The National List of Essential Medicines of India 2022 (NLEM 2022): Tommy, Toe the Line

S. Manikandan

Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry, India

The Lancet Regional Health - Southeast Asia 2023;13: 100202

Published Online 24 April 2023

https://doi.org/10.1016/j.lansea.2023.100202

Summary

India recently released its fifth National List of Essential Medicines 2022 (NLEM 2022). A critical analysis of the list was performed and was compared with the WHO 22nd Model List of Essential Medicines published in 2021. The Standing National Committee, since its inception, have taken four years to finalise a list. The analysis identified that all the available formulations and strengths of the selected drugs are included in the list, which must be avoided. Furthermore, the antibacterial agents are not categorised as access, watch and reserve (AWaRe) and this list is not aligned with the national programs, standard treatment guidelines and nomenclature. There are a few factual errors and some typographic errors. These problems in the list need to be rectified immediately so that the document would be able to serve the community more effectively as a true model list.

Keywords: NLEM 2022; WHO EML; Rational use of medicines; Procurement of drugs

The concept of essential medicines is based on the priority health care needs of the majority of the population. WHO published the first model list of essential medicines in 1977.[1] As the priority healthcare needs differ as per the country, WHO urges the member states to develop a list of essential medicines at the national/regional/hospital level based on the concepts followed by WHO. The WHO regularly updates its list every two years and the current WHO Model List of Essential Medicines was released on 2021. India developed its first national list of essential medicines (NLEM) in 1996.[2] NLEM 2015 was revised and released as the fifth list in September 2022 (NLEM 2022).[3] The NLEM specifies the level of healthcare (primary, secondary, tertiary) at which each drug is considered essential. This is not new to NLEM 2022 but is a useful additional feature when compared to the WHO list. NLEM 2022 clearly mentions the medicines that are newly added and those deleted from the previous list. These are the commendable points to be noted.

The WHO Expert Committee on the selection and use of essential medicines has met virtually for nearly two weeks (from June 21, 2021 to July 02, 2021) and have developed the WHO Model List 2021.[4] Similarly, the Standing National Committee on Medicines (SNCM) was constituted on July 2018 to review and revise the NLEM 2015.[3] But this committee has taken four long years since its inception to revise the list out of which nearly two years were before the COVID-19 pandemic. Not only the timelines for revision by the committee, but it appears more things must be set right.

E-mail address: manikandan.s@jipmer.edu.in.

Unaligned with the concept of essential medicines

Essential medicines must always be available in adequate quantities at an affordable cost. The process of selection of essential medicines involves the evaluation of scientific evidence for comparative effectiveness, safety, cost effectiveness, suitability, and tolerability.[5] The available therapeutic alternatives should also be considered. WHO appoints an expert committee to prepare the model list of essential medicines. This committee undertakes the above-mentioned process and recommends the selected drug along with the dosage form and strength. But in the case of NLEM 2022, instead of choosing the appropriate dosage form and the strength for every selected drug, all the available dosage forms and their strengths are included in the list. This indicates a possibility that the selection process as defined by the WHO was not followed. For example, five different strengths (50 mg, 100 mg, 150 mg, 200 mg, and 400 mg) of tablet fluconazole are included in NLEM 2022 but WHO EML 2021 includes only one strength (50 mg) of solid oral dosage form (capsule) of fluconazole. Similarly, all the available strengths are included for the parenteral preparations of all drugs in NLEM 2022 and is also same for liquid oral dosage forms. Including all the available dosage forms and strengths for every drug is against the concept of essential medicines. Such a list also defeats the purpose of having an essential medicines list.

WHO EML contains name, dosage form and strength of each drug, which makes it a complete source of reference (ready reckoner). In NLEM 2022, instead of exactly mentioning the dosage form and strength, it is

mentioned as "As licensed" for some items. As a result, those who first use NLEM 2022 as a reference are forced to consult other sources like the website of Central Drugs Standard Control Organisation (CDSCO) to obtain complete information about the licensed dosage form. Hyperlinking to other websites in the electronic copy of NLEM might obviate this. But the more important problem is that multiple formulations/strengths for a particular drug are licensed. Hence the readers of NLEM 2022 are confused on whether all the licensed formulations of a drug are to be selected to the list or any one among the licensed formulations alone needs to be considered. For example, the dosage forms and strengths for oral rehydration salts (ORS) is mentioned as "As licensed" in NLEM 2022. As numerous products of ORS (some of them irrational) are licensed, each differing in composition and quantity, one is perplexed on which among these licensed preparations must be chosen. In contrast to this, the WHO EML 2021 clearly mentions the composition of ORS setting aside all these confusions.

Unaligned with the AWaRe categorisation

WHO introduced the categorisation of antibacterials as access, watch and reserve (AWaRe) in 2017.[6] AWaRe is a new tool by WHO to help countries improve the antibiotic treatment, increase access, and reduce antimicrobial resistance. In 2019, AWaRe categorization was expanded to include most of the antibiotics. Antibiotic consumption in each of the AWaRe categories is an indicator of overall quality of antibiotic use in a country. Several countries have already adopted the AWaRe for surveillance of antibiotic use. By the end of 2023, WHO aims to implement the AWaRe tool in countries to improve the antibiotic prescription practices so that 60% of all antibiotic usage should be from the access category (60 by 2023).[7] Achieving this target will enable the countries to attain the Sustainable Development Goals (SDG). Hence by aligning the NLEM with the AWaRe categorisation, the antibiotic stewardship concepts can be easily incorporated at the national level. As NLEM 2022 is not aligned with the AWaRe categorisation of antibiotics, it ceases to promote antibiotic stewardship in the nation.

Unaligned with the national programs

In 2017, fixed dose drug combinations (FDC) of first line antitubercular drugs were introduced in the Revised National Tuberculosis Control Program (RNTCP).[8] This scheme was known as 99 Directly Observed Treatment Shortcourse (99 DOTS). Three or four first line antitubercular drugs are combined to form 3FDC and 4FDC used in the treatment of continuation and intensive phase respectively. The RNTCP released a National Strategic Plan for Tuberculosis Elimination 2017-25 (NSP 2017-25) for elimination of tuberculosis from India by 2025 (five years ahead of the global target).[9] In 2020, RNTCP was renamed as National Tuberculosis Elimination Program (NTEP). The WHO EML 2021 includes both 3FDC as well as 4FDC. Private practitioners are also discouraged to use the first line antitubercular agents in separate formulations (nonFDC) in drug sensitive tuberculosis patients for the fear of development of resistance. But NLEM 2022 has only individual antitubercular agents in the list and no FDC. Hence NLEM 2022 is not aligned with the NTEP and the use of nonFDC formulations in the NLEM 2022 poses the risk of emergence of multidrug resistant strains of *Mycobacterium*.

WHO has been recommending the replacement of tetanus toxoid (TT) with tetanus adult diphtheria (Td) vaccine.[10] Td vaccine is a combination of tetanus and diphtheria with lower concentration of diphtheria antigen (d) as recommended for older children and adults. More than 130 countries have already replaced TT with Td in their immunisation program. As there is a shift in the diphtheria cases to adolescents and adults, the National Technical Advisory Group on Immunisation (NTAGI) has recommended the replacement of TT with Td for all age groups including pregnant women in 2018.[10] Commensurate with this recommendation, Td vaccine has replaced TT in the Universal Immunisation Program of India. This replacement is not executed in the NLEM 2022.

Unaligned with the standard treatment guidelines

Pneumocystis pneumonia is an opportunistic infection caused by *Pneumocystis jiroveci* in people living with HIV (PLHIV). Prophylaxis for Pneumocystis pneumonia is especially important for PLHIV as it has drastically reduced the number of new cases with pneumocystis. The National Guidelines for HIV Care and Treatment 2021 published by the National AIDS Control Organisation (NACO) endorses this.[11] In NLEM 2022, there is no subsection for drugs used for the prevention of opportunistic infections in PLHIV. However, it has a section on medicines for treating opportunistic infections (Section 6.7.5). But this section does not contain cotrimoxazole (trimethoprim + sulfamethoxazole) which is the drug of choice for the treatment of Pneumocystis pneumonia as per NACO guidelines. Rather it has clindamycin which is an alternative drug (to be administered along with primaquine). The WHO EML 2021 has drugs for prevention of opportunistic infections as per the guidelines.

Digoxin and spironolactone are the only two agents available for heart failure in NLEM 2022. Angiotensin converting enzyme inhibitors, angiotensin receptor blockers and beta blockers are the first line agents for chronic heart failure.[12] Loop diuretics are the preferred agents for relieving congestion in heart failure. In

NLEM 2022, no agent from angiotensin converting enzyme inhibitors, angiotensin receptor blockers, beta blockers, or loop diuretics was included among the drugs used for heart failure. There has been important omission e.g., essential medicines for psychiatric disorders such as drugs for acute withdrawal management, and long-term maintenance of alcohol dependence and varenicline/bupropion for tobacco dependence.

Problems with the dosage forms

Following are three different problems associated with the dosage forms in NLEM 2022.

1. Information about the dosage form for each drug is important as many organisations use the essential medicines list for procurement of drugs. NLEM 2022 has not provided the details about the dosage form for all parenteral preparations. For example, NLEM 2022 mentions "Injection 1%, Injection 2%, Injection 5% with 7.5% glucose" under 'Dosage forms and strengths' for lignocaine. It is not clear which among these injectable preparations are to be made available in vial. On the other hand, WHO EML 2021 provides this information for most of the parenteral preparations. If we look at the previous example of lignocaine in WHO EML 2021, it clearly specifies lignocaine injection 1% and 2% in vial and 5% with 7.5% glucose in 2 ml ampoule.
2. The essential dosage form itself is not included for some drugs in NLEM 2022. It is very difficult to treat an acute attack of migraine by oral route especially when vomiting has set in. Hence parenteral preparations are essential for treating an acute attack of migraine. There is no parenteral preparation available in the list for antimigraine medications in NLEM 2022.
3. The dosage form 'drops' refers to oral liquid formulation used in neonates and children unless otherwise specified. The ophthalmological solution for topical application on eye is to be specified as 'eye drops'. But in NLEM 2022, topical ophthalmological solutions are just mentioned as 'drops'. This leaves a confusion in the minds of the reader as to which formulation is referred to viz. oral drops or eye drops. WHO EML 2021 clearly mentions it as eye drops. NLEM 2022 should toe this line.

Unaligned with the nomenclature

WHO develops and establishes a unique name known as the international non-proprietary name (INN) for every biological, pharmaceutical, and similar product. INN is an important requirement for clear identification, safe prescribing, labelling, regulatory activities, and communication among health professionals. However, NLEM 2022 has not included INN for some drugs. For example, NLEM 2022 mentions "sulphamethoxazole, sulphadoxine, sulphadiazine". The INNs for sulphonamides are standardised with 'sulfa-'.[13] Hence these names have to be changed in NLEM 2022 to harmonise with the INN.

Factual errors and typographic errors

Mupirocin, a topical antibacterial agent effective against *Staphylococcus aureus* used for minor skin infections is mentioned as an antifungal agent in NLEM 2022. This factual error needs to be corrected. Section 6.2.1. is beta-lactam medicines and Section 6.2.2. is 'Other antibacterials'. Cefuroxime, phenoxymethyl penicillin and procaine benzylpenicillin are beta-lactam antibiotics. These are mentioned under the subheading 'Other antibacterials'. These need to be moved to Section 6.2.1, so that they can be grouped with the beta-lactam antibiotics. In the alphabetical list of drugs (Page 95), 'nicotine replacement therapy' is mentioned. Nicotine replacement therapy is not a drug. It should be changed to 'nicotine'. Few typographic errors have creeped into the document: 'They are mesalaine' (Page nos. 61 and 85) and 'power for injection' (Page 23). The document must be proofread meticulously.

The way forward

All the available formulations of the enlisted drugs are included in NLEM 2022. A standing committee must be constituted with different experts. This expert committee should critically analyse the evidence for efficacy, safety, and availability. The committee should analyse and retain only essential formulations in the list. Similarly, all the available strengths of the drugs are also included in the list. It must be decided which strength is required for majority of the population and the rest all may be deleted from the list. As these two issues violate the basic principle of essential medicines, all required rectifications must be prioritised. All the other concerns highlighted here are to be taken up for correction and this must be executed on a war footing.

Contributors

SM conceptualised and wrote the paper.

Declaration of interests

None.

References

1 *WHO Model lists of essential medicines*. Geneva: World Health Organization; 2021. Available from: https://www.who.int/groups/expert-committee-on-selection-and-use-of-essential-medicines/essential-medicines-lists [cited 2022 Oct 28].
2 *National list of essential medicines*. Hyderabad: Vikaspedia; 2020. Available from: https://vikaspedia.in/health/nrhm/national-health-policies/national-list-of-essential-medicines [cited 2022 Oct 28].
3 *National list of essential medicines 2022*. New Delhi: Ministry of Health & Family Welfare; 2022. Available from: https://main.mohfw.gov.in/newshighlights-104 [cited 2022 Oct 28].
4 *Executive summary. The selection and use of essential medicines 2021. Report of the 23rd Expert committee on the selection and use of essential medicines*. Geneva: World Health Organization; 2022. Available

from: https://www.who.int/publications/i/item/WHO-MHP-HPS-EML-2021.01 [cited 2022 Oct 28].
5 *The selection of essential medicines*. Available from:. Geneva: World Health Organization; 2022. https://apps.who.int/iris/bitstream/handle/10665/67375/WHO_EDM_2002.2_eng.pdf [cited 2022 Oct 28].
6 *2021 AWaRe classification*. Available from:. Geneva: World Health Organization; 2021. https://www.who.int/publications/i/item/2021-aware-classification [cited 2022 Oct 28].
7 AWaRe. Geneva: adopt AWaRe. Available from: https://adoptaware.org/; 2022 [cited 2022 Oct 28].
8 National Tuberculosis Elimination Program. New Delhi: National health Portal. Available from: https://www.nhp.gov.in/revised-national-tuberculosis-control-programme_pg; 2022 [cited 2022 Oct 28].
9 *Press release of Ministry of Health and Family welfare*. Available from:. New Delhi: Press Information Bureau; 2022. https://pib.gov.in/PressReleasePage.aspx?PRID=1858006#:~:text=The%20National%20Tuberculosis%20Elimination%20Programme,of%20the%20Sustainable%20Development%20Goals [cited 2022 Oct 28].
10 *Tetanus and adult diphtheria (Td) operational guidelines*. Available from:. New Delhi: Ministry of Health and Family Welfare. National Health Mission; 2022. https://nhm.gov.in/New_Updates_2018/NHM_Components/Immunization/Guildelines_for_immunization/Td_vaccine_operational_guidelines.pdf [cited 2022 Oct 28].
11 *National guidelines for HIV care and treatment*. National AIDS Control Organisation; 2021. Available from: http://naco.gov.in/sites/default/files/National_Guidelines_for_HIV_Care_and_Treatment_2021.pdf [cited 2022 Oct 28].
12 Mishra S, Mohan JC, Nair T, et al. Management protocols for chronic heart failure in India. *Indian Heart J*. 2018;70(1):105–127. https://doi.org/10.1016/j.ihj.2017.11.015.
13 Bennett PN, Brown MJ, Sharma P, eds. *Clinical pharmacology*. 11th ed. Edinburgh: Churchill Livingston; 2012.