferreira PH, Fritz JM, Genevay S, Gross DP, Hancock MJ, Hoy D, Karppinen J, Koes BW, Kongsted A, Louw Q, Peul WC, Pransky G, Sieper J, Smeets RJ, Turner JA. Low back pain: a call for action. *The Lancet (British edition)* 2018;391(10137):2384-2388.
- [3] Carragee E, Alamin T, Cheng I, Franklin T, van den Haak E, Hurwitz E. Are first-time episodes of serious LBP associated with new MRI findings? *The spine journal* 2006;6(6):624-635.
- [4] Carreon LYMDM, Bratcher KRRN, Ammous F, Glassman SDMD. Cost-Effectiveness of Lumbar Epidural Steroid Injections. *The spine journal* 2014;14(11):S29-S30.
- [5] Chou R, Hashimoto R, Friedly J, Fu R, Bougatsos C, Dana T, Sullivan SD, Jarvik J. Epidural Corticosteroid Injections for Radiculopathy and Spinal Stenosis: A Systematic Review and Meta-analysis. *Annals of internal medicine* 2015;163(5):373-381.
- [6] Fatoye F, Gebrye T, Odeyemi I. Real-world incidence and prevalence of low back pain using routinely collected data. *Rheumatology International* 2019;39(4):619-626.
- [7] Flynn T, Smith B, Chou R. Appropriate Use of Diagnostic Imaging in Low Back Pain: A Reminder That Unnecessary Imaging May Do as Much Harm as Good. *The Journal of orthopaedic and sports physical therapy* 2011;41:838-846.
- [8] Foster NE, Anema JR, Cherkin D, Chou R, Cohen SP, Gross DP, Ferreira PH, Fritz JM, Koes BW, Peul W, Turner JA, Maher CG, Buchbinder R, Hartvigsen J, Underwood M, van Tulder M, Cohen SP, Menezes Costa L, Croft P, Ferreira M, Genevay S, Hancock MJ, Hoy D, Karppinen J, Kongsted A, Louw Q, Öberg B, Peul WC, Pransky G, Schoene M, Sieper J, Smeets RJ, Woolf A. Prevention and treatment of low back pain: evidence, challenges, and promising directions. *The Lancet (British edition)* 2018;391(10137):2368-2383.
- [9] Gouda HN, Charlson F, Sorsdahl K, Ahmadzade S, Ferrari AJ, Erskine H, Leung J, Santamauro D, Lund C, Aminde LN, Mayosi BM, Kengne AP, Harris M, Achoki T, Wiysonge CS, Stein DJ, Whiteford H. Burden of non-communicable diseases in sub-Saharan Africa, 1990–2017: results from the Global Burden of Disease Study 2017. *The Lancet global health* 2019;7(10):e1375-e1387.
- [10] Hartvigsen J, Hancock MJ, Kongsted A, Louw Q, Ferreira ML, Genevay S, Hoy D, Karppinen J, Pransky G, Sieper J, Smeets RJ, Underwood M, Buchbinder R, Cherkin D, Foster NE, Maher CG, van Tulder M, Anema JR, Chou R, Cohen SP, Menezes Costa L, Croft P, Ferreira M, Ferreira PH, Fritz JM, Gross DP, Koes BW, Öberg B, Peul WC, Schoene M, Turner JA, Woolf A. What low back pain is and why we need to pay attention. *The Lancet (British edition)* 2018;391(10137):2356-2367.
- [11] Hoy D, Brooks P, Blyth F, Buchbinder R. The Epidemiology of low back pain. *Best practice & research Clinical rheumatology* 2010;24(6):769-781.

- [12] James SL, Abate KH, Abay SM, Abbafati C, Abbasi N, Abdelalim A, Abdollahpour I, Abebe Z, Abera SF, Abil OZ, Abu-Raddad LJ, Acharya D, Acharya P, Adamu AA, Adetokunboh OO, Adib MG, Adsuar JC, Afshin A, Agarwal G, Aggarwal R, Agrawal S, Ahmadi M, Ahmadi H, Ahmed MB, Aichour MTE, Al-Mekhlafi HM, Alahdab F, Alam K, Alavian SM, Alene KA, Alkerwi Aa, Alla F, Allebeck P, Altirkawi K, Aminde LN, Ammar W, Amoako YA, Anber NH, Androudi S, Anmut MD, Ansha MG, Antonio CAT, Arauz A, Aremu O, Armoon B, Ärnlöv J, Arora A, Awasthi A, Ayala Quintanilla BP, Ayer R, Badali H, Ballew SH, Barac A, Bärnighausen TW, Baune BT, Bedi N, Behzadifar M, Béjot Y, Belay YA, Bell ML, Bello AK, Bhattarai S, Bhutta ZA, Bikbov B, Bililign N, Bisanzio D, Blyth FM, Briant PS, Briko AN, Busse R, Butt ZA, Carrero JJ, Carvalho F, Castañeda-Orjuela CA, Castro F, Catalá-López F, Cercy KM, Chaiah Y, Chang H-Y, Chang J-C, Charlson FJ, Chattopadhyay A, Chin KL, Choi J-YJ, Chowdhury R, Christensen H, Christopher DJ, Ciobanu LG, Cirillo M, Coresh J, Cortesi PA, Cousin E, Criqui MH, Cross M, Dadi AF, Dandona L, Dandona R, Dargan PI, Davitoliu DV, De Courten B. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet (British edition)* 2018;392(10159):1789-1858.
- [13] Koes BW, van Tulder M, Lin C-WC, Macedo LG, McAuley J, Maher C. An updated overview of clinical guidelines for the management of non-specific low back pain in primary care. *European spine journal* 2010;19(12):2075-2094.
- [14] Kreiner DS, Matz P, Bono CM, Cho CH, Easa JE, Ghiselli G, Ghogawala Z, Reitman CA, Resnick DK, Watters WC, Annaswamy TM, Baisden J, Bartynski WS, Bess S, Brewer RP, Cassidy RC, Cheng DS, Christie SD, Chutkan NB, Cohen BA, Dagenais S, Enix DE, Dougherty P, Golish SR, Gulur P, Hwang SW, Kilincer C, King JA, Lipson AC, Lisi AJ, Meagher RJ, O'Toole JE, Park P, Pekmezci M, Perry DR, Prasad R, Provenzano DA, Radcliff KE, Rahmathulla G, Reinsel TE, Rich RL, Robbins DS, Rosolowski KA, Sembrano JN, Sharma AK, Stout AA, Taleghani CK, Tazell RA, Trammell T, Vorobeychik Y, Yahiro AM. Guideline summary review: an evidence-based clinical guideline for the diagnosis and treatment of low back pain. *The spine journal* 2020;20(7):998-1024.
- [15] Lin C, Haas M, Maher CG, Machado LAC, van Tulder MW. Cost-effectiveness of general practice care for low back pain: a systematic review. 2011.
- [16] Maher C, Underwood M, Buchbinder R. Non-specific low back pain. *The Lancet (British edition)* 2017;389(10070):736-747.
- [17] Morris LD, Daniels KJ, Ganguli B, Louw QA. An update on the prevalence of low back pain in Africa: a systematic review and meta-analyses. *BMC Musculoskeletal Disorders* 2018;19(1):196.
- [18] National Guideline C. National Institute for Health and Care Excellence: Clinical Guidelines. Low Back Pain and Sciatica in Over 16s: Assessment and Management. London: National Institute for Health and Care Excellence (UK)
- Copyright © NICE, 2016., 2016.
- [19] Nicholas MK, Linton SJ, Watson PJ, Main CJ. Early Identification and Management of Psychological Risk Factors (“Yellow Flags”) in Patients With Low Back Pain: A Reappraisal. *Physical therapy* 2011;91(5):737-753.
- [20] Nkhata LA, Brink Y, Ernstzen D, Louw QA. A systematic review on self-management education campaigns for back pain. *The South African journal of physiotherapy* 2019;75(1):1314-1314.
- [21] Qaseem A, Wilt TJ, McLean RM, Forciea MA. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Annals of internal medicine* 2017;166(7):514-530.
- [22] Sapienza MA, Miyamoto GC, Lin C-WC, Kharitonov SA, Horvath I, Cabral CMN, Chung KF, van Dongen JM, van Tulder MW, Barnes PJ. Cost-effectiveness of exercise therapy in the treatment of non-specific neck pain and low back pain: a systematic review with meta-analysis. *British Journal of Sports Medicine* 2019;53(3):172-181.
- [23] Stochkendahl MJ, Kjaer P, Hartvigsen J, Kongsted A, Aaboe J, Andersen M, Andersen MØ, Fournier G, Højgaard B, Jensen MB, Jensen LD, Karbo T, Kirkeskov L, Melbye M, Morsel-Carlson L, Nordsteen J, Palsson TS, Rasti Z, Silbye PF, Steiness MZ, Tarp S, Vaagholt M. National Clinical Guidelines for non-surgical treatment of patients with recent onset low back pain or lumbar radiculopathy. *European spine journal* 2018;27(1):60-75.
- [24] Vos T, Abate KH, Abbafati C, Abbas KM, Abd-Allah F, Abdulkader RS, Abdulle AM, Abera SF, Abu-Raddad LJ, Adetokunboh O, Afshin A, Agarwal SK, Aggarwal R, Agrawal A, Agrawal S, Ahmadi H, Ahmed MB, Aichour AN, Aichour I, Aiyar S, Akseer N, Al

Lami FH, Alahdab F, Al-Aly Z, Alam K, Alam T, Alasfoor D, Ali R, Alizadeh-Navaei R, Alla F, Allebeck P, Allen C, Al-Maskari F, Alsowaidi S, Amare AT, Amini E, Ammar W, Antonio CAT, Artaman A, Assadi R, Atnafu NT, Atre SR, Avila-Burgos L, Bacha U, Banerjee A, Barac A, Barker-Collo SL, Bärnighausen T, Barrero LH, Basu S, Battista B, Battle KE, Baune BT, Bazargan-Hejazi S, Beardsley J, Bedi N, Beghi E, Bell ML, Bensenor IM, Benson J, Berhane A, Berhe DF, Bernabé E, Betsu BD, Beuran M, Beyene AS, Bhala N, Bhansali A, Bhatt S, Bhutta ZA, Biadgilign S, Bikbov B, Bisanzio D, Bizuayehu HM, Boneya DJ, Boufous S, Bourne RRA, Brazinova A, Bumgarner BR, Cahuana-Hurtado L, Cameron E, Car M, Carabin H, Cárdenas R, Carrero JJ, Carvalho F, Casey DC, Caso V, Castle CD, Chang H-Y, Charlson FJ, Chen H, Chisumpa VH, Chitheer AA, Christopher DJ, Ciobanu LG, Cirillo M, Colombara D, Cortesi PA, Criqui MH. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet* (British edition) 2017;390(10100):1211-1259.

[25] Wáng YXJ, Wu A-M, Ruiz Santiago F, Nogueira-Barbosa MH. Informed appropriate imaging for low back pain management: A narrative review. *J Orthop Translat* 2018;15:21-34.

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