



STARFIELD SUMMIT

...where primary care research inspires policy and practice

Imprinting & Graduate Medical Education

Why this is important (brief description):

“Children have never been very good at listening to their elders, but they have never failed to imitate them.”¹ –James Baldwin

Imprinting is a psychological term for “the process by which an organism develops a tendency to remain in proximity with the first stimuli to which it is exposed.”² Imprinting stimuli are more or less constant during a very critical period of early development, and unlike associative learning, are not induced by consequences (either rewards or negative feedback). Imprinting is early, immersive, and innately comfortable. We have argued that there are educational imprinting effects that occur in medical education, focusing on the formative clinical experiences.³ This educational imprinting likely impacts health care cost behaviors and our support for training programs as the imprinting can yield both positive and negative effects on value and overall care provided to patients. The science of understanding which outcomes are imprinted, how to modify them in the training environment, and how to modify them in practice, is new but growing. To paraphrase Hafferty, “reform initiatives must be undertaken with an eye to what residents learn, instead of what they are taught.”⁶

What We Think We Know (Bulleted evidence + Seminal references):

The “hidden curriculum” that exists in both medical school and graduate medical education (GME) can trump the actual curriculum in terms of lasting impact on practice.ⁱ

- There is a likely imprint of health care cost behaviors acquired during residency that lasts for 16-19 years after training.ⁱⁱ
- A likely imprint of patient management style and general internists’ choices of conservative vs. aggressive management options in a certifying exam.ⁱⁱⁱ
- Practice intensity (aggressiveness) is largely predicted by residency affiliation.^{iv}
- Asch et al reported imprinting of quality of care for women treated by obstetricians
- Training in rural and safety net settings has been shown to be a potent predictor in practicing in these locations later, and demonstrating an imprinting effect could give even greater cause to making sure these experiences are early and longitudinal.^v
- The consensus-driven, low-value elements of Choosing Wisely explain very little of what drives primary care cost outcome variance.^{vi}

Questions for Group Consideration at the Starfield Summit:

- How might imprinting affect the long-term performance of a primary care physician?
- Dr. Jordan Cohen, former President of the AAMC once noted, “the residency experience inevitably brands all physicians with an indelible imprint of medicine's lived values.”¹¹: Based on this statement, how can we ensure the values that soon-to-be physicians are taught align with those of the ABFM?
- How can programs such as “Choosing Wisely” and the movement to value-based payment for care purposefully guide sociocultural education and, possibly, imprinting?
- What should we measure and modify in the educational environment in order to effect practice behaviors?
- How can we change the curricula to ensure what is actually learned matches that which is intended by medical professors?
- *It would be helpful to build a shared agenda with funders (educational and research) and policy-makers would be a helpful step to avoid accountability requirements for which we have little understanding or capacity to modify.*
- What other measures can be made to identify the discrepancies between what is taught and what is learned in medical education?
- How can the RRC inform and influence positive imprinting in their new guidelines to positively impact cost, quality, and access to high-performing primary care over the next two decades?

References:

ⁱ Hafferty FW. Beyond curriculum reform: confronting medicine's hidden curriculum. *Acad Med*. 1998;73(4):403-407

ⁱⁱ Phillips RL, Petterson SM, Bazemore AW, Wingrove P, Puffer JC. The effects of training institution practice costs, quality, and other characteristics on future practice. *The Annals of Family Medicine*. 2017;15(2):140-148

ⁱⁱⁱ Irovich BE, Lipner RS, Johnston M, Holmboe ES. The association between residency training and internists' ability to practice conservatively. *JAMA internal medicine*. 2014;174(10):1640-1648.

^{iv} Dine CJ, Bellini LM, Diemer G, et al. Assessing Correlations of Physicians' Practice Intensity and Certainty During Residency Training. *J Grad Med Educ*. 2015;7(4):603-609.

^v Bazemore A, Wingrove P, Petterson S, Peterson L, Raffoul M, Phillips Jr RL. Graduates of Teaching Health Centers Are More Likely to Enter Practice in the Primary Care Safety Net. *American family physician*. 2015;92(10).

^{vi} Barreto TW, Chung Y, Wingrove P, et al. Primary Care Physician Characteristics Associated with Low Value Care Spending. *J Am Board Fam Med*. 2019;32(2):218-225.