

“Funds Flow” Implementation at Academic Health Centers: Unique Challenges to Pediatric Departments

Satyan Lakshminrusimha, MD, FAAP¹, Susan Murin, MD, MSc, MBA², J. Douglas Kirk, MD, FACEP, FACC³,
Zishan Mustafa, MHA⁴, Timothy R. Maurice, MBA⁴, Noel Sousa, MBA⁴,
Janette Lee¹, and David A. Lubarsky, MD, MBA⁵

Academic health centers aim to advance their traditional tripartite mission of advancing clinical care, education, and research, which is now expanding to a quadripartite mission, addressing social determinants of health and promoting health equity.¹ However, academic health centers face significant challenges in the current marketplace.² Competition from the private sector, regulatory issues, payer mix, decreased work hours, increased provider cost, and lack of alignment between hospitals and schools of medicine have contributed to the financial woes of pediatric departments.² An academic health center is typically made up of a primary teaching hospital, affiliate community hospitals or clinics, a medical school, a faculty practice plan, and a parent university.³ The lack of an aligned strategy among these entities, scarce funding, complex agreements, and operating in silos without transparency have contributed to internal tension and organizational dysfunction.²

“Funds flow” has emerged as a common term to describe the strategic alignment between components of the academic healthcare enterprise.⁴ In addition to securing administrative and clinical services, funds flow can support educational and research programs, enables faculty recruitment and retention, and facilitates program development, including those dedicated to equity and promoting diversity.^{3,5} We offer an overview of an aligned strategic funds flow system, commonly adopted methods, and unique benefits and challenges to pediatric departments. It is most applicable when the children’s hospital is part of the academic health center and not independent.

Challenges Faced by Academic Pediatric Departments

Academic pediatric departments currently deliver high-quality healthcare; educate students, residents, and fellows; and orga-

nize their research enterprise. Integrating this tripartite mission, adding an expanded emphasis on equity, while minimizing provider burnout, promoting work-life balance and optimizing finances has been a major challenge to departments of pediatrics.⁶ The cost of delivering tertiary care has steadily increased. Parents (consumers) have expectations of easy access and timely and efficient delivery of services. Nonacademic centers are offering stiff competition in financially lucrative fields, such as neonatal intensive care, cardiology, gastroenterology, and cancer care without investing in less lucrative programs such as developmental-behavioral follow-up, infection prevention, and antibiotic stewardship. These financial challenges were further exacerbated during the current SARS-CoV-2 pandemic.⁷ School closures and masking significantly decreased seasonal respiratory virus transmission in 2020 with a resultant low census in children’s hospitals.⁸

The emergence of nonacademic health systems targeting non-Medicaid patients has altered the payer mix at academic health centers. Changes in the National Institutes of Health funding and reliance on alternate sources of research funding such as pharmaceutical clinical trials have altered the fiscal margins associated with research. Finally, reduction in time spent by pediatric residents in neonatal intensive care units (NICU) and pediatric intensive care units (PICU) and work-hour restrictions have increased the need for in-house faculty and advanced practice providers.

Basics of Funds Flow Methodology

Compensation should take into to account all contributions from faculty and not just clinical work (Figure 1; available at www.jpeds.com). Although grants and hospital support for medical directorships have clear sources of revenue, teaching, service, equity, diversity, and strategic initiatives

cFTE	Clinical full-time equivalent
NICU	Neonatal intensive care unit
PICU	Pediatric intensive care unit
SPA	State plan amendment
UPL	Upper payment limit
wRVU	Work relative value unit

From the ¹Department of Pediatrics, ²Department of Internal Medicine, and Interim Dean, School of Medicine, ³Department of Emergency Medicine, ⁴Department of Finance, and ⁵Department of Anesthesia and Pain Medicine and Vice Chancellor of Health Affairs, UC Davis Health, Sacramento, CA

The authors declare no conflicts of interest.

0022-3476/\$ - see front matter. © 2022 Elsevier Inc. All rights reserved.
<https://doi.org/10.1016/j.jpeds.2022.01.058>

are important faculty efforts that require support. Excellence in all areas should be promoted through incentives based on established, predefined metrics.

Collection-Based Model

Traditionally, pediatric departments in academic health centers have functioned as relatively independent financial entities focusing on individual profits. Common cash inflows include professional fees collections (after denials and deductions for coding, billing, and collections expenses), grants, agreements with the schools of medicine (student education instructors, curriculum development, etc), and hospital agreements (medical directorships, quality/safety, infection prevention, antibiotic stewardship, call coverage etc), and, in some circumstances, university funding for tenured faculty (Figure 2). A labyrinthine tangle of negotiated legacy agreements between the parent university, hospital, schools of medicine, and practice plans has evolved over decades in many academic health centers.³ Cash outflows include compensation and benefits, billing and coding costs, a dean's tax (or its equivalent), operational costs, paid leave, recruitment, and retention expenses. Because pediatric departments at academic health centers typically care for a high proportion of Medicaid patients, they do benefit in selected states from state plan amendments (SPA) or upper payment limit (UPL) incentives as a source of revenue. The remaining profit is used for faculty bonuses, recruitment packages, building up reserves, and strategic growth initiatives. The department chair supports administration costs and clinic costs and subsidizes missions based on departmental priorities and the overall profit margin. The health enterprise may provide shortfall and programmatic

support based on predetermined criteria. This approach poses risk to departmental autonomy and may lead to poor alignment with the larger enterprise.

Aligned-Strategic Funds Flow Models

Future success of academic health centers in general is based on strategic resource allocation resulting from enterprise-wide strategic goals.² "Our money, our collective success" is becoming a more common vision, where shared rewards and risks accompany strategic resource allocation decisions.³ These aligned models are predicated on simplifying the flow of funds based on a transparent and formulaic approach that sustains the mission of the center. Basic determinants of compensation, productivity, and clinical full-time equivalent (cFTE) benchmarks must be determined before initiating the funds flow process (Table; available at www.jpeds.com). Consensus regarding these numbers is important, because it has a huge impact on departmental revenue.

Establishing an Aligned Funds Flow Process at Academic Health Centers

Designing an effective funds flow model is composed of 4 stages: an analysis of current cash inflows and outflows, rationalizing and radically simplifying flow of funds to various departments and centers, creating a transparent and formulaic model, and finally laying the groundwork for sustainability through policy, process, and governance.²

Types of Funds Flow Reimbursement

The departmental reimbursement can be based on productivity (typically work relative value units [wRVUs] generated) or staffing needs (hours of clinical service) (Figure 3; available at www.jpeds.com). The choice of the

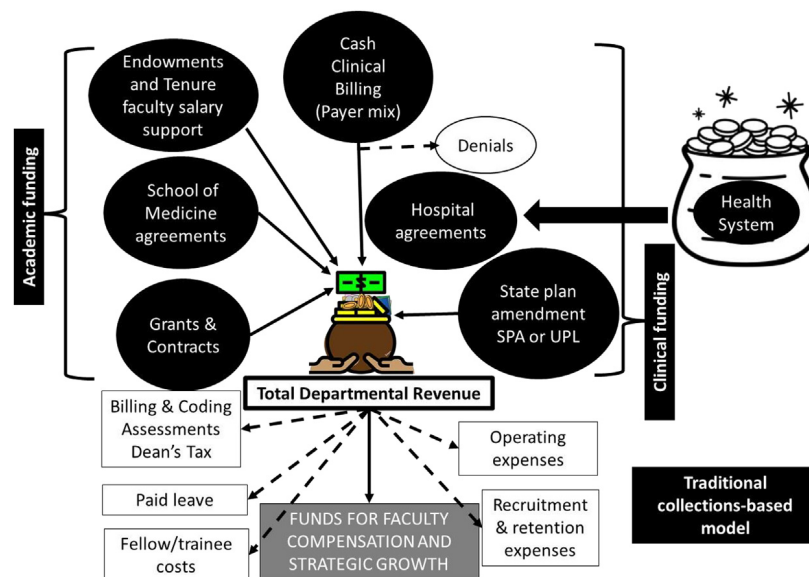


Figure 2. Typical revenue flow in a department of pediatrics in a collection-based model. *Solid lines* represent cash inflow and *dashed lines* depict outflow.

model might depend on the type of clinical service. A service where coverage is based on patient volume, such as a pediatric subspecialty clinic, where provider-hours influence patient volume and acuity aligns well with a wRVU-based productivity model. A clinical service where coverage at a given level is mandatory is better addressed by a staffing model. For example, the pediatric hospitalist service at a small children's hospital might need 2 daytime attending physicians and 1 night-time physician. This level of staffing can address a wide range of census (except for respiratory viral season when additional cFTE is needed). A hybrid approach combining both these models might be suitable for some divisions.

Structure of an Aligned Funds Flow Model

The main difference in these aligned models is that patient revenue is transferred to the health system enterprise (Figure 4). The health system in turn uses a formulaic approach to fund the departments through staffing or productivity, hospital and schools of medicine agreements, trainee support, and programmatic support to interdepartmental and service lines. Research grants and tenured faculty support directly flow into the department. The department no longer pays a dean's tax; billing, coding, and malpractice expenses; or selected benefits costs because they are paid by the health system enterprise. Each funds flow model differs significantly in some of these financial arrangements. Such an aligned model decreased departmental autonomy and also decreases risk and improves strategic alignment with the health system.

Unique Challenges in Pediatrics

The following features can have an impact on payments in various funds flow models:

Medicaid (Payer Mix)

Many children's hospitals serve as a safety net and provide care to many children covered by Medicaid. In the collections model, professional fees paid by Medicaid are typically lower than commercial insurances. The advantage of funds flow models (productivity or staffing) is that the reimbursement is agnostic to payer mix.

Denials

If the insurance denial rates are high, there is a significant negative impact on departmental collections. Typically, with both productivity and staffing models, the impact of denials is on the health enterprise and not on individual departments.

The "Neonatology Paradox"

The division of neonatology contributes to a high percentage of wRVUs in most pediatric departments (the exact percentage may vary depending on the number of NICU beds and the size of other divisions such as cardiology, critical care, gastroenterology, hematology/oncology, etc). For example, neonatology accounted for 34% of the wRVUs and only 12% of salaries (before bonuses) in our department for fiscal year 2020-2021 (Figure 5; available at www.jpeds.com). The neonatology division typically generates high cash

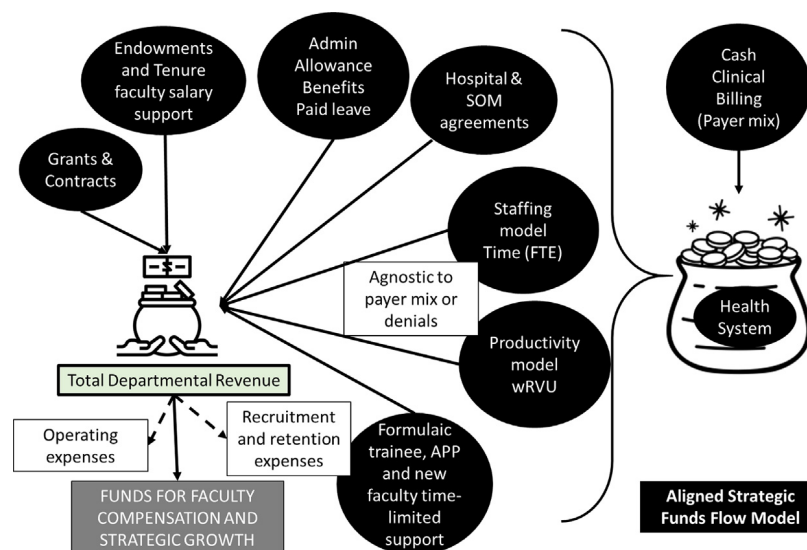


Figure 4. Example of an aligned strategic funds flow model. Individual models vary significantly. Patient revenue is collected by the health system enterprise. This enterprise in turn funds departments through agreements, staffing and productivity-based payments, formulaic support to advanced practice providers (APP), time-limited support for new faculty, and support for trainees.

collections contributing to departmental funds. These funds are commonly needed to support subspecialists who provide consultations to the NICU and follow-up programs. In a productivity model, when the departmental reimbursement is based on dollars per wRVU (median compensation/median productivity), the division of neonatology does not benefit financially. Given the modest academic neonatology salaries combined with high wRVU benchmarks, the dollars per wRVU values are relatively low (eg, \$22-\$25 for neonatology) (Figure 6, A, B, and C; available at www.jpeds.com). The dollars per wRVU values for neonatology are the lowest among the 128 subspecialties listed in the clinical practice solutions center. This results in a significant decrease in financial reimbursement to the department. Similarly, in a staffing model, providing salaries for necessary cFTE only eliminates the cross-subsidization of other services and specialties by the neonatal division. In departments of pediatrics and children's hospitals with large cardiac intensive care units, PICUs, cancer centers, and gastroenterology procedure units, neonatology may have a smaller impact on departmental revenue.

SPA and UPL

Because pediatric faculty care for many Medicaid patients, they are eligible for additional payments under the SPA and UPL supplements in selected states. These payments typically contribute to departmental revenue in a traditional, collection-based model. However, under the funds flow aligned methodology, these payments are often absorbed by the health system enterprise.

Divisional Autonomy as a "Cost Center"

Departments of pediatrics can exist as 1 cost center, balancing finances between different divisions or set up independent cost centers for all divisions. Under both staffing and productivity models in funds flow, divisions are better balanced so that there are no "wealthy" divisions and "poor" divisions. For example, the dollars per wRVU in our model is \$25.28 for neonatology and \$74.32 for developmental behavioral pediatrics. An added advantage of this divisional cost center approach is that each pediatric subspecialty has its own budget and expectations in a realigned funds flow. Ideally, the health system provides the necessary support to keep small subspecialties sustainable.

How to Address These Challenges

Optimizing wRVU Generation

With increasing challenges from healthcare reform, building partnerships with community hospitals within the geographical region serves as a winning strategy for both organizations.⁹ Empowering our community partners to care for routine pediatric patients by providing pediatric hospitalist coverage, and allowing children needing tertiary services to be transferred to the academic health center, results in improved operating efficiencies for the community partner

as well as the academic health center.¹⁰ At children's hospitals with limited bed capacity, this strategy, when combined with back-transfers to community partners, can increase acuity and wRVU productivity by focusing on critically ill children. The overall impact of this strategy on departmental finances is modest (approximately 2%-5% added revenue in our department).

Elimination of the Dean's Tax, Billing, and Coding Assessment

In aligned funds flow models, departments typically do not contribute to payments such as a dean's tax, billing and coding assessments, malpractice costs, and related expenses. These changes result in substantial savings to the department (approximately 15%-25% of collections) because the health enterprise absorbs these expenses.

Provider Benefits and Paid Leave

Benefits add a significant cost to the departments (typically 20%-31% of faculty and staff salaries). If the cost of selected benefits is transferred from the departments to the health enterprise, faculty and staff expenses can be decreased. When infrequent paid leave, including family leave and maternity and paternity leaves, are pooled by the health enterprise, the department is relieved of this financial risk.

Research Support and Indirect Costs

As a part of aligned funds flow modeling, additional support to researchers including physician-scientists from the health system is important. This support can take the form of a share of indirect costs, salary support over the National Institutes of Health cap, and additional start-up support for newly recruited physician scientists.

Support for Teaching Efforts

In an aligned model, departments are provided with funds to support program directors, coordinators, and clerkship directors along with some additional dollars to support general teaching time by all faculty.

Faculty Leadership and Administrative Allowance

An additional allowance based on the number of full-time faculty or collections is needed for the smooth functioning and covering the cost of division chiefs and vice chairs, along with administration staff.

Compensation Benchmarks

Academic departments have used various benchmarks for salary and standard benefits adjusted for productivity (Table). If a given benchmark results in a deleterious financial impact to the department, alternate choices may be considered. However, nonacademic benchmarks such as Medical Group Management Association and Sullivan-Cotter do not take into account academic rank. The proportion of faculty at each rank (assistant, associate, or professor) may alter the financial impact of switching to nonacademic benchmarks. Nonacademic benchmarks

mainly focus on increasing clinical productivity as a means of increasing compensation with no relevance to academic productivity in teaching and research. The impact of using a nonacademic benchmark is variable (ranging between 5% and 59%) and is influenced by the faculty rank mix in the department (there is greater benefit if there are many assistant professors and fewer full professors).

Profit Sharing

To enhance physician engagement in the health system, there needs to be a systematic approach where health system profits are shared with individual departments. These incentives should be based on metrics—access, the provider component of parent and patient satisfaction surveys, length of stay, safety, and mortality. The goal is to rebuild faculty compensation models by applying common academic health center metrics aligned with shared goals for productivity, access, and service expectations in incentive payment formulas.³ The health system can also step in to support departments if there were unexpected financial shortfalls. Retention of SPA or UPL funds to individual departments based on their share of Medicaid patients is also an option to increase financial support to pediatrics departments. Similarly, if departmental profits exceed a prespecified threshold (approximately 5%-10% of the budget) after providing appropriate bonuses, these funds might be invested back in the health system.

Conclusion

In the current complex healthcare landscape, academic health centers are plagued by low margins and intense competition.¹¹ A funds flow process is a strategic method of managing finances in alignment with the health enterprise and can have a profound impact on departments of pediatrics owing to their unique payer mix and disproportionate productivity among different divisions. Each funds flow model is unique, institution specific, and influenced by the nature of the enterprise (public vs private) and corporate structure (affiliated vs integrated).³ Active engagement in the process of developing a funds flow methodology and

understanding the details of the formulaic approach, and its disparate sources and uses of funds (such as the NICU, PICU, and other high-wRVU generating divisions) are important to appreciate before entertaining such a process. A good funds flow model is critical to maintaining financial viability of the pediatrics department and continue to achieve excellence in the full quadripartite mission of the academic health center. ■

Reprint request: Satyan Lakshminrusimha, MD, FAAP, Department of Pediatrics, UC Davis Health—Children's Hospital, 2516, Stockton Blvd, Sacramento CA 95817. E-mail: slakshmi@ucdavis.edu

References

1. Montoya-Williams D, Pena MM, Fuentes-Afflick E. In pursuit of health equity in pediatrics. *J Pediatr* X 2020;5:100045.
2. Barnes J, Abrams KJ. Funds flow in academic medical centers: moving toward a transparent and equitable funding model. Accessed February 12, 2021. www2.deloitte.com/us/en/pages/risk/articles/funds-flow-model-academic-medical-center.html2021
3. Orłowski JM, Mitchell CA, Enders T, Merritt MG, Pfister HR, Leary TD, et al. Next-generation funds flow models: enhancing academic health system alignment. AAMC—Future of Academic Medicine Series. Washington, DC: AAMC; 2018.
4. Josephson SA, Sacco RL, Czech JM, Maher RN, Knutson CS, Goldstein LB. Funds flow in academic neurology: a potential path to financial success. *Neurology* 2020;94:785-91.
5. Dobbin F, Klev A. Why diversity programs fail. *Harv Bus Rev* 2016;94:14.
6. Shanafelt T, Goh J, Sinsky C. The business case for investing in physician well-being. *JAMA Intern Med* 2017;177:1826-32.
7. Colenda CC, Applegate WB, Reifler BV, Blazer DG II. COVID-19: financial stress test for academic medical centers. *Acad Med* 2020;95:1143-5.
8. Partridge E, McCleery E, Cheema R, Nakra N, Lakshminrusimha S, Tancredi DJ, et al. Evaluation of seasonal respiratory virus activity before and after the statewide COVID-19 11 California. *JAMA Netw Open* 2021;4:e2035281.
9. Hamline MY, Forman K, Tran-Viet K-N, McKnight H, Lakshminrusimha S, Lubarsky DA. Constructive self-cannibalism: pediatric affiliation between an academic university and a community hospital. *NEJM Catalyst Innovations in Care Delivery* 2020;1.
10. Lubarsky D, Keating E. The academic medical center as collaborative partner: six strategic questions for a reinvention. *NEJM Catalyst Innovations in Care Delivery* 2021;2.
11. Lee TH. Discovering strategy: a key challenge for academic health centers. *Trans Am Clin Climatol Assoc* 2016;127:300-12.

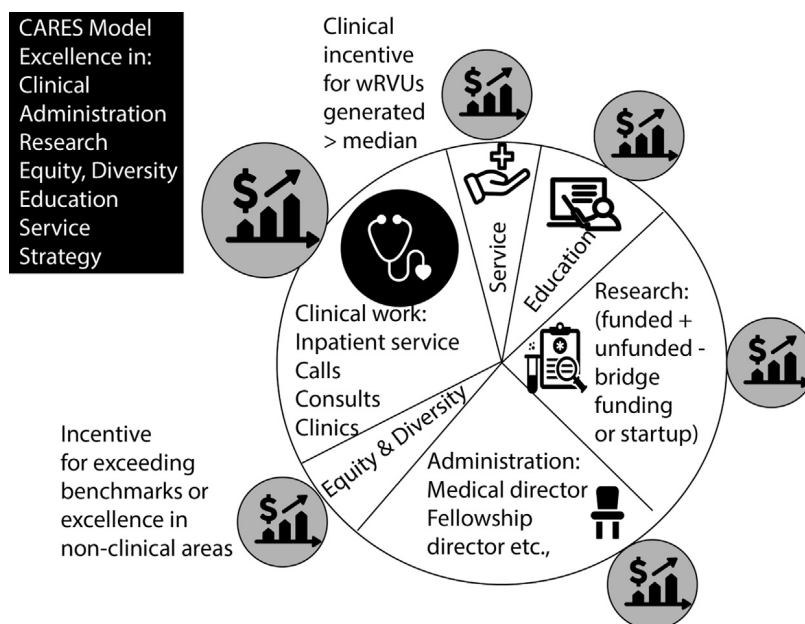


Figure 1. The CARES model of physician work assignment/compensation. Full-time equivalent (FTE) work may include 6 missions—clinical, administration, research, education, equity and diversity, and service. Incentives are provided for exceeding benchmarks. Clinical incentive is based on generation of wRVUs exceeding median expectation (using Association of American Medical Colleges salary benchmarks and clinical practice solutions center—Clinical Practice Solutions Center benchmarks for productivity at UC Davis, Department of Pediatrics) for the clinical portion of FTE. An objective assessment of administrative, research (grants and publications), teaching (assignments and evaluations), engagement in equity and diversity efforts, and service are used to measure incentives in these areas.

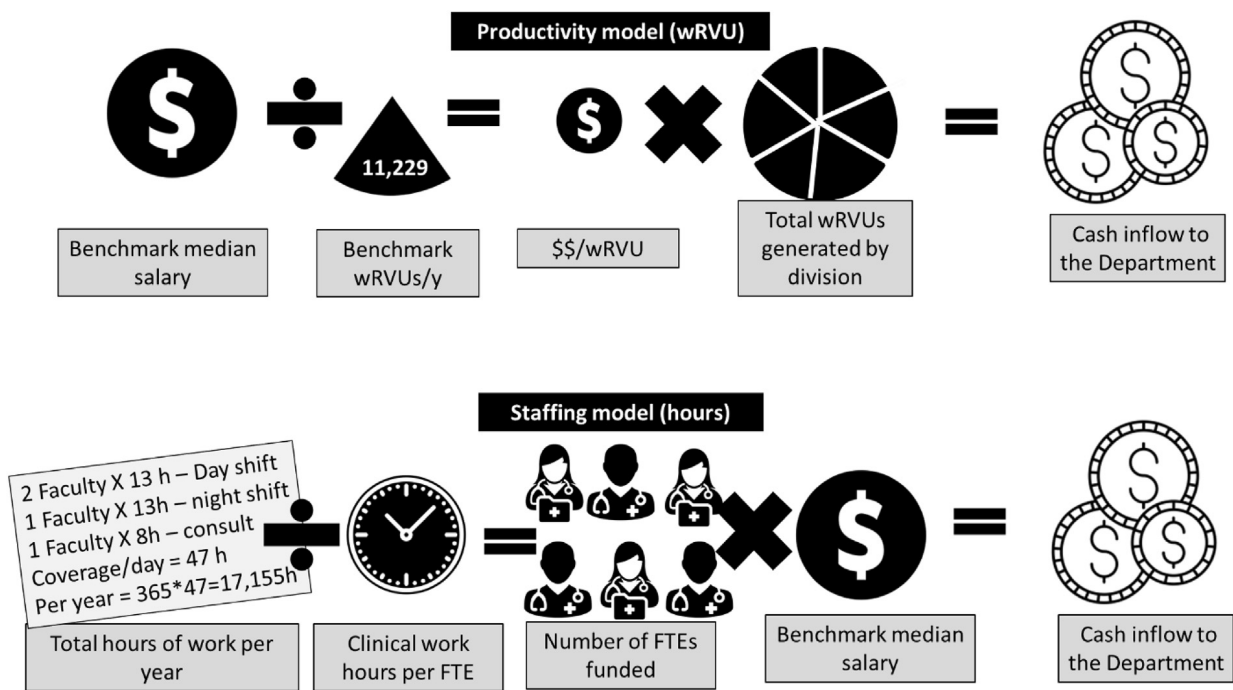


Figure 3. Calculation of reimbursement to department (or divisions) using productivity or staffing models. In the productivity model, benchmarks salary is divided by benchmark wRVUs for 1.0 cFTE (the number shown is the benchmark for neonatology) to calculate dollars per wRVU. On a monthly basis, dollars per wRVU value is multiplied by wRVUs billed by the division (or sub-specialty) and this product is transferred to the department. In the staffing model, total clinical hours per year is divided by benchmark clinical work hours per clinical FTE to calculate number of FTEs funded. Benchmark salaries for these cFTEs is paid out to the department monthly.

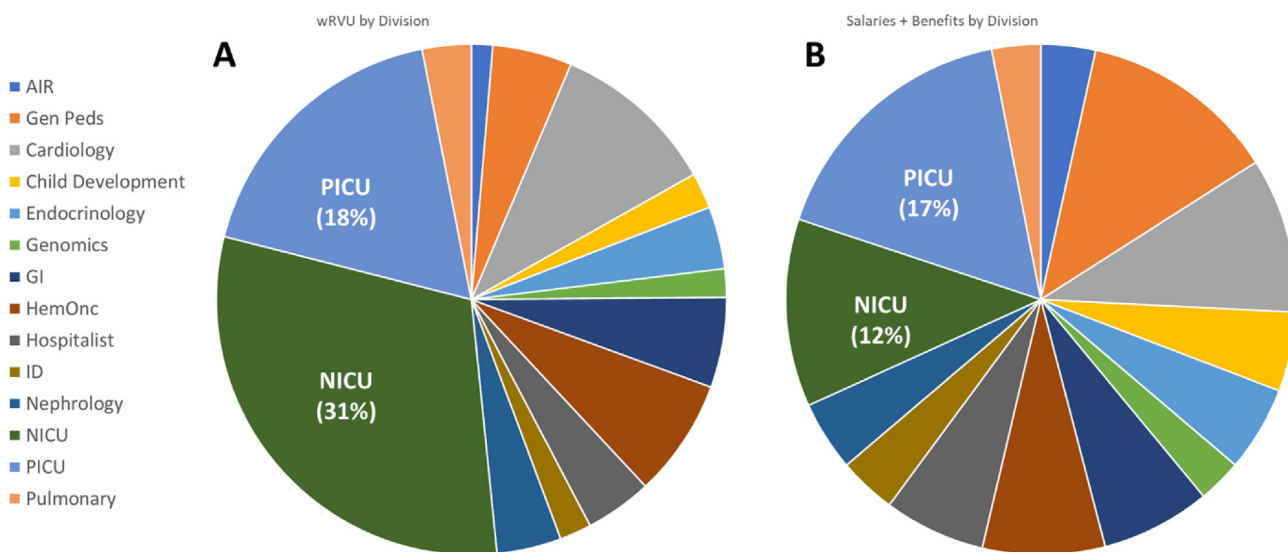


Figure 5. A, Percentage of departmental wRVUs generated by each division in the Department of Pediatrics at UC Davis Health. **B,** Salaries and benefits by division as a percentage of all departmental faculty. *AIR*, allergy, immunology and rheumatology; *GI*, gastroenterology; *ID*, infectious disease. Note that this department has 120 faculty (95 FTE) and does not include the pediatric neurology or pediatric emergency medicine divisions.

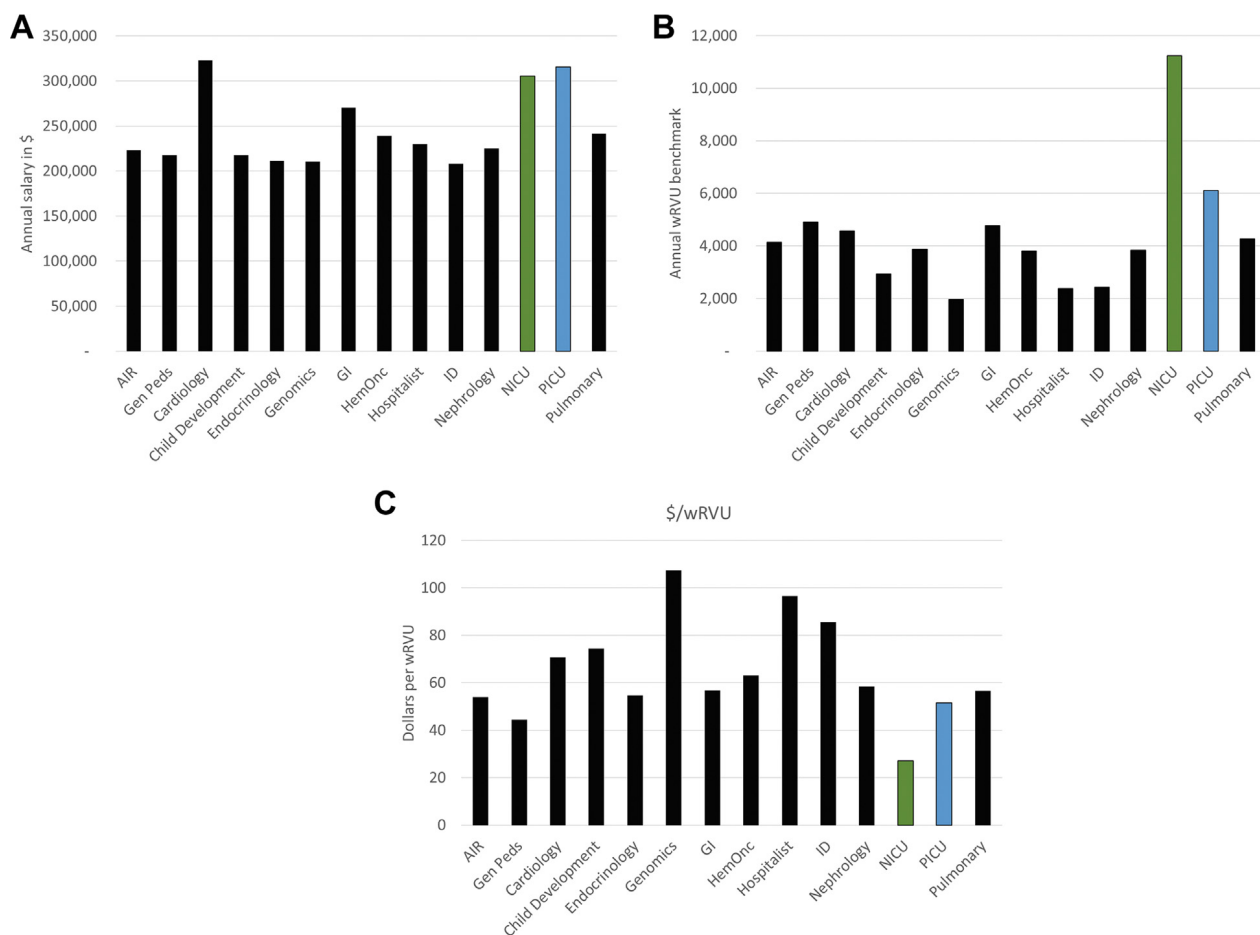


Figure 6. **A**, The “neonatology paradox”—the median salaries (for a mid-rank) for various subspecialties in Pediatrics using national academic benchmarks. **B**, Annual productivity (wRVU) benchmarks based on the Clinical Practice Solutions Center (CPSC). **C**, The net result of current salary benchmarks and high wRVU benchmarks in neonatology result in lower dollars per wRVU (in productivity models) in the field that produces the highest number of wRVUs to departments of pediatrics. In staffing models, providing only cFTE support to cover the NICU (instead of collections) will lead to a large deficit in the department.

A
M
S
P
D
C

Table. Basic determinants for funds flow

Source	Advantages	Disadvantages
Compensation (salary and core benefits) AAAP (national vs regional)*	Specific numbers for several pediatric subspecialists; combined with wRVU benchmarks from same source Salary benchmarks adjusted for rank	Cannot be used across other departments at schools of medicine
AAMC (national vs regional)*	Numbers available for all departments in schools of medicine; salary benchmarks adjusted for rank	Need to choose wRVU benchmarks from other sources (eg, CPSC) No specific data for some pediatric subspecialties (eg, developmental behavioral pediatrics)
MGMA	Higher benchmarks, includes salary and productivity benchmarks	Higher range compared to AAAP and AAMC and may not be affordable by academic health center; compensation benchmarks are not adjusted for academic rank.
Sullivan Cotter	Higher benchmarks, includes salary and productivity benchmarks	Higher range compared to AAAP and AAMC and may not be affordable by academic health center; compensation benchmarks are not adjusted for academic rank.
Productivity (wRVU) AAAP, CPSC, MGMA, Sullivan-Cotter	Benchmarks vary based on source; often mathematically corrected for 1.0 cFTE	Changes in Centers for Medicare and Medicaid Services rules in 2021 resulted in additional variability; global daily codes result in low wRVU with night shifts
Definition of cFTE (hours per year) Clinical hours per year vary from 1760 (40 h × 44 weeks) to 2300 (50 h × 46 weeks)	Ideal for inpatient shifts; can be modified for outpatient work (assuming 4.0-4.5 h per half-day clinic) eg, 1 cFTE = 8 clinics/week × 46 weeks = 368/y	No clear calculations for calls from home; influenced by intensity of work (intensive care unit vs floor) and support staff (fellows, APP, residents)

AAAP, Association of Administrators in Academic Pediatrics; AAMC, Association of American Medical Colleges; CPSC, Clinical Practice Solutions Center; MGMA, Medical Group Management Association.

*National benchmarks have higher numbers of faculty in a specific specialty and are less prone to fluctuation from year to year. Regional benchmarks represent the states included better but have low numbers and are prone to rapid swings based on influx or efflux of faculty to that region.