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Using a Life Course Health Development Framework to Redesign Medicaid

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Abstract

Since the Affordable Care Act, Medicaid programs serve millions more enrollees across the life course, yet beneficiaries continue to experience high rates of preventable morbidity and mortality rooted in earlier life experiences. By incorporating evidence from life course science into Medicaid, using the Life Course Health Development (LCHD) framework, states can more effectively achieve lifelong health improvement. We describe 5 elements of an LCHD-informed strategy states can use to align Medicaid redesign initiatives toward a common goal of improving life course health outcomes: targeting prevention to sensitive periods; prioritizing intervention on social exposures; maximizing longitudinal continuity in coverage and service delivery; building technological systems with capability to measure performance and outcomes over time; and selecting financial models that support LCHD-informed care. With this framework, states can strategically direct investment to improve health for vulnerable Americans, and assure their investment will pay off over time.

Keywords

life course health development; Medicaid

When the Affordable Care Act filled the Medicaid coverage gap between childhood and old age, it also created the potential for Medicaid to become a life course program in states that expanded eligibility. Although a given individual is not enrolled in a single, lifelong Medicaid plan, Medicaid can be responsible for financing health care throughout the life course. At the same time, states and the federal government are increasingly moving beyond a concept of Medicaid as simply financing health care, to leveraging the public investment

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in Medicaid as a way of improving population health, by extending coverage to nonclinical aspects of social and physical well-being.[1]

Life course science creates an opportunity for states to redesign Medicaid programs to more effectively achieve population health objectives by capitalizing on the new lifelong coverage potential from the ACA expansion. Several decades of research from health, biological and social sciences illuminates how health risks accumulate, and how sensitive periods of health development provide opportunities for targeted interventions that optimize lifelong outcomes.[2] Quantum leaps in understanding how adverse experiences in childhood can "get under the skin" with cascading impacts of trauma-induced toxic stress on metabolic, immune, neurological and behavioral systems, provide ample evidence for the lasting quantifiable impact on health trajectories from childhood into old age.[3] The Life Course Health Development (LCHD) framework was created to help policymakers synthesize and translate life course evidence and apply it to inform health services organization and delivery.[2]

Moving this agenda forward will require that states come to grips with long standing barriers that impede the kind of transformative changes that would be necessary to fully realize a life course health promoting design to Medicaid. The science of LCHD supports such transformative goals and offers an opportunity to reimagine traditional barriers. State and federal Medicaid policymakers working in partnership with a broad array of stakeholders including health and social services providers, community partners and academic researchers can draw on the LCHD framework as a guiding strategy to help orient redesign efforts toward better health outcomes and more effective use of resources.

In this article, we review aspects of the LCHD framework most relevant to Medicaid design, and highlight key principles states can prioritize to make the shift to an explicitly life course-informed Medicaid strategy.

The LCHD Framework

The LCHD framework grew out of 30 years of findings in biology, sociology, epidemiology, and psychology.[2] Initially, seeking to explain the early life origins of population level variations in functional, cognitive, and chronic disease status, the growing evidence base demonstrates that a person's health is influenced by past experiences and exposures which become embedded in biobehavioral pathways affecting future health. A simplified representation of this complex, dynamic process is a continuous trajectory of health over the life course that is influenced by specifically timed risk and protective factors (Fig. 1).

The LCHD framework considers the ecosystem of health development as a dynamic interplay of biologic, social, and psychological factors over time. This approach supports cross-sector, horizontally integrated interventions that are purposefully linked with longitudinally integrated delivery system strategies supporting upstream preventive interventions. By organizing and paying for interventions that can alter dynamically developing suboptimal health trajectories and deliver long range health and economic returns, the LCHD framework shifts the focus of health care away from reacting to isolated

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episodes of disease to addressing the upstream developmental origins of chronic health conditions (Fig. 1).[4,5]

Three core principles of the LCHD literature are particularly relevant to Medicaid policy:

Cumulative burden of risks and protective factors. Risks and protective factors accumulate over time, so health in later life is shaped by earlier influences. Multiple risks accumulate in a complex, synergistic interplay and leave individuals with fewer reserves to weather insults. The more risks a person experiences early in life, the lower their maximal health attainment is likely to be and the earlier the start to their health decline.[6]

Sensitive periods. At certain times throughout life, the health trajectory is particularly vulnerable to positive and negative influences. These "sensitive periods" include those defined by age–the prenatal period, early childhood and adolescence—as well as those defined by circumstance–pregnancy, divorce, or the time around an acute hospitalization. [7,8]

Chains of Risk. Particularly, impactful exposures may serve as a turning point, setting off a chain reaction affecting future health, and increasing the risk of a sequence of subsequent exposures occurring.[6] Exposures that may set off chains of risk include neighborhood deprivation, premature birth, and tobacco exposure.[9,10] These chains are often intertwined with sensitive periods, for example homelessness at the time of a teen pregnancy has prolonged detrimental consequences.[11]

Medicaid is Uniquely Suited for LCHD

Among various calls for LCHD-informed health system transformation,[5,12,13] Medicaid is uniquely well-suited to utilize an LCHD framework. A covered population that is especially vulnerable to accumulating health risks with significant health and fiscal consequences for the individual and society creates incentive to implement anticipatory interventions that reduce risk and optimize health trajectories.

An effort more focused on life course health could enhance Medicaid's impact on population health. First, states have incentive to move interventions upstream to less costly preventive services, as Medicaid spends more on health care for the elderly than other groups.[14] Given racialized and economically based health disparities, and Medicaid's coverage of poorer and disproportionately nonwhite population, Medicaid provides an important opportunity to reduce disparities. Recent studies demonstrate that Medicaid availability in a state at time of birth has mortality benefits in later childhood and into adulthood, as well as reductions in hospitalizations and chronic disease evident by age 36.[15] At the same time, Medicaid coverage expansions have yet to demonstrate reductions in disparities and in fact may perpetuate disparities by increasing access to existing structurally inequitable services.[16] Together, persistent disparities and high costs of care for the elderly are compelling reasons for states to redesign Medicaid services to a more preventive, life course based model.

As a public program, Medicaid can apply the LCHD framework in ways private payers cannot. States' multiple policy levers include regulation, public attention, and organizing

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public-private alignment. Because of a state's purview over other government activities, including human services, education, and economic programs, state policymakers can engage Medicaid program leadership in new strategies to incorporate a broader scope of services into Medicaid decision-making accounting for both potential savings across sectors from improved health (eg, increased productivity) as well as cross sector cost savings to other agencies, with an eye to designing a system that could yield a net savings.

Applying the LCHD Framework to Medicaid

The LCHD literature provides direction for an overarching Medicaid strategy that can help states align redesign initiatives toward a common life course health improvement goal. States can align around 5 elements of an LCHD-informed Medicaid design strategy (Fig. 2):

- Target prevention to sensitive periods, defined by age or life events
- Prioritize intervention on social exposures that most add to the cumulative burden and set off chains of risk
- Focus on maximizing longitudinal continuity in coverage and service delivery
- Build technological systems with capability to measure performance and outcomes over developmental time frames
- Select those new financial models that support LCHD-informed care

Target Prevention to Sensitive Periods, Defined by Age or Life Events

Timing affects how an exposure influences health. For example, smoking before puberty increases the odds of breast cancer more than smoking the same number of pack-years starting after puberty.[17] Focusing on sensitive periods when people are most vulnerable to the lasting impacts of an exposure can help Medicaid policymakers concentrate efforts on those times in the life course when service delivery should be more robust.

States already target preventive efforts to 2 sensitive periods, early childhood and pregnancy, and states can advance a life course agenda by redesigning more effective service delivery at these 2 periods, and by translating lessons learned to additional sensitive periods. Medicaid was ahead of its time with the Early Periodic Screening, Diagnostic and Treatment (EPSDT) benefit in 1967, which promotes frequent, proactive screening in early childhood.[18] Medicaid eligibility expansions for prenatal care in the late 1980s led to improved uptake of prenatal services.[19] Despite targeted prevention, decades later, preventable child and maternal health inequities persist. On the early childhood side, practices have been hindered by overburdening pediatric providers with too many lofty objectives that may not meet families where they are; proposed shifts in early childhood prevention include rethinking EPSDT's regimented schedule for a more individualized approach.[20] For Medicaid prenatal preventive services, issues of access to care, limited reimbursement for postpartum care, and historic guidelines that failed to acknowledge social contexts for perinatal health have all limited the effectiveness of prenatal care.[21] In addition to new 12 month postpartum coverage, ideas for redesign include changing the content of prenatal visits to emphasize maternal mental health, well-being, and lifelong reproductive health, and increasing access

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to postnatal care such as by retiming postpartum visits and colocating mother and baby follow up care.[21,22] States leveraging an LCHD framework can capitalize on the existing paradigm for preventive services targeted to these periods, and improve their effectiveness

Other sensitive periods receive less attention: adolescence, periods of social transition (eg, divorce, unemployment) and recovery from acute hospitalization. Under the LCHD framework, states can enhance prevention at these other sensitive periods by redirecting existing broadly targeted efforts toward these specific periods, ensuring that lessons learned in the prenatal and early childhood periods—avoiding a one-size-fits-all approach in a preventive schedule, placing realistic demands on single visits, and ensuring adequate access to preventive care—and driving an accelerated research agenda through direct funding and via academic partnerships for more effective initiatives.

Prioritize Intervention on Social Exposures That Most Add to the Cumulative Burden and Set Off Chains of Risk

Certain exposures have outsized impacts on the health trajectory, especially social factors such as food security, housing, and education.[23] States began incorporating social services into Medicaid a decade ago, with the concept now widely accepted.[1,24] Medicaid programs address social needs through arrangements ranging from direct payment for linkages to housing and employment services, to efforts directing provider attention to social needs more globally, including accountable health communities.[24–26] For example, Oregon's Coordinated Care Organizations partner with community-based organizations to provide "flexible services" such as housing assistance, food access, and neighborhood improvement grants under a capitated payment model.[27] Despite this push, while some social needs programs have yielded health care cost savings or reduced unnecessary utilization, not all interventions demonstrate clear savings.[28] This may be because states seeking to incorporate social needs in Medicaid coverage policy must manage complex processes to integrate care delivery across historically siloed institutions especially with regards to sharing data and payment across medical providers and social services, and decide where to strike the complex balance of investment in individual social needs versus the systemic factors (ie, social determinants of health) that drive social needs.[29,30]

States can use the LCHD framework to strategically select among and evaluate social needs interventions. By including the longitudinal dimension, social needs interventions can be targeted to sensitive periods and exposures expected to have the largest effect on improving future health. A continuing focus of the LCHD literature is disentangling the mechanisms and mediators of life course influence. States can help shape the future research agenda toward identifying feasible targets for intervention. A better understanding of these mechanisms may help target the inciting exposure in the chain of risk, and identify targets to reverse or reduce the detrimental effects of an exposure that has already occurred. States can also use this literature to evaluate existing programs, selecting outcomes measures from known mediating factors in long-term health trajectories, as a predictor of success to enhance short- and long-term health outcomes. Finally, Medicaid programs can partner with

other government agencies and nongovernmental organizations on structural policy changes to address social determinants of health.

Focus on Maximizing Longitudinal Continuity in Coverage and Service Delivery

Delivering services targeted to specific developmental time frames in the life course are more feasible with longitudinal continuity in coverage and service delivery. Currently, the Medicaid population experiences particularly discontinuous care, which can disrupt timing and coordination of interventions. Several studies have found that disruptions in a usual source of care undermine preventive care efforts,[31] such as fewer well child checks,[13] and increased emergency department utilization[32,33]; ongoing investigations seek to demonstrate the converse hypothesis that reducing churn can lower costs associated with inappropriate utilization. States can undertake strategies to improve longitudinal integration, as well as develop strategies to improve continuity even in changing life circumstances.[34]

Utilizing a LCHD framework, states can prioritize improving continuity in Medicaid at the coverage level. Medicaid beneficiaries frequently lose and re-establish Medicaid coverage (“churning”), due to fluctuations in income, acquisition of alternative insurance, or administrative issues. Nearly 25% of beneficiaries churn annually.[35] Managed care organization (MCO) enrollment can change each year, if not multiple times within a year,[36] among MCOs with different provider networks, payment models, benefits, and management tactics. At the same time, factors including annual budget cycles, and political considerations such as concern for fraudulent enrollments of higher-income earners make ensuring continuous enrollment challenging for state policymakers. States can mitigate some of these concerns by focusing on reducing churn at sensitive periods, such as recent state and federal actions to increase the duration of postpartum Medicaid coverage beyond 60 days,[37] or to work on mitigating the effects of churn by ensuring networks and benefits are sufficiently similar across programs and health plans.

Additional state efforts target continuity at the delivery system level, such as accountable care organizations (ACOs) that encourage vertical integration of hospital and clinical services,[38] specific care co-ordination efforts,[39] and leveraging health information exchange to promote seamless transitions across settings. The above principles of time-targeted and exposure-targeted services can help focus these efforts and maximize impact, such as the goal with the Integrated Care for Kids (InCK) model which focuses on childhood and prenatal health.[40]

Build Technological Systems With Capability to Measure Performance and Outcomes Over Time

Functions of an LCHD-informed Medicaid program, including delivering services targeted to particularly sensitive periods of life course health development, identifying high-risk exposures, and tracking long-term outcomes all require enhanced information technological capacity. In the past decade, states and the federal government have invested heavily in developing health information technology infrastructure to enable data exchange and measurement.[41] States vary in the sophistication of their data systems, facing barriers

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such as expense, data sharing agreements, and technological interoperability challenges; however, several states have intentionally designed new systems to support health system transformation, such as through the federal State Innovation Models program.[42] As these states design their data infrastructure for the future, specific capabilities to support LCHD-informed Medicaid include ensuring Medicaid data systems can longitudinally track needs and outcomes, support information exchange across providers about individuals over time, and support data exchange with social services providers. New possibilities arising from an LCHD framework include linking data for the whole family, or for siblings or mother-child dyads, to more accurately capture the totality of an individual's health environment.

In tandem with data infrastructure, measurement should closely track with lifelong health improvement. LCHD measurement moves beyond point-in-time health status and outcome measures to examine changes over time: increases in protective factors, reductions in risks, and intermediate indicators of the health trajectory. Rather than measuring one factor at a time, LCHD-informed measurement considers the ecosystem of factors influencing health during sensitive periods: measuring a package of services delivered (eg, addressing multiple social and health needs during one sensitive period); measuring risks and protective factors during a particular period of development as a linked set (eg, an index score across a variety of factors); and obtaining data to inform risk adjustment that incentivizes service delivery for the most at-risk individuals during sensitive periods. Some existing LCHD-informed measurement strategies include incorporating educational measures (eg, kindergarten readiness or literacy scores) into health and social service initiatives, and using holistic index scores such as the Early Development Index and Strong Start Index.[43,44]

Select Those New Financial Models That Support LCHD-Informed Care

Medicaid was designed to finance point-in-time medical care. As states adopt a new generation of value-based payment models, 2 critical challenges limit their ability to incorporate longitudinal health promotion and social needs investment. The "long pocket" problem encompasses the time horizon challenges of capturing the pay-offs of prevention, years in the future, on health outcomes and costs[45] especially in light of states' annual budget cycles.[46] The often associated "wrong pocket" problem includes the perverse incentives to do nothing, when one sector invests in providing a service but another sector realizes savings.[47]

States can trial innovations to confront these challenges by piloting a new wave of Alternative Payment Models (APM). New models for financing early childhood health, development and well-being incorporate the broader context of factors that impact child health, taking a more collaborative approach that includes health care financing along with partnerships across other social service sectors.[20,48] Such childhood-focused efforts include the aforementioned InCK pediatric ACH models,[40] Children's Health and Wellness Funds and other "braiding" efforts incorporating multiple funding streams including Medicaid.[13,49] These include efforts to better quantify savings for pediatric investment by considering net present value of predicted future savings, and considering savings across sectors to account for improved productivity and reduced future service use.[50] Future experimental ideas include a Medicaid life course bundle that could be designed to include all primary

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health services starting in pregnancy and continuing through the first 5 years of life.[50] Short of experimental models, even within more basic capitation models health systems can find opportunities to bundle and redesign services with the assurance of a more stable funding stream.

Besides APMs, states struggling to demonstrate value for long-term preventive investments can leverage the LCHD framework. First, states can use research on mechanisms of health development to inform better predictive models. Measuring intermediate-term mediating factors could help demonstrate earlier effects on the health trajectory prior to disease onset. Actuarial models could take these outcomes into account as well. For example, if health benefits are seen years in the future, then maintenance of coverage longitudinally is a mechanism for Medicaid to recoup investment, making continuity of enrollment a cost-saving opportunity. In weighing the financial impact of a shortened eligibility redetermination period, states could model the lost savings from prevention dollars already invested, without continued eligibility to realize the benefit of this investment.

Conclusions

Medicaid programs increasingly serve enrollees across the life course. States can purposefully design Medicaid as a life course program, drawing upon the LCHD framework and supporting evidence to efficiently and effectively target services at sensitive times with infrastructure that supports and prioritizes the longitudinal dimension of health. We offer a scaffolding with 5 organizing principles to help states translate LCHD evidence into Medicaid policy, providing a structure for strategic decision-making that can maximize the impact of state health care spending. Moving this agenda forward will require that states come to grips with long standing barriers that prohibit the kind of transformative changes that would be necessary to fully realize a life course health promoting design to Medicaid. The science of LCHD supports such transformative goals, and the potential for Medicaid to take on this challenge sits right before us; history has shown that Medicaid shifts can lead to innovative cross-sector partnerships that re-envision and overcome past challenges. States must now rise to the occasion and strategically direct public investment to improve health for the most vulnerable Americans, and assure their investment in health care will pay off over time.

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What's New

Life Course Health Development (LCHD) is a translational framework that draws on evidence from biology, sociology, epidemiology and psychology. We apply LCHD to Medicaid, presenting five LCHD-informed tenets states can use to organize Medicaid transformation, to improve life course outcomes.

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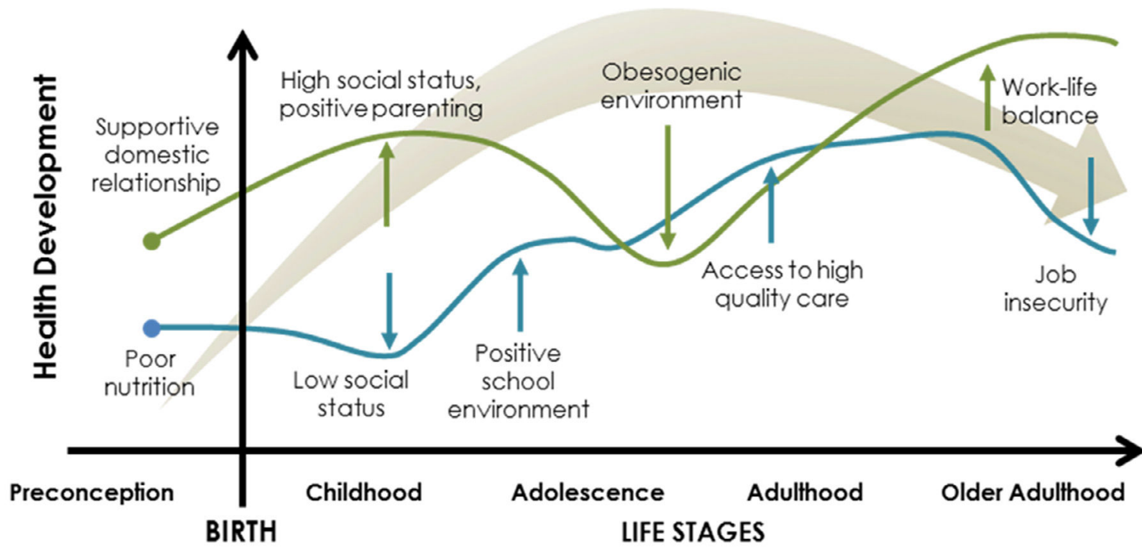

Figure 1.
Life course health development conceptual diagram.

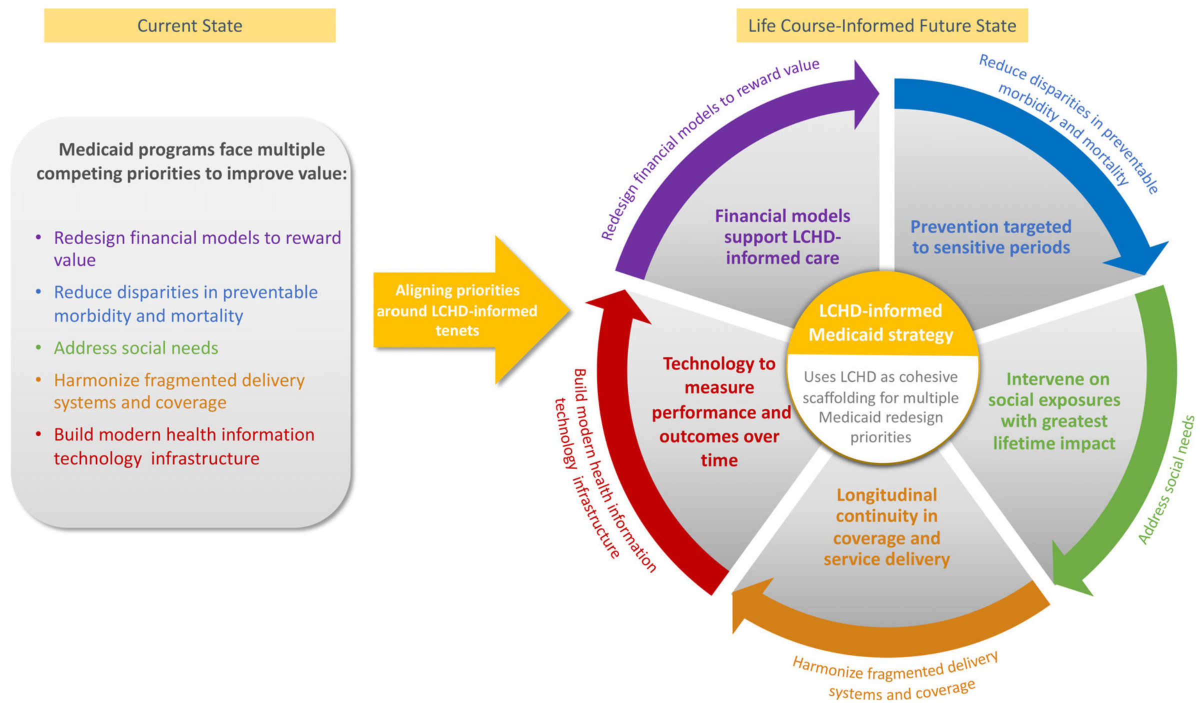

Figure 2.

Five tenets of an LCHD-informed organizing framework for aligning multiple competing priorities to improve Medicaid's value.

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