Training is all about learning. When training ends and trainees become licensed professionals, their learning must continue. This expectation is widely recognized as lifelong learning – a core tenet of medical professionalism. While the expectation is codified in formal ways such as maintenance of certification requirements and continuing professional development, a large part of lifelong learning occurs informally and spontaneously through voluntary actions and participation in everyday practice (Ryan et al, 2020). As such, much lifelong learning may be invisible to others and even to physicians themselves. If this is true, it raises questions about how physicians in practice conceptualize and pursue lifelong learning and, correspondingly, what aspects of lifelong learning they teach and model to trainees.

In medicine, lifelong learning tends to be associated with professionalism and a commitment to competent performance. The Physician Charter on Medical Professionalism identifies competence as a professional responsibility and states that physicians must be “committed to lifelong learning and be responsible for maintaining the medical knowledge and clinical and team skills necessary for the provision of quality care.” (p.244) The broader literature on lifelong learning includes a strand that views it as “the development of human potential” through processes that “stimulate and empower individuals to acquire the knowledge, values and skills and understanding they will require throughout their lifetimes and apply with confidence, creativity, and enjoyment in all roles, circumstances, and environments.” These different conceptualizations of lifelong learning have implications for how people approach lifelong learning – namely where they choose to focus their efforts and how.

If we assume physicians’ commitment to professionalism ensures their engagement in lifelong learning, we still know surprisingly little about the specific ways that physician pursue lifelong learning and in what areas. Continuing Medical Education (CME) is the most overt way to demonstrate effort to maintain competence through lifelong learning, primarily through formal educational activities (ACCME annual report). While CME increasingly covers a wide array of topics, most still address medical knowledge and skills rather than core competencies in the realm of interpersonal and communication skills or professionalism. These activities mirror learning activities common in medical school and residency, such as attending lectures, seminars, conferences and workshops. They can also continue the workplace learning processes they relied on during training – discussing cases or situations with colleagues, reflecting on novel or challenging patient experiences, looking things up or seeking expert advice. Yet, in contrast to students and residents, physicians in practice must balance and regulate performance largely on their own. They have no curriculum to guide their learning, rarely receive explicit feedback, and face cultural norms that may discourage disclosure of uncertainty about knowledge and performance (LaDonna 2018, Bearman/Molloy – intellectual candor). They choose much of the CPD and informal activities they engage in, which means they rely on their own sense of need and motivation. Studies warn about the risks of relying on self-assessment of performance to guide learning (Eva & Regehr, 2005), which means that aspects of performance that are largely unobserved, not assessed by trusted metrics, and not mandated to meet certain standards or addressed in required trainings may receive little attention.

How and where faculty direct their lifelong learning has implications for what learners learn not only from a content perspective (e.g., are they learning what’s currently believed to be best practice), but also from a ‘learning to be a lifelong learning’ perspective. If the deliberate and intentional efforts
faculty make to learn and improve are invisible to trainees, they are missing opportunities to model lifelong learning. If lifelong learning is more visible is some areas than others, trainees may underestimate the need and effort to continuously seek improvement in these areas and/or they may pursue sub-optimal ways of learning in these areas.

In effort to ensure that trainees receive formal training in lifelong learning, medical schools and residency programs have added curricula addressing metacognitive processes such as self-regulated learning, inquiry, adaptive expertise and, mastery learning (ref [1]). Yet, role modeling is not the most reliable teaching method, particularly for a topic like lifelong learning. We identified two main themes in faculty conceptualizations of lifelong learning:

1. Results
   - We identified two main themes in faculty conceptualizations of lifelong learning: competence and caring. When faculty discussed competence-oriented learning, they described the scientific/technical aspects of medicine and clinical practice, such as knowledge, skills and techniques. When discussing care-oriented learning, they described nontechnical aspects, such as interpersonal and communication skills, relationship building, and emotional awareness. Participants’ focused much more on lifelong learning for competence-oriented purposes than for caring-oriented purposes, though when probed they acknowledged the importance of lifelong learning for their development as caring physicians. In both themes, faculty overwhelmingly described informal learning during practice and work-based experiences, whether intentionally seeking information through reading, or from interactions with patients and colleagues and through reflection. Dominant and threaded throughout these themes was a sense of continuity and change. Participants also discussed characteristics that supported both themes.

2. Methods:
   - General qualitative approach
   - Maximum variation sampling of faculty from UCSF who received at least 1 teaching evaluation in the year prior to the study – variation based on specialty, rank (asst, assoc, full professor), practice site (university, community, county, VA) and practice setting (inpt, outpt, ED/acute, OR, lab); Interviewed 31? Faculty.
   - Trainees - 4th yr med students (n=10), residents and fellows from all specialties from which we interviewed faculty (n=10)
   - Interview guide based on literature about lifelong learning and concept of intellectual candour
   - Thematic analysis

3. In summary, we know little about what and how physicians in practice pursue lifelong learning and even less about what aspects, if any, of their learning they share with trainees. Our study aims to enrich our understanding of lifelong learning – as a core element of professionalism – by exploring, firstly, how physicians in practice conceptualize and pursue lifelong learning. Secondly, how, if at all, physicians teach / model their lifelong learning for trainees.
Conceptualizations and content of lifelong learning

Competence
When asked to give examples of their lifelong learning, participants predominantly referred to the learning they do to maintain competence in many domains, including clinical knowledge and procedural skills as well as interpersonal communication, quality improvement, and medical education. They emphasized the importance of “keeping up to date” in a rapidly evolving field because “so much innovation, and development...some of the information that I learned even in residency is now obsolete.” (P30) and noting “anyone who isn’t involved in lifelong learning as a physician is hopelessly out of date very quickly” (P24). As such, participants viewed professional lifelong learning as a “necessary process” (P27) for clinical excellence throughout one’s career - even until retirement.

Participants explained that engaging in this competence-oriented lifelong learning was fairly easy, particularly in an academic medical center, even when it involved content that was not part of their training, such as panel management and communicating diagnostic uncertainty to patients. They identified multiple ways of keeping up to date on multiple levels. Sometimes keeping up to date involved responding in the moment to questions that arise for specific case. Other times it involved more extensive preparation to perform in a new way, such as using a new technique in the OR. In their areas of expertise, they read recent literature and research to inform practice. They described various motivations for competence-oriented lifelong learning. At times, such learning stemmed from a desire for self-improvement, a sense of curiosity and enjoyment of asking questions. Participants also associated it with professionalism and their commitment to “provide patients with the best care that you can.” (P103). Some portion of lifelong learning was also mandated as part of one’s professional responsibilities through maintenance of certification requirements and continuing medical education credits.

Caring
Participants also described lifelong learning in terms of personal growth and development to strengthen their relationships with patients, colleagues, and trainees. Often the content in this area focused on communication, wellness, xxx and involved activities such as ...(teaching, observing others, reflection, and formal workshops or seminars, .... . While most participants endorsed this caring-oriented lifelong learning, they rarely mentioned it without direct prompting. Nevertheless, when probed, many were emphatic about just how “hugely important” (P29) these were and “[intrinsic to being good at what you do” (P15), that “good physician-patient relationship and communication...[is] very important in terms of good care.” (P16). In fact, everyday practice is not just the facts of medical treatment, but “also how you handle situations, how you communicate something, how you interact with the patient.” (P1).

Through their everyday practice examples, faculty indicated that they understood the importance of lifelong learning in these areas, that “All that stuff turns out to be where seasoned clinicians who are interested, still want to learn” (P22). They also emphasized the necessity of imparting these skills to learners and trainees who initially focus more on knowledge, but quickly come to realize that “the next frontier, really is art stuff. The communication, how did I turn someone who was angry into someone who is getting along with me?” (P22).

Participants described characteristics that supported lifelong learning. These characteristics encompassed a sense of needing to be developed, maintained or cultivated, and also as being more intrinsic and akin to personal traits. Participants felt that one “should never actually feel like a master, but always have questions and there’s always, always room to learn.” (P1). As such, they described the importance of curiosity, humility, being open to new experiences and awareness of one’s limitations. A
sense of humility is aligned with an openness to seek input from others, “to have the perspective of...I've never seen it before. So let me pull my colleagues to see if they've seen it...to have a humility to learn from others, and to ask for help.” (P12), and even “being willing to accept that...sometimes the more junior people will learn a new way of doing things that I haven't learned and that I have to be open to.” (P4). Learning new information and techniques is not always easy and “takes an openness to look at your own biases and your own willingness to learn new things.” (P16).

Therefore, it is important to be realistic and “honest about what we know and what we don't know.” (P12), and necessitates a “mindset of openness” (P21) to adapt and change one’s practice and to evolve as a clinician. Within this, there was a sense of intentionality and/or action in terms of needing to maintain, develop or cultivate some of these characteristics. Maintaining curiosity, for example, allowed faculty to stay engaged in their work: “it's a core part of maintaining the joy in your practice, is maintaining that curiosity and spark and novelty of the work. Otherwise I think you just sort of get stagnant.” (P11) / “if you can enlighten that spark, they will have so much more joy out of their work.” (P5). Participants also expressed a sense of lifelong learning as “a deeper development of what the profession is. It’s a deeper development of what we can be.” (P17) and, as such, the need to develop certain characteristics and awareness: “I think there is in the realm of lifelong learning just the professionalism of learning humility and learning limitations.” (P4).

Participants also discussed characteristics in terms of intrinsic and personal traits, particularly in relation to communication, interpersonal skills, and emotional awareness. They considered these as “intrinsic to being good at what you do” (P15), but that people don’t always “have those skills naturally” (P19), and “some of us are natural diplomats and some people are not so diplomatic.” (P21). As people may not always have good self-awareness of their ability in these skills, these domains “are harder” in terms of lifelong learning (P19). One participant explained that “because...the medical knowledge...is constantly...changing. It's huge and I don't have an expectation that I know that all the time. But in some ways, humans are humans. And to not be able to feel like you’re relating well to a patient or communicating effectively with a patient actually feels much more personal.” (P6). Nevertheless, participants felt it important that physicians – even those with a more ‘intellectual’ focus – pay attention to these to provide good care (P15, P16).

Visibility

- Faculty generally said they were very open when they didn’t know something or felt uncertain. They were generally willing to engage learners in looking things up or figuring things out together
- They viewed this as a shift from the culture they trained in where people rarely admitted not knowing, always appeared knowledgeable and confident

- Learners identified multiple examples of faculty admitting they didn’t know something or when they were uncertain, but they couldn’t say for sure if faculty were always honest. They noted some specialities and cultures were more open than others
- Non-knowledge and reasoning domains were less often discussed.
Extra on CPD:

The broader concept of continuing professional development (CPD) recognizes informal activities as sources of lifelong learning. Campbell and colleagues' describe CPD as “a process of monitoring and reflecting on professional performance, identifying opportunities to improve professional practice gaps, engaging in formal and informal learning activities, and making changes in practice to reduce or eliminate gaps in performance,” (Campbell et al., 2010). Recent work has explored work-based forms of CPD and lifelong learning to understand what it entails in certain contexts (e.g. rural or solo practice) (Ryan 2020) and domains (communication) (Sehlbach, 2020). This work highlights the important role of learning with and from patients, colleagues, and trainees through active, reflective, and social processes.