

Nudge Theory and Role of Nudging Strategies in Neonatology and Child Health

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ABSTRACT

Nudging is a recent effective behavioral strategy used to improve health outcomes. The principle component of nudging is choice architecture which alters the decisions we make while preserving the individual's freedom of choice. Nudging strategy can be applied in NICU in scenarios of limit of viability and ethical dilemmas whether to continue life-sustaining treatment or not. This is effective to promote breastfeeding, improve vaccination status in children, reduce antibiotic over prescription in viral illness, to reduce hospital discharge inconsistencies and to promote hand washing. Nudging may not be always morally neutral and context dependant. Doctors need to develop new communication skills to help parents clarify their values and chose shared decision making procedure. Transparency about nudging at the level of guidelines combined with professional virtues is opted.

Keywords: Choice architecture; Nudging; Strategy

INTRODUCTION

The word Nudge has been popularized since 2008 by a book 'Nudge: Improving Decisions About Health, Wealth, and Happiness' written by American academics Richard H Thaler and Cass R Sunstein, which received noble prize on 2017.¹ The literal meaning of nudge is to push someone with one's elbow in order to get attention. A nudge is a mild stress or change, the smallest step possible in the direction of your goal.^{1,2} Nudging, as strategy that uses subtle stimuli to direct people's behavior, has recently being included as effective and low cost behavior strategy in low and middle income countries.^{3,4}

The principle component of nudging is choice architecture. The design of choices influences the decisions we make, ideally towards positive outcomes.⁵ It is about making the individual's

context of choice based on their behavior while at the same time preserving that individual's freedom of choice. These outcomes should be compared with outcomes typically arising from traditional enforced or directed change. The decisions are more likely to produce helpful outcomes for those people and society.⁶

Thaler and Sunstein illustrated the contrast between different types of people, which they called 'Human' and 'Econ'.⁷ 'Humans' are characterized as thinking automatically, usually irrational and common while 'Econs' are characterized as thinking reflectively, rational or smart and rare. Humans are guided by bounded rationality⁸. They do not always rationally weigh all the options at hand in the limited time available to them, follow their cognitive biases and decide by following the principles such

as rule of thumb, common sense, or educated guess.^{7,8} Institutions influence the choice presented to people and thus direct people to either way without being intentional about it. So being intentional about the way choice is architected is what it means to nudge.

Role of Nudging Strategies in Neonatology

Nudging in limit of viability in NICU

The way choice is presented has an impact on decision-making in NICU, particularly in the challenging cases that concern the limit of viability. The limit of viability is defined as the point in fetal development at which the infant has a reasonable chance of extra-uterine survival.^{9,10} It lies between 22 and 25 weeks of gestational age (GA) and weeks 23 and 24 of GA remain to be the grey zone of viability that is followed by a considerable variation in practices.¹¹ In NICU, disagreements about whether life-sustaining treatment can ethically be withheld or withdrawn are not uncommon.¹² Such conflicts have occurred in cases of hypoxic encephalopathy, degenerative neurologic diseases, and even brain death.¹³ Usually, the dilemma comes down to questions about the value of life with severe physical or cognitive impairments. Disagreements can go in both directions. Sometimes, doctors recommend treatments and parents refuse. Sometimes, parents request continued treatment that doctors think inappropriate. These disagreements can cause moral distress among doctors and nurses and debates about the ethical justifiability of unilateral decisions that treatment is futile and should be withdrawn.^{14,15,16} Cognitive biases occur when the decision between active and comfort care is taking place. It needs to be noted that communication trainings for NICU professionals can help avoid the misusing of the more avoidable cognitive biases or, alternatively, can help in nudging parents toward the use of rational thinking in the decision-making processes. Communicate with parents as part of the shared decision making procedure and choose to intentionally alter the choice architecture at their disposal.¹⁷ It may not be morally neutral but automatically need to take a stand on what is good for the given individual or population. Decision-making

at the limit of viability is, to a large extent, context dependant.¹⁸ When NICU professionals communicate to parents that active care is the default option already at week 26th of gestation; they take a value stand that saving a child at this point of prematurity is already worth it.

Nudging to promote Breastfeeding

The American Academy of Pediatrics and WHO recommends exclusive breastfeeding for 6 months of life, with continued breastfeeding up to 2 years of life.^{19, 20} However, the average duration of breastfeeding is below 4 months in low and middle income countries and ethnical/racial women minority group.^{21,22} Suboptimal breastfeeding increases the risk for infant mortality and variety of pediatric infectious diseases, including otitis media, gastroenteritis, and respiratory infections.^{22,23} The global experience indicates that success of exclusive breastfeeding programs relies mainly on establishing the right environment for the successful implementation of breastfeeding promotion and support initiatives.²⁵ Nudging strategies include changes in the default social and environmental systems, that would allow women to implement their right to breastfeed their infants. Breastfeeding literature to parents on their first prenatal at the waiting room, NICU and special newborn care unit can be used to promote breast feeding.²⁴ In this instance, protection, at a minimum, needs to address the employment sector (ideally paid maternity leave, breaks for women to express milk and/or breastfeed their infants) and the implementation and monitoring of the World Health Organization (WHO) Code for the Marketing of Breastmilk Substitutes adopted by the WHO assembly in 1981.^{25,26}

Nudging Immunity

Nudging is a feasible, ethically acceptable, and potentially effective vaccination strategy. Making vaccination at OPD, school or day-care the default option and leaving parents the possibility to opt out if they so wish is a vaccination nudging.²⁷ The omission bias “the tendency to see a negative outcome resulting from inaction (omission) as more favorable than the same negative outcome resulting from action (commission)” is common in vaccination.²⁸ The

default effect “the tendency for decision makers to stick with the default, or the option that takes effect if one does not make an explicit choice” make the child is vaccinated, if parents do nothing (can opt out).^{29,30} The parents would simply be informed of the vaccination and of its benefits and risks, requested to bring forward any contraindications to vaccination e.g. HPV vaccination through school-located vaccination programs.³¹ Pediatricians who used an opt-out communication style (e.g., “Well, we have to do some vaccines today.”), as opposed to those who used an opt-in communication style (e.g., “What would you like to do about vaccines today?”), were associated with greater parental acceptance of childhood vaccines.³² Vaccination framing is another important aspect of nudging immunity. It emphasizes benefits rather than risk for instance, instead of telling parents that 0.001% of vaccinated children experience serious side-effects, we could provide them with the factually equivalent information that 99.999% of vaccinated children do not have serious complications will improve vaccine uptake.³³

Nudge the discharge readiness

The problems in discharge include inconsistencies, omissions, and duplications of care. Caregiver readiness is a common reason for delayed discharge patients and families have difficulty understanding and executing the process and leave the hospital unprepared for the transition home which can contribute to worsening health and increased likelihood of hospital readmission.³⁴ Various discharge toolkits have been developed to help patients and providers in discharge planning, such as checklists covering essential processes and guides to educate and empower patients.³⁵ The exposure of guardian to a “nudge” poster that highlighted discharge process tasks, improved perceived readiness for discharge from a large, urban, pediatric academic medical center in the United States.^{36,37} They created ‘The Way Home poster’, a nudge focused on enhancing caregiver readiness and self-efficacy, while increasing practical knowledge for specific areas of transition adjustment, as medication issues, use of web-based records and tools, and effective communication skills around care recipient

recovery behaviors, barriers, and enablers.

COVID 19 and Nudging

In a study, published in journal *Economic Letters*, researchers tested so-called loss aversion messages, highlighting the potential lives lost would be expected to make respondents more cautious about COVID-19 than a message highlighting potential lives saved by a well-managed extension.³⁸ They say that one of the most robust findings in social psychology is that people value losses more than they do gains of equivalent. The hand washing nudge in the form of cheerful footsteps in demarcated pathways, improved the number of handwashing.³⁹

Nudging to reduce antibiotics prescription

Inappropriate antibiotic prescribing for acute respiratory tract infections (ARI) persists globally despite numerous clinical guidelines for diagnosis and treatment. The reason for this inappropriate antibiotic prescribing behavior includes defensive prescribing, unawareness of diagnostic guidelines; patient demand and workplace environment.^{40,41,42} Unnecessary antibiotics will lead to the rise of multidrug-resistant superbugs and harm patients. Initial efforts to reduce unnecessary prescriptions of antibiotics have relied mainly on traditional approaches including education, alerts and reminders but none of which were much effective.⁴³ In a RCT done by Mecker et al, significant decrease in unnecessary antibiotic prescribing rates for patients treated by clinicians who signed and posted a letter in their examination rooms emphasizing a commitment to avoid inappropriate antibiotic prescribing for ARI.⁴⁴ In another studies done , in which physicians were updated via a monthly email about their rate of inappropriate prescribing and informed whether they were a "top performer" in comparison to their peers significant reduction as compared to no letter or education only.^{45,46,47}

Nudging is not always morally neutral. Ethical issues may arise in nudging in the form of lack of transparency in the use of the tool of nudging and background value judgments.⁴⁸ The solution for the lack of transparency includes formulation of guidelines on the management on institutional and national level in critically ill patients. The

solution to the second issue with nudging, namely the value conflicts in the background include virtue ethics. It is the character trait that disposes the physician habitually to act well and wisely in medicine.^{49,50}

CONCLUSION

Pediatrician should use the tool of nudging to improve decision making in various clinical settings. They need to develop new communication skills to clarify the parents. They must also be aware of their own values as they design the choice architecture within which parents will make decisions. This self-awareness and these communication skills will be especially important in pediatrics as decisions become even more complex and challenging with advancement of care. To overcome the ethical issues within nudging, transparency at the level of guidelines combined with professional virtues is opted.

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