***Factor 1: Patient panel description***

*1) The payor mix data you provide on pg. 11 of the application provides two categories: Medicaid and “All Other.” Please divide “All Other” into sub-categories, if this data is available. Also, please provide payor mix data for each HSA.*

**Response:** Since filing the Determination of Need Application, Boston Children’s Hospital (BCH) has completed another fiscal year. The patient panel data provided in the application has been updated to reflect the 2021 information (Table 1). As the Commonwealth’s only dedicated pediatric care delivery system, the BCH has a consistently diverse, statewide Patient Panel.6 *See* Table 1, below. The number of patients utilizing the services of BCH has increased over the past four years, with 251,058 unique patients in its 2021 fiscal year (“FY”) as compared to 219,857 unique patients in FY18, an increase of 31,201 unique patients, or a 4.5% annual compounded growth rate. *See* Table 1, below. BCH’s patient mix consists of approximately 52% females and 48% males. *See* Table 1, below. Reflecting BCH’s commitment to health equity and access to care, the portion of its revenue attributed to the treatment of patients enrolled in Medicaid has increased from 37.7% in 2018 to 40.4% in 2021. *See* Table 1, below. Table 1A sub-categorizes “All Other” into the major payers (Blue Cross Blue Shield, Harvard Pilgrim Health Plan, Tufts Health Plan, Other Government/Self Pay, and All Other Commercial Payers) by Health Service Area. BCH’s Medicaid payer mix has increased from 2018 to 2021 in each Health Service Area.

BCH’s Patient Panel reflects a diverse patient population. In FY21, 60.7% of BCH’s statewide patient population (excluding those listed as unknown) identified as White, non-Hispanic; 16% identified as Hispanic; 9.7% identified as Black, non-Hispanic; 7% identified as Another Race, non-Hispanic; 4.9% identified as Asian, non-Hispanic; and 1.7% identified as Multiracial, non-Hispanic. *See* Table 1, below.

While BCH provides care to patients from around the world, its statewide Patient Panel resides mainly in Eastern Massachusetts. Applying the Department of Public Health’s Health Service Area (“HSA”) categories to FY21 data, 34.6% of BCH’s Massachusetts patients reside in HSA 4; 20.3% reside in HSA 6; 17.3% reside in HSA 3; 14.5% reside in HSA 5; 6.3% reside in HSA 2; 1.8% reside in HSA 1; and the origin of 5.1% is unknown. *See* Table 1, below. The demographic characteristics, behavioral risk factors, and health disparities of the BCH’s Patient Panel are those of the Commonwealth’s families.



*2) The Application (starting at pg. 9) describes the existing patient panel of BCH in statewide terms. However, to better understand how the siting for these services was determined, please provide counts and percentages of patient population by age and patient origin for FY19 for each of the services you anticipate providing (see table below).*

*Please complete the following table for each the Needham, Weymouth, and Waltham locations:*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PREPARE ONE TABLE FOR EACH SITE**  WALTHAM  NEEDHAM  WEYMOUTH | **Patient**   **Panel** | **ASC Procedure Volume** | **MRI Scans** | **Physician Practice Visits** |
| Age  0-17  18+ |  |  |  |  |
| Patient Origin  Towns  (If the count is < 11 use *Other* and specify which towns are aggregated in that category) |  |  |  |  |

**Response:** Table 2 summarizes the FY19 patient panel, ambulatory surgical, outpatient MRI and physician practices statistics for its Waltham location. BCH is providing the FY19 data by zip code for its Waltham location in a separate excel file. The data demonstrates that Waltham functions as a gateway location to service patients from across the State with over 600 zip codes represented in its patient panel. 125 towns make up 80% of its primary service area for patient panel. Patients who received ambulatory surgery at Waltham reside in over 400 zip codes. 138 zip codes make up 80% of the primary service area for ambulatory surgery. Patients who received an MRI study at Waltham reside in over 350 zip codes. 122 zip codes make up 80% of the primary service area for MRI studies. BCH physician practices draw from more than 625 zip codes, including 125 that make up 80% of their primary service area.



**Response:** Table 3 summarizes the FY19 patient panel and physician practices statistics for its Weymouth location. MRI and Ambulatory Surgery are not available services at the current location. BCH is providing the FY19 zip code data by town for its Weymouth location in a separate excel file. The data demonstrates that Weymouth functions as a gateway location to service patients from across the State with over 450 zip cods represented in its patient panel. 58 zip codes make up 80% of its primary service area for patient panel. BCH physician practices draw from more than 430 zip codes, including 54 that make up 80% of their primary service area. 

BCH did not operate a facility in Needham in 2019, therefore, no separate table is provided.

***Factor 1: Need for clinical services***

*3) On pg. 12 of the application (table 5) you provide Pediatric Ambulatory Visits per 1,000 by geographic regions. Noting that, the siting of these services appears to be where utilization is still above average (461.1 visits per 1,000), which does not suggest an access issue.*

* 1. *Is there an optimal visit per 1,000 benchmark? Please explain with citations if available.*
  2. *In choosing the project sites, to ensure access, was socio-economic status of the siting communities taken into consideration?*
  3. *In choosing the project sites, to ensure access, was proximity to public transport to the site taken into consideration?*
  4. *In choosing the project sites, was the prevailing type of insurance coverage of the projected PSA taken into consideration?*

**Response**: BCH is not aware of an industry benchmark for pediatric ambulatory visits per 1,000. The siting of the proposed Project is in HSA 4: Metro West with utilization markedly lower than Boston. It is important to also note that HSA 4 stretches from the State’s border of Rhode Island to north of Route 2. To the east, it stretches to the South Shore and to the west to the Rte 495 ring. Underserved areas like Framingham will have easier access to BCH’s our proposed sites in Waltham and Needham. Underserved residents in Quincy, Brockton and Randolph will have improved access to BCH services in both Weymouth and Needham. Table 4 demonstrates that residents of nearby underserved communities of Brockton, Quincy, and Randolph access both locations. 30% of the existing patients who reside in these communities seek care in Waltham. Expansion of services in nearby Weymouth is designed to improve access to these communities.



While the average across the State is 461.1 visits per 1,000, the Table 5 (replicated below) shows variation across Health Service Area. The highest utilization per 1,000 is HSA 6: Boston at 926.4 visits per 1,000. While there is no reason to expect that the disease burden or need for the specialized pediatric care provided by the Hospital varies across HSAs, the data reflect that patients outside of Boston face increased burdens accessing care from Boston Children’s due to geographic barriers. Furthermore, as demonstrated by the response to Question 2, BCH’s Satellites service patients across the State.



In considering this project, Boston Children’s considered the changing demographics of urban and suburban communities, including the ongoing trend of lower-income families moving to the suburbs (in part due to housing stock and pricing factors).

Boston Children’s maintains a longstanding commitment to our presence in Waltham, so this site was largely predetermined. This commitment is, in part, an extension of our community mission to ensure access to underserved populations. The same approach applies to the proposed site in Weymouth, where Boston Children’s would be replacing leased space approximately a mile away from the proposed site and wanted to ensure continuity of experience for existing patients.

In Needham, the site selection process contemplated the potential of the selected site to effectively serve families from the surrounding areas, as opposed to considering the demographics of the host communities specifically.

In evaluating prospective sites, access for families was a major consideration, including access for families traveling from communities across Massachusetts. As such, these facilities would be sited near major arteries (e.g., Route 128, Route 3, the Mass Pike). As described in the answer to question 4b., car travel is an important transportation method for the existing patient population. As of 2019, over 90% of Massachusetts families own at least one car, although car ownership rates are variable and residence in a more densely populated municipality is associated with lower household car ownership rates. [[1]](#footnote-1),[[2]](#footnote-2)

Boston Children’s considered access both for families arriving by car and for families using another mode of transportation, including transit, when evaluating site options. Boston Children’s Waltham is located directly adjacent to an MBTA bus stop and is proximate to the Waltham stop on MBTA commuter rail Fitchburg line.

Boston Children’s is committed to serving all Massachusetts children who need services regardless of their insurance status. In the analysis for this proposal, Boston Children’s concluded that this configuration of sites would enhance its ability to serve municipalities outside of Boston with relatively high Medicaid coverage rates, among other suburban and exurban communities where access to the Longwood Medical Area proves challenging.

*4) On pg. 13, you state that by siting the projects along major transportation routes, you intend to increase accessibility to “underserved communities” including Quincy, Brockton, Randolph, and Framingham.*

1. *Have you determined which sites patients from each of these communities are most likely to go to?*
2. *Have you determined how the patients residing in these communities currently travel to BCH-Longwood or one of its satellites and whether that option will be feasible at the proposed sites?*
3. *Do the majority of the patients from these communities have a PCP? For patients who do have a PCP, is it a BCH PCP?*

**Response:** Patients seeking subspecialty care are primarily motivated to travel to whichever site offers the providers and/or services they need; when they have a choice (e.g., because a provider divides their time between two sites), families report that they consider whether it is possible for them to book multiple appointments to reduce their number of separate visits, how comfortable the experience is for their child (with respect to social/emotional needs or physical accessibility), and convenience/impact to the family’s work and school schedules. Those seeking ancillary services such as lab or imaging are likely to use the site(s) that are most convenient for them.

Within that framework, families with a choice of sites (for example, for services such as lab, radiology, or physical therapy) tend to choose sites that are close to where they live, work, or attend school, or sites that may be farther away but easier to access due to transportation routes and considerations such as congestion and parking. Although Boston Children’s considers the service area for each of the three sites to be statewide, current patient origin data for the existing sites in Waltham and Weymouth suggests that many families in the communities South of Boston (including Quincy, Randolph, and Brockton) would find the Weymouth site to be a useful access point, much as families west of Boston (including Framingham) would be well served by better access in Waltham and Needham.

Car travel is a common way for patients to arrive at health care appointments, and patient families frequently report that affordable (especially free), accessible, easy to use parking is a key factor in their ability to bring their children to appointments. It is also important to bear in mind that, for children covered through MassHealth, the PT1 program is an option for transportation to and from health care appointments, although we acknowledge the challenges associated with utilization of that program and have advocated for improvements. Boston Children’s has also piloted programs that would support families in using rideshare services for transportation to appointments. Prior to the pandemic, Boston Children’s launched Circulation, a non-emergency medical transportation service, in order to more effectively serve patients in need of transportation to appointments (more information is available via the following link: <https://accelerator.childrenshospital.org/portfolio/circulation/>). The program partnered with Lyft, an on-demand ride sharing service, as a service provider; it has subsequently been sold to Modivcare, a company providing access to NEMT, home care, and other services. Boston Children’s use of this service post-pilot has been limited due to challenges related to MassHealth rules and coverage, but there is significant interest in continuing to explore this and other mechanisms to connect families to transportation supports. Patients seeking care at our existing site in Weymouth tend to travel to their visits by car and reported that they strongly prefer access to surface level parking for accessibility reasons. The site selected in Weymouth allows for a surface parking lot sufficient for both staff and anticipated patient volume, making it attractive from this perspective. At the proposed Needham site, patients are likely to arrive by car and Boston Children’s has planned for safety elements such as a raised crosswalk from the parking structure to the entrance of the building and a curbless dropoff area.

Boston Children’s does not have a mechanism to ascertain the prevalence of PCP relationships for the overall pediatric populations in these specific communities. The following information that could be used to estimate PCP empanelment:

* According to the 2019-2020 National Survey of Children’s Health, approximately 90% of Massachusetts children had one or more preventative care check-ups with a doctor, nurse, or other health professional in the preceding 12 months.[[3]](#footnote-3) This metric could reasonably be interpreted as a proxy for having a PCP relationship.
* The following chart details the number of children under 18 residing in each of these communities and the number who are empaneled with a PCP associated with Boston Children’s:

| City/town | Number of children | Number empaneled with Boston Children’s PCP | Percent empaneled with Boston Children’s PCP |
| --- | --- | --- | --- |
| Brockton | 27,046[[4]](#footnote-4) | 5,071 | 18.7% |
| Framingham | 16,787[[5]](#footnote-5) | 5,289 | 31.5% |
| Quincy | 15,161[[6]](#footnote-6) | 3,154 | 20.8% |
| Randolph | 7,103[[7]](#footnote-7) | 1,529 | 21.5% |

*5) On pg. 14, you state that part of your goal is to consolidate services “rather than simply adding capacity,” and that the Longwood campus is “capacity constrained.” The department recently approved a major expansion for the Longwood campus area that includes an ambulatory care site.*

1. *Have the sites in this area reached capacity?*
2. *For each of the proposed services that you consider “constrained,” describe which criteria/measures you used to determine that.*

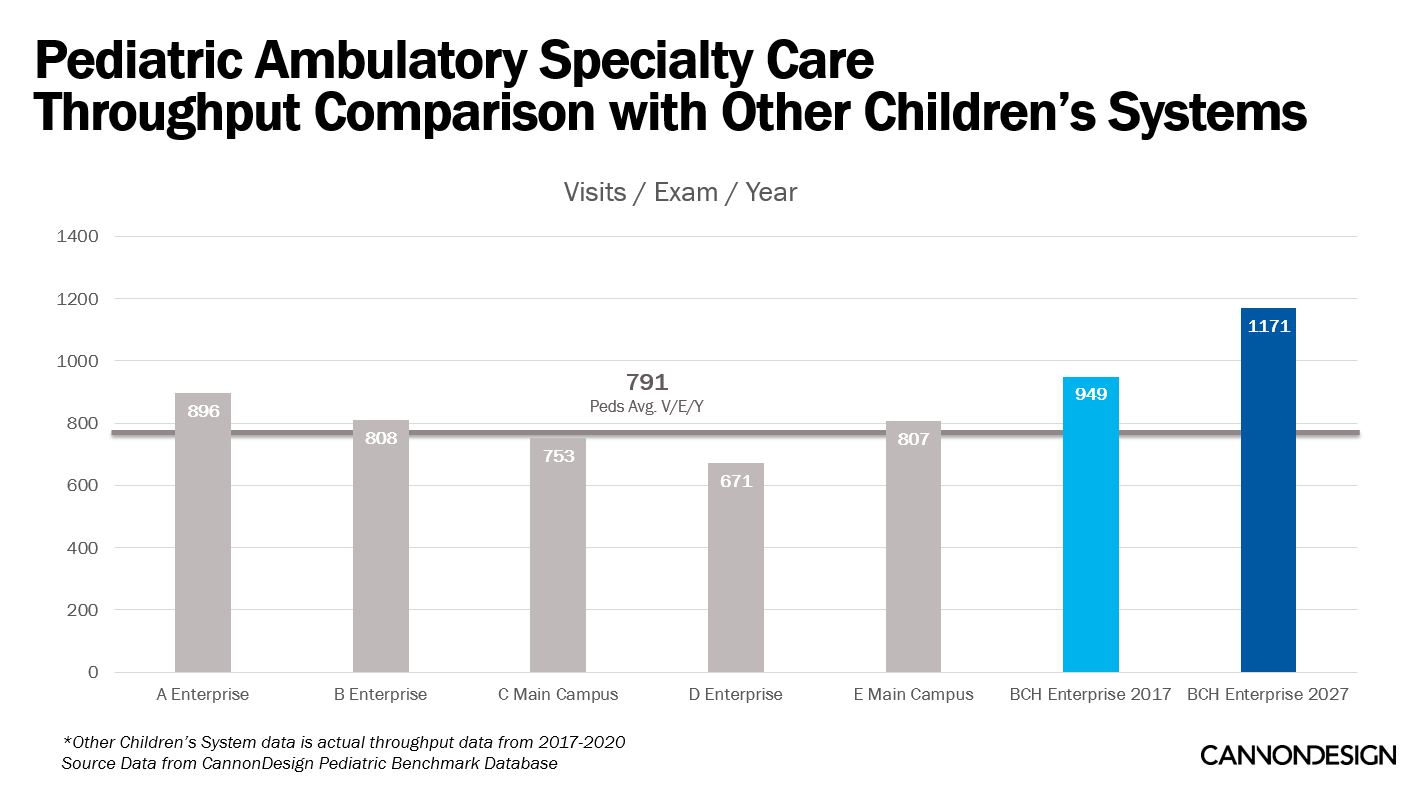
**Response:** On October 27, 2016, the Department approved BCH’s Application Project Number 4-3C47 which included the construction of an ambulatory care site at 2 Brookline Place in Brookline, MA. The facility opened in May 2021. The Brain, Mind & Behavior Center brings together care across these specialties into one convenient location. With the inclusion of interdisciplinary clinical research, the center will improve clinical care for children with neurodevelopmental and neuropsychiatric disorders. The site has not yet reached capacity. The ambulatory care site at 2 Brookline Place does not include any expansion of operating rooms or MRI.

The services that are constrained are physician exam office space, operating rooms, and MRI imaging. The criteria used to determine capacity are as follows:

* Physician Exam Room Space - Visits per Exam Room per Year
* Operating Room - % utilization of In Block OR Utilized Minutes
* MRI - Wait Times for the Appointments

BCH routinely monitors these criteria and has developed an extensive multi-year strategic plan to ensure sufficient capacity to deliver patient centric care to our patients. Detailed benchmarking and modelling for Operating Rooms and MRI criteria are discussed in response to subsequent questions.

BCH’s data, as compiled by Cannon Design, demonstrates that the throughput of ambulatory physician office visits through exam rooms is extraordinarily higher than other Children’s facilities. This level of throughput has been achieved with expanded hours in the evening and weekends. As noted in subsequent questions, the wait time for appointments remains long. Additional physician office space is required to expand access to pediatric patients.



*6) Patient wait times are a very useful metric for assessing the population-level need for a new/expanded service. For each of the new/expanded services included in the Proposed Project, please complete the following table regarding wait times:*

| **Specialty (add rows as needed)** | **Current wait time data** | **At which location(s) will service be provided?** | **How did BCH determine that the site(s) in the previous column needs this service?** |
| --- | --- | --- | --- |
| Sleep |  |  |  |
| Ortho |  |  |  |
| GI |  |  |  |
| *[Add rows as needed...]* |  |  |  |

**Response**: Boston Children’s Hospital has completed the requested table as illustrated below. The average wait measures the actual number of days between when an appointment is scheduled and the date of service. The majority of pediatric subspecialty services have wait times above 30 days. In certain services, there is a 73-day wait to see a dentist followed by a 39-day wait for a surgical procedure if one is needed. Similarly, in Sleep, there is a 90-day wait to see a specialist and another 120 days for a sleep study if one is needed. Boston Children’s receives 250 order per month for sleep studies. Service that rely on similar wrap around services were located at specific sites. For example, the Sleep Lab is sited at Waltham given the fact that the Waltham location currently operates 24/7 and the support structure is in place to operate the program.

As part of BCH’s comprehensive planning process, BCH considered the space needs by program to address patient access. Gastroenterology, Ophthalmology, and Orthopedic Surgery are three of our largest ambulatory clinical programs. The existing footprint at Waltham does not allow them to expand in place. Therefore, those program were largely relocated to Needham which allows for expansion of the medical programs (Cardiology, Neurology, Psychiatry, Pulmonary) and smaller surgical program to be housed in Waltham. These three services will also rely on the use of the operating rooms to provide care. Each program is expected to shift care from both the Longwood and Lexington programs. Furthermore, BCH will triage those patients who are likely to require an overnight stay to its Waltham facility in order to leverage those critical infrastructure assets. Overall annual growth rates for ambulatory services are anticipated to grow approximately 2.8%, driven in part by the continued development of care models that shift care from inpatient settings to outpatient settings.





*7) On pg. 11 of the supplement, you reference the need for increased sleep disorders services in the wake of COVID-19. For how long do you anticipate the COVID-19-related surge in sleep services demand will last and what level of need is projected for after this surge subsides?*

**Response**: In general, Boston Children’s Hospital returned all programs to full operations by the Fall of 2021. As of March 2022, the Sleep Program has an average wait time 90-day wait to see a specialist and another 120 days for a sleep study if one is needed. Boston Children’s receives 250 order per month for sleep studies. The program leadership does not see demand for studies lessening. The Proposed Project will facilitate expansion of pediatric sleep services for the only pediatric dedicated sleep program in New England, addressing the need for a child in the Commonwealth to drive as far as 94 miles for sleep medicine care as reported by the American Academy of Pediatrics.[[8]](#footnote-8)

**Factor 1: Need for ambulatory surgery**

*8) Please complete the table below regarding your existing ambulatory surgical sites with the number of ORs at each and the number of ORs at each post-project implementation.*

| Ambulatory surgical sites (current and proposed) | Current number of ORs at site | Proposed number of ORs post project implementation |
| --- | --- | --- |
| Longwood | 28 \* | 28\* |
| Lexington | 3.5\*\* | 0 |
| Waltham | 6 | 6 |
| Needham | 0 | 8 |
| Total | 37.5 | 42 |

\* BCH operates 24 ORs currently which will expand to 28 as of June 2022 consistent with the approval of BCH’s Application Project Number 4-3C47.

\*\*BCH jointly operates 4 operating rooms in Lexington with Beth Israel Deaconess Medical Center. BCH uses 3.5 of the 4 operating rooms.

*9) For each location that currently performs ambulatory surgical procedures:*

1. *What are the wait times and backlogs by specialties and procedures?*
2. *For each specialty, provide the volume for 2018-19.*
3. *What is considered capacity for each location?*
4. *Which specialties and procedures have the highest need?*
5. *Provide projected surgical volume by specialty for five years post project implementation.*
6. *Provide an explanation of your methodology for determining need by the patient panel, if any (with applicable citations).*
7. *Explain how you calculated the number of ORs needed by site.*
8. *What percent of BCH system wide/outpatient procedures will be performed at each of these sites?*
9. *As a result of the shift in patients to these new sites, what is the expected impact on your existing facilities (as demonstrated by projected change in volume, wait times, etc.)?*

**Response:** When evaluating the need for operating room capacity, several factors including clinical service mix, acuity, length of case, turn over time and staffing must be considered. Boston Children’s has developed a comprehensive planning tool that considers these factors and the resultant surgical minutes. Children’s Hospital Association collects utilization information across all of its members. Specifically, they collect actual minutes excluding room turnover. As shown in Chart 1, Boston Children’s performs well above the four major pediatric facilities of similar size and complexity. The Longwood campus consistently achieves above 70% average room utilization vs its peers at an average of 59.4%.

Source: CHA Fall 2019 COMPARE report. COMPARE is the CHA data base for OR benchmarking. Defined as the number of minutes rooms are in use during regularly scheduled hours from wheels in to wheels out. **Does not include turnover time**

For space planning purposes, OR utilization models typically include a factor for turnover time, defined by the number of minutes to prepare an operating room for the next case. Typical turnover time tends to run between 20 and 30 minutes, with a shorter times for less complex cases. Table 6 outlines the utilization rates with and without turnover for Longwood and the Satellites.



Boston Children’s planning model is predicated on achieving 85% utilization of staffed operating room time on the Longwood campus in order to be able to accommodate emergent and unplanned surgeries, enable efficient patient flow, and avoid cancellations or delays that can be incredibly stressful for children and their parents. In 2019, the Longwood operating room ran at an average 91% utilization with several months at 94% utilization. Ambulatory operating rooms have a lower optimal utilization given that they don’t accommodate emergent surgeries, etc. Boston Children’s targets utilization of 71-73% of staffed operating rooms for ambulatory use. Our satellite operating rooms run at approximately 71%. In order to avoid cancellations and delays for ambulatory surgery cases and provide sufficient capacity to accommodate complex surgical cases on Longwood campus, Boston Children’s must shift current utilization for ambulatory surgical cases to the satellites. In order to rebalance utilization on Longwood campus to the satellites, approximately 180,000 minutes of surgical time must be shifted. Furthermore, Boston Children’s currently operates four operating rooms jointly with Beth Israel Deaconess Medical Center. Approximately 3.5 of the 4 rooms are used by Boston Children’s surgeons. The Lexington facility was renovated in 1994 and the average size of the operating rooms are approximately 365 sq. ft. The small size of the Lexington rooms, paired with the growing size and quantity of medical technology makes it difficult to efficiently operate in these rooms long term. Current standards for the size of an ambulatory surgery room is 600 sq. ft. Therefore, BCH intends to consolidate day surgery volume at the Waltham Facility and Needham Facility and reduce day surgeries at its Lexington location. Table 7 summarizes the results of the planning model. Boston Children’s currently operates 9.5 ORs in the Satellites at an average utilization of 71%. The proposed project calls for 6 ORs in Waltham and 8 ORs in Needham, with 6 of the 8 initially staffed. The rebalancing of OR time from Longwood and a 2.1% average growth rate in surgical minutes consistent with historical trends is projected to drive to 73% utilization of 12 operating rooms by 2028, requiring the staffing of the remaining 2 operating rooms in 2029.



Boston Children’s has a backlog of 4,791 ambulatory surgical cases with an average wait time of 3.1 months as referenced in Table 8. The backlog reflects an additional 25% increase in case load relative to the surgical volume delivered in the last 12 months. Most notably, Ophthalmology and dental surgical cases are booking out 5.4 months and 5.1 months, respectively.



Table 9 summarizes the outpatient surgical case activity at each operative location based on aggregation of similar case types at certain locations (i.e., ambulatory patients who are likely to require an extended recovery stay are scheduled in Waltham where there is a 12 bed surgical unit). Alternatively, highly specialized equipment dependent cases that don’t require an extended stay will be performed at Needham and allow Boston Children’s to optimize the use of this specialized equipment and avoid duplication.



**Factor 1: Need for MRI (pg. 17-18)**

*10) Historical MRI scan volume was not provided by site or by specialty. For* ***each site*** *that offers MRI services, provide the data below (if the numbers in any category are need <11, amalgamate into “other” and footnote what is included in “other” category.)*

1. *Provide the volume of MRI by specialty for 2018-19.*
2. *Provide projected MRI volume by specialty for five years post project implementation.*
3. *Provide an explanation of your methodology for determining need, if any (with applicable citations).*
4. *Explain how you determined the number of units needed by site.*

Response: BCH performs approximately 29,000 MRI scans per year. Table 10 shows that distribution of MRI scans by location. Table 10A shows the distribution of MRI scans by organ system (e.g. specialty) and Table 10B reports the distribution between scans requiring anesthesia vs no anesthesia. Approximately 28% of all scans require anesthesia.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 10: 2018 and 2019 MRI Volume by Site** | | | | |
| **Year** | **Boston** | **Peabody** | **Waltham** | **Total** |
| 2018 | 21,486 | 1,885 | 5,815 | **29,186** |
| 2019 | 20,594 | 1,775 | 7,030 | **29,399** |

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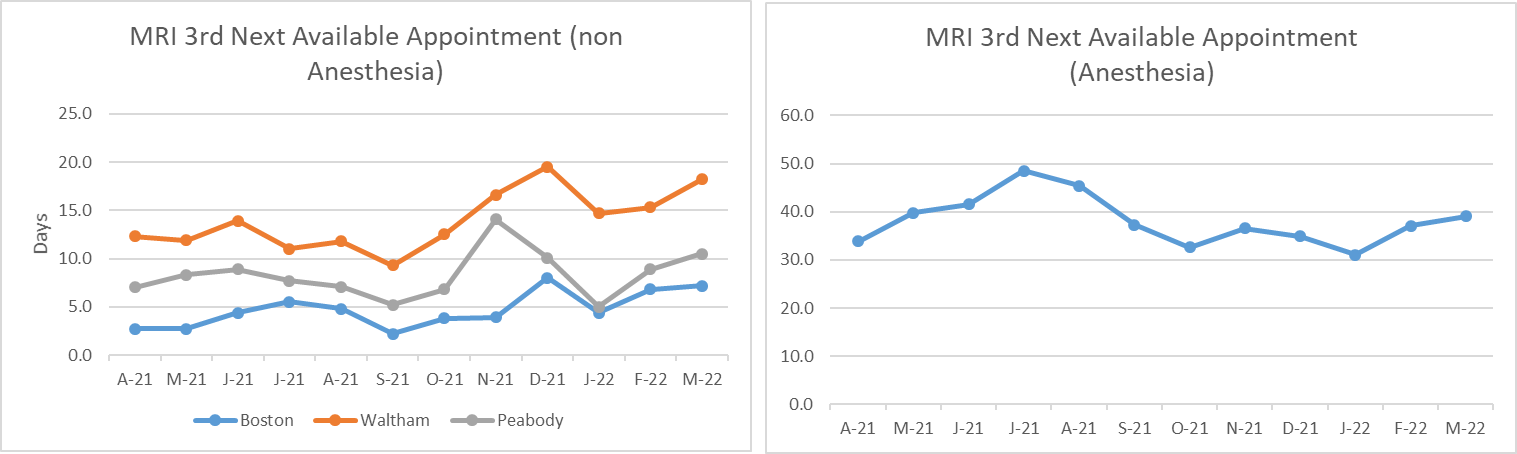
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As of December 2021, BCH is operating its scanners at approximately 90% utilization. Utilization is based on an average of 50 minutes of scanning time plus 5 minutes for room turnover. As demonstrated in Table 11A, BCH is anticipating an increase of 5,506 scans across all locations by 2031. The proposed MRI units in Needham and Waltham are planned to be open 48 hours per week. Assuming 55 minutes per scan 50 weeks per year, the number of available minutes per unit is 132,000. Downtime for maintenance and holidays is planned for 2 weeks over the course of the year. Each unit is planned to run at 2,100 scans, or 115,500 minutes, or 87.5% utilization by 2031. This planned utilization is consistent with current state operations.



**Appointment Wait Time**

* Appointment wait time at BCH satellite locations is higher than for Boston.
  + Some patients are leaving BCH for their MRI rather than travel into Boston or wait for a satellite appointment (13-15 patients per week in Weymouth).
* MRIs with anesthesia are only performed in Boston. By moving non-Anesthesia patients to satellite locations, Boston will be able to provide more anesthesia imaging appointments.
* There is currently a backlog of 1,560 patients waiting to be scheduled. As these patients are scheduled, appointment wait time will increase.

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Boston Children’s Hospital (BCH) is requesting permission to add two MRI units - one in Needham and one in Weymouth - as part of the planned hospital satellite expansion. The new units will be general purpose units that will serve the expanded capacity of the institution resulting from the Needham and Weymouth building projects, meet an increased demand for MR imaging, and benefit patients in the local communities. There are limited dedicated pediatric MR options in the community outside of those at existing BCH satellite locations. On the South Shore in particular, there is a lack of dedicated pediatric MRI facilities. Pediatric patients in need of MRI have to choose whether to undergo imaging at adult-focused facilities which may be closer and more convenient to them or traveling to Boston or Waltham for an exam at a BCH facility.

BCH staff recognized the increasing demand for diagnostic services to support several programs, including its renowned pediatric subspecialty services that serve as a national and international draw for children with rare and/or complex conditions. MR imaging has become a central tool in diagnosis, surgical management, and treatment efficacy assessment for a large number of conditions across much of the pediatric disease spectrum. There are many reasons why a patient’s MRI should be performed at BCH rather than at a non-BCH facility:

**Specialty expertise:** BCH’s unique approach to pediatric radiology means that a pediatric radiologist who has specialized training in the disease or organ system being studied will review and interpret the images, providing expertise that will help you and your child’s doctor make the best decisions about care. This subspecialty organ based interpretation is well-aligned with needs of the subspecialty pediatric clinical services at BCH and is not available at all other locations with the same depth of expertise.

BCH-based imaging allows for discussion of imaging at innumerable multidisciplinary conferences throughout the hospital, where treatment decisions are discussed in a team-based approach with radiologist participation. Patients undergoing MRI at a BCH facility not only benefit from the subject matter expertise of the institution, but also the collaborative, team-based, patient-centered environment where they will be assured of receiving personalized attention and expert opinions from all facets of their care team.

**Individualized care:** To obtain the highest quality images and ensure the most accurate diagnoses, BCH Radiology uses customized MRI exam protocols for each patient based on age, size, symptoms, disease process and past and current patient specific treatments. These specialized imaging protocols are driven by specific clinical needs of the referring services and are not available at other local imaging centers. Images can be viewed in real time by the radiologist and the imaging study is tailored accordingly.

**Intact medical record:** When patients have their imaging at a non-BCH facility and are ultimately evaluated by a BCH subspecialist, the result is fragmentation of a complete electronic medical record (EMR) and imaging record. For pediatric patients with either routine or complex medical conditions, having an intact medical and imaging record allows for better patient care over time. Having access to prior exams and medical information in the EMR, for example clinic notes, operative records and laboratory studies, beyond that conveyed in the request for exam is often extremely in determining the appropriate imaging protocol and interpreting the MRI.

**Innovative technology:** The 3 Tesla (3T) MRI systems available at BCH allow for faster scans and higher image resolution than the more commonly used 1.5T machines in the community. BCH’s state of the art 3T MRI scanners and imaging protocols are constantly evolving as we invest in breakthrough technology. The proposed MR units at Needham and Waltham will be state-of-the-art 3T imaging systems that will be able to run the most up-to-date imaging protocols developed at BCH to meet pediatric specific imaging concerns. BCH Radiology has MRI coils designed to fit nearly every body size and anatomic location. Motion-correction software customized for patients by BCH specialized physicists and physicians compensates for pediatric patients who may have difficulty lying still. This has increased the number of children who can be imaged without anesthesia (safer, lower cost) and would be a unique resource in the community, which primarily has adult focused imaging facilities.

**Environment:** Imaginative décor, knowledgeable staff and dedicated child life specialists help make the experience as enjoyable as possible. Age-appropriate distraction techniques, including video goggles, music, and lighting, are used to help ease anxiety.

**Pediatric anesthesia:** When required, anesthesia is administered and monitored by a dedicated and specialized team who put patient safety and comfort first. BCH’s Try Without Anesthesia appointments offer patients of all ages the opportunity to try their scan without anesthesia, when applicable.

Why is MRI Volume Increasing?

Over the last several years, BCH has made a concerted effort to transition pediatric scanning away from modalities that use ionizing radiation (e.g., CT scans) toward those that do not (e.g., MRI).  Examples of clinical indications that have shifted towards MRI include assessment of ventricular size in patients with hydrocephalus, imaging of children with new onset of seizures, newborns in need of neuroimaging, imaging of children with inflammatory bowel disease, and imaging of children with appendicitis. These conditions were previously imaged with CT scans.

In addition, BCH anticipates further shifts from CT and fluoroscopy for body imaging to MRI in the future. Examples include shifts away from fluoroscopic guided voiding cystourethrography to MR urography, and further shifts away from CT enterography to MR enterography.  Orthopedic patients are being referred for MRI more frequently as a means of directing management in a more time-sensitive manner, which reduces delay in diagnosis for patients with orthopedic conditions and reduces time to return to activity.

The major limitation to further expansion of the growing clinical indications for MRI is one of access rather than technology.

References

<https://www.ajronline.org/doi/pdf/10.2214/AJR.09.4091>   (see step #4)

[https://www.radiologyinfo.org/en/info/pediatric-mri#:~:text=Unlike%20x%2Dray%20and%20computed,MRI%20does%20not%20use%20radiation.](https://www.radiologyinfo.org/en/info/pediatric-mri" \l ":~:text=Unlike%20x%2Dray%20and%20computed,MRI%20does%20not%20use%20radiation)

<https://www.chop.edu/news/children-s-hospitals-are-shifting-away-ct-use-other-imaging-tools>

*11) On pg. 8 of the supplement, you state BCH is trying to transition away from CT to MRI. Please provide projections of future utilization of CT. Additionally, please discuss the number of CT scans you expect to avoid and discuss concerns regarding the need for repeated scans if/when an MRI scan is not sufficient.*

**Response:** Table 12 summarizes outpatient CT utilization. The compounded annual growth rate from 2019 to 2031 is 0.4%, demonstrating a very low reliance on this imaging modality.

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BCH has made a concerted effort to transition pediatric scanning away from modalities that use ionizing radiation (e.g. CT scans) towards those that do not (e.g, MRI). This transition began in 2012 at which time BCH saw a 13% drop in CT activity with a 10% increase in MRI activity. Over the four year period, CT activity dropped 32% while MRI activity increase 23%.

Table summarizing decrease in CT scans and increase in MRI activity between 2012-2015

**F1.b.iv Public Health Value/Outcomes and Quality of Life:**

*11) How will the proposed project improve health outcomes and quality of life for your Patient Panel? Will wait times be decreased? Will it be easier for patients to access services at the appropriate acuity level? Please provide any salient metrics that would demonstrate improved outcomes and quality of life.*

**Response:**The proposed project would improve health outcomes and quality for the patient panel in several interconnected ways.

Boston Children’s expects that the expanded access to pediatric dedicated services in the community will improve health outcomes and quality of life for patients served. Patients and families are able to bypass the complexities of city transportation, modernized but often retro-fitted and confusing urban campus in order to receive care. These experiences coupled with a reduction in spending for travel, less costly parking, improved scheduling efficiencies and access state of the art facilities with an environmental designed to de-escalate the anxiety that often accompanies a medical visit contribute to improved quality of life for patients and families. Expanded hours of operations at these sites allow caregivers to reduce the time away from work. These are considerations that make a meaningful difference to families of children requiring frequent care.

Because the proposed project would allow for the growth of some specialized and in-demand programs, such as the Growth and Nutrition Program, wait times for care would be expected to decrease as access to appointments improved. In the case of the Growth and Nutrition Program specifically, the proposed project would enable the development of a new space where families can engage in feeding therapy and learn skills to support children’s nutrition at home. This new program component would support patient and family engagement, empowering families to care for their children more effectively at home and supporting the health and wellbeing of not only the child but wellbeing of the family.

In the case of the ophthalmology service, an expanded physical space will allow for greater access to treatment, ensuring children identified through vision screening programs, an important public health intervention, can receive the care they need to improve their eyesight with implications for their academic outcomes.

As noted in the submitted Bailit report, Boston Children’s proposed expansion of orthopedic/sports medicine services in Needham can improve the availability of high-quality, pediatric-focused specialty care that is hard to find in ambulatory settings. Pediatric orthopedic care is currently limited to a few facilities in Massachusetts, such as Boston Children’s, Boston Medical Center, Mass General Hospital for Children and Tufts Children’s Hospital. Availability of pediatric orthopedic care, however, is challenging to find in community settings, other than the satellite locations of Boston Children’s and Mass General Hospital. Further, while pediatric patients may seek care for orthopedic/sports medicine needs in alternate, easier-to-access, non-pediatric settings (e.g., adult-focused facilities), this care is not of the highest quality children can receive because the facilities are most often do not have the staff or equipment needed to provide safe and effective pediatric-focused care.

There is a pervasive behavioral health crisis in Massachusetts (and the country) for both adults and children. This project includes the development of a partial hospitalization program, which would begin to fill a gap in the current continuum of care. This addition to the continuum would serve the patient panel in complementary ways:

* It would enable the right care at the right time for patients for whom partial hospitalization level of care is indicated.
* It would also enable more timely and appropriate care for other children waiting for behavioral health beds that are, at present, occupied by patients who could be discharged to partial hospitalization seats if they could find a placement.

Given the current pressure that the behavioral health crisis is placing on hospital emergency departments, additional behavioral health capacity could support an incremental improvement to emergency department wait times overall, above and beyond the implications for those seeking behavioral health care specifically.

*12) Will the proposed project have an impact on patients who live in/around Boston and prefer to be seen at Longwood?*

**Response:** Patients who prefer to be seen at Longwood will be able to continue receiving care at Longwood—they always have the choice to schedule appointments at any location where their clinician is rendering services. Boston Children’s families most often base their choice of location on the practice site of their established provider(s) and, as such, may find that it is preferable to shift some or all of their services to a different site to maintain those connections. Based on feedback from the Boston Children’s Family Advisory Council, it is likely that while some families will elect to receive services at the satellites, others will continue to seek most or all of their care in Longwood.

*13) How will BCH’s approach ensure that staffing up the new/renovated facilities that compose the project will not impair access to other currently available services, such as those provided at the Longwood campus?*

**Response:** BCH has a robust workforce planning effort that is responsive to changes in program and market. As part of its planning process, BCH is developing a program to recruit and retain the necessary staff to operate the programs located at the Proposed Project sites. Regardless of location, BCH leadership has worked hard to develop departmental teams that trust and support one another in their day to day work. This culture is particularly valuable in areas that require high clinical expertise such as the operating room and imaging services. Therefore, staff in general are reluctant to shift locations of choice with the expansion. BCH has staffed satellites in Waltham and Weymouth for over 15 years with no impact to staffing levels in Boston. Hiring of staff occurs primarily at each location and is not sourced out of the Longwood labor pool.

**F1.c Coordination of Care:***14) There are many services and departments proposed in this project. Does BCH envision that a child with multiple complex needs utilize the satellites or would that patient be seen at the Longwood campus? If the satellites would be utilized, who is steering care (i.e., who is at the center of the care team composed of specialists spread among many departments)?*

**Response:** Coordination of care is facilitated based on the specialties involved in the plan of care, as opposed to the site of care. Boston Children’s uses a consistent electronic health record across all sites of care that is accessible to clinicians at Longwood and the satellites, which facilitates care coordination across specialties and sites of care. Additionally, Boston Children’s clinical programs work extensively with a family—and, when needed, with other clinical areas—prior to visits to ensure the family has all the information they need for a visit to go smoothly. On the day of a visit, staff will be available at any site to support a family that would like help navigating the site for any reason.

As noted in the answer to question 4, multiple factors contribute to a family’s decisions about where to seek care for their child, including opportunities to book multiple appointments in the same visit, the child’s familiarity/comfort with the location(s) of care, and convenience for the family. As such, it is plausible that some patients with complex needs will continue to receive much of their care in Longwood, while others may be interested in shifting some of their care to other locations.

***Factor 1(f): Competing on Costs****15) On pg. 9 of the supplement, you state: “Boston Children’s Hospital seeks to transition less acute pediatric specialty care and day surgery from the capacity-constrained Longwood campus to community locations that are less costly to operate and more accessible to patients.”*

*a) Please provide references to literature or public data to substantiate the assertion that the community locations you reference have a lower price point and are more accessible to patients.*

*b) Additionally, please provide data demonstrating the savings that will result from the Waltham and Weymouth facilities.*

*c) Finally, please discuss whether the new services at Needham/Weymouth will be priced similarly to Waltham.*

**Response:** **Response:** There is limited publicly available information that compares charges for pediatric hospital services. BCH has compared charges for the most frequently used service provided in the satellites to local community hospitals. BCH charges for these hospital services are considerably lower than the comparators.

**

Boston Children’s Hospital has different payment levels between Longwood and the Satellites for the three major local payers – Blue Cross Blue Shield, Harvard Pilgrim Health Care, and Tufts Health Plan. Table 14 demonstrates the payment differential for hospital services provided in the Satellites. All Satellite locations are reimbursed at the same payment levels, therefore Needham/Weymouth will be reimbursed at the same level as Waltham.

As BCH has deliberately moved services from the constrained Longwood campus to the Satellites over the last several, the benefit of these lower payment rates have contributed favorably to the State’s cost containment goals. The proposed project plans will allow BCH to continue to shift care to the Satellites providing expanded access to pediatric patients and complying with the State’s cost containment efforts.



*16) Do you anticipate that payments at the three facilities will reflect the regional average prices or will payments be negotiated based on your specialty hospital status? For each service setting (office based/surgery/both), which facilities and departments will bill for office/facility fees or similar fees?*

**Response**: BCH anticipates retaining its general overall approach to negotiating payments for services at the proposed locations. All Satellite locations have same pricing and payment schedules. Table 15 below summarizes services that are facility fees billed by BCH vs the services that will bill office fees under their private physician office arrangements.

**Table 15: Summary of Facility (BCH) vs Office (Physician Office Practices) by Location**

Summary of BCH facility vs Physician Office Practices by Location. Image 1of2

Summary of BCH facility vs Physician Office Practices by Location. Image 2of2**Factor 2: Public Health Value:**

*17) On pg. 26 of the supplement, you state that opening the proposed facility in Needham would decrease patient volume at the Boston flagship. Specifically, which services/procedures do you expect to shift from Longwood to Needham? For each service/procedure listed, please describe the impact of the anticipated shifts.**Data regarding the shift of patients experienced following the opening of an older Children’s satellite location may provide useful context.*

**Response:** Boston Children’s Hospital anticipates a shift in services for subspecialty physician office services, ambulatory surgery and MRI imaging from Longwood to the Proposed Project sites as previously described. By way of example, BCH opened its Waltham facility in June 2005. Table 16 demonstrates that the addition of the 6 operating rooms in Waltham enabled a shift in ambulatory cases from Longwood to Waltham, enabling more complex surgical cases to be performed in Longwood. Average minutes per surgical case in Longwood increase from 80 in 2005 to 147 minutes in 2019, illustrating that BCH is accommodating more complex surgical cases requiring longer use of the operating room while improving the access to ambulatory surgical services in the community. Average case length in Waltham is 69 minutes.



Boston Children’s Hospital anticipates a shift in MRI volume from the Longwood to Needham and Weymouth Campus. MRIs with anesthesia are only performed in Boston. By moving non-anesthesia patients to Needham and Weymouth, Boston will be able to provide more anesthesia imaging appointments. The current wait time for a MRI with anesthesia is approximately 40 days. Boston Children’s Hospital is planning a 2.6% annual growth rate across all locations that provide outpatient MRI services.



*18) On pg. 12, you reference the benefits of improved accessibility of the proposed ambulatory sites. What patient and family concerns did you focus on (e.g., patient flow, signage, comfort)?***Response**: The Boston Children’s facility planning team works diligently to prioritize patient and family comfort and ease of use at all Boston Children’s sites, and sites outside of the space constraints of Longwood offer opportunities to improve accessibility and experience for patients. These considerations begin as soon as a family arrives at the site. Families who travel to Boston Children’s by car routinely report that the availability of parking close to the building entrance is important to them and, in particular, that they appreciate spaces large enough to accommodate families moving a child from the car to a stroller, wheelchair, or other mobility aid.

Once in the facility, every effort is made to facilitate patient flow in a way that reduces excess travel time and distance by locating related services close to one another. As two examples, in Needham, the Proposed Project would configure clinical spaces for Gastroenterology such that exam rooms and procedure rooms are proximate to each other and would organize ophthalmology services such that patients who are have vision impairment or whose pupils are dilated will not need to walk long distances for the different parts of their visit. The ability to design proactively to address these types of issues is an important advantage of new construction, as opposed to attempting to fit programs into existing spaces that are not well suited to their intended use.

Further, Boston Children’s has dedicated significant time and attention to creating spaces that are accessible and accommodating for all pediatric patients, including those with autism and other sensory issues. Features such as aquariums, inviting furniture, and art can engage children—i.e., distract them from the reason for their visit—reducing their anxiety. Creating dedicated waiting areas that are quiet and comfortable can facilitate a less stressful experience for children with autism and their caregivers. Boston Children’s takes these aspects of facility design very seriously as part of the care experience and seeks input from family representatives as the design process occurs.

*19) The “public health outcomes” section of the application narrative (pg. 26-27) references several of the services the proposed project will provide but does not offer much description of how the project will improve public health outcomes. Please describe which public health outcomes you expect will be improved for each service you reference in this section.*

Boston Children’s Hospital is committed to improving public health outcomes. Healthy children grow into healthy adults, therefore, our efforts to improve pediatric health has a life time of benefit. For example, preventive dental care carries substantial benefit as children mature to adulthood. Boston Children’s will bring together data scientists and clinicians to develop quality outcome paradigms including longitudinal studies for certain high risk patient populations.

**Gastroenterology & Nutrition Services**

Pediatric feeding disorders are defined as "impaired oral intake that is not age-appropriate, and is associated with medical, nutritional, feeding skill, and/or psychosocial dysfunction". (Goday J Pediatr Gastroenterol Nutr. 2019 Jan;68(1):124-129). Feeding disorders in children encompass several groups, including patients with psychosocial deprivation, patients with neuropsychological disorders (for example autism or developmental delay), and patients with physical illnesses that impair feeding (for example cerebral palsy or congenital heart disease). Often, the default "treatment" for such children is to simply place a gastrostomy tube. While a gastrostomy tube may be lifesaving for certain children, it is often unnecessary and many of these patients. In addition, gastrostomy tube use has been associated with an increased risk of hospitalization and complications in a subset of special needs children, and oral feeding may actually reduce the risk of hospitalization (McSweeney, J Pediatr. 2016 Mar; 170: 79–84). In addition, a significant proportion of children in the United States continue to have food insecurity (Bowers Preventive Medicine Reports 2018;12:294-7). In order to improve the health of these children, BCH has established programs that care for children with swallowing disorders that cause lung disease (the aerodigestive disease center), and also swallowing and behavioral disorders that result in malnutrition (the growth and nutrition program). Unfortunately, the wait list for these programs remains long (several months), suggesting that access to multidisciplinary care remains an issue in the Commonwealth of Massachusetts. In addition, compared to other states, our ability to support children with feeding disorders is limited. For example, Milwaukee Children's Hospital has a comprehensive feeding and swallowing program, including a facility that allows for parents to feed their children, while observers are watching the parent-child interaction through a one-way mirror system. By expanding the growth and nutrition program through the Needham facility, as well as coordinating with other subspecialties throughout BCH, we hope to reduce the number of gastrostomy tubes and also reduce hospitalizations.

**Ambulatory Surgery Care**

Dental caries is the most common chronic disease of childhood, five times more common than asthma. Early childhood caries is prevalent among young children, particularly among underserved and minority children. In 2015-2016, the prevalence of dental caries in the United States was 21.4% in 2-5 year olds; 50.5% in 6-11 year olds; and 53.8% in 12-19 year olds. Massachusetts received a grade “C” from the Pew Center (The Cost of Delay: State Dental Policies Fail One in Five Children, 2010) for failing to implement effective policies that could improve children’s oral health.

In Massachusetts, the burden of dental disease in children disproportionately impacts those who belong to racial and ethnic minority groups, low income families or who have disabilities or special health care needs. Children in these groups experience high rates of dental decay and untreated disease. Many patients in these groups struggle to access dental care, often because they are unable to find a dentist who accepts public insurance. In 2014, only 35% of dentists treated a MassHealth patient and only 26% billed at least $10,000 to the program (Pew Charitable Trusts, January 2017; <https://www.pewtrusts.org/-/media/assets/2017/01/a_path_to_expanded_dental_access_in_ma.pdf>).

Individuals with special health care needs have higher rates of oral diseases. They also face significant barriers to accessing oral health care. Dental care has been reported to be the most common unmet health care need in children with special health care needs (CSHCN), with 8% of parents or caregivers reporting that their children needed dental care that they were unable to obtain. Only 10% of general dentists, comprising 80% of dental practitioners, treated CSHN often whereas 70% reported that they rarely or never treated CSHCN (Ng MW et al. Academic Medicine, 2008). Many parents of special needs children delay seeking preventive dental care because they do not connect oral health to general health. Often, these children are orally tactile sensitive and are very difficult to manage by the time they do see a dentist at an older age or if they seek dental care infrequently. Individuals with special needs who need dental treatment often require general anesthesia in the operating room. Because dental problems, especially caries, is almost entirely preventable and much more cost effective to prevent than treat dental problems identified, it is important for CSHCN to have their first preventive dental visit at an early age.

Dental caries is also a bio-behavioral disease that is largely preventable. Dental caries negatively impacts children’s nutrition, learning, speech and overall development. Young children and individuals with medically compromising conditions or developmental disabilities often require sedation or general anesthesia as adjunct to dental treatment. This mode of dental care delivery is costly and the relapse rates have been reported to be high (37-69% in the national literature). Even after fixing the cavities with fillings, if the disease itself is not managed with changes in diet or oral hygiene habits, new decay will develop or progress. On the other hand, it is possible to slow the disease or halt it completely by successfully altering dietary and oral hygiene habits.

Disease management necessitates educating and engaging high risk patients and parents to make changes in their diet, oral hygiene and increase in fluoride exposure. The Dental Department at Boston Children’s Hospital has demonstrated the effectiveness of a chronic disease management protocol to reduce new caries (cavities), pain and dental treatment needed in the operating room under general anesthesia and has the potential to reduce cost (Ng MW et al 2014; Edelstein B and Ng MW 2015; Samnaliev M, et al, 2015). The additional satellite OR capacity proposed in this project will enable BCH to reduce the wait time for pediatric dental surgery.

**MRI Services**

The faculty at Boston Children’s Hospital recognizes the increasing demand for diagnostic services to support several programs, including its renowned pediatric subspecialty services that serve as a national and international draw for children with rare and/or complex conditions. MR imaging has become a central tool in diagnosis, surgical management, and treatment efficacy assessment for a large number of conditions across much of the pediatric disease spectrum. BCH Radiology uses customized MRI exam protocols for each patient based on age, size, symptoms, disease process and past and current patient specific treatments. Pediatric specific protocols can decrease the need for repeat studies. As an example, in an internal review of repeat imaging studies, we found that 84% of pediatric patients who received an MRI for epilepsy in the community needed to have a repeat MRI prior to assessment and treatment at BCH due to the outside exam providing insufficient detail to assess for a potentially surgically treatable lesion. BCH’s unique approach to pediatric radiology means that a pediatric radiologist who has specialized training in the disease or organ system being studied will protocol how the exam is to be performed and supervise and interpret the MRI images. This subspecialty organ based interpretation is well-aligned with needs of the subspecialty pediatric clinical services at BCH.

3T MRI systems allow for faster scans and higher image resolution than the more commonly used 1.5T machines in the community. The proposed MR units at Needham and Waltham will be state-of-the-art 3T imaging systems that will be able to run the most up-to-date imaging protocols developed at BCH to meet pediatric specific imaging concerns. BCH Radiology has MRI coils designed to fit nearly every body size and anatomic location. Motion-correction software customized for our patients by our specialized physicists and physicians compensates for pediatric patients who may have difficulty lying still. This has increased the number of children who can be imaged without anesthesia (safer, lower cost) and would be a unique resource in the community, which primarily has adult focused imaging facilities.

As a part of its commitment to providing medical services to children with behavioral health concerns, BCH plans for behavioral health resources to be located in both the Needham and the Weymouth facilities. The availability of these resources on site will better enable children with underlying behavioral issues to successfully complete MRI exams compared with facilities which are not equipped to manage the needs of children with behavioral health challenges.

The planned 3T MR systems at Needham and Weymouth will be capable of leveraging the advances in MR imaging developed in Boston to provide better care for children. The availability of motion robust imaging in particular will facilitate the ability of many children from these geographies to undergo MR without the need for sedation to provide diagnostic quality images. Avoiding sedation both improves the safety of the MR exam and decreases the cost of providing the service to payers compared to an exam performed under sedation. BCH clinicians are using data derived from imaging performed by BCH to develop imaging decision support for use by other academic and community imaging providers with a view to informing and optimizing healthcare resource utilization.

**Sleep**

Sleep disorders are common in children and the most common conditions are obstructive sleep apnea, childhood insomnia, excessive daytime sleepiness, restless sleep disorder, and narcolepsy. Sleep apnea is estimated to affect 3-5% of children, with higher prevalence in racial minorities. Although the American Academy of Pediatrics recommends an in lab overnight sleep study as the “gold standard” for the diagnosis of obstructive sleep apnea in children, it is estimated that only about 10% of children with clinical symptoms undergo the optimal diagnostic testing. Expansion of our bed capacity to conduct these tests will significantly improve the quality of and access to care for children in the Commonwealth.

Sleep apnea seen in neonates and can present with apnea and desaturations, these infants are at high risk for sudden infant death. In addition, sleep disorders are commonly seen in children with complex disorders such as asthma, cystic fibrosis, children with tracheostomies and congenital heart disease. It is also commonly seen in children with autism and ADHD. Under diagnosis of sleep disorders in children impacts their quality of life and long-term neurocognitive outcomes. Throughout the COVID pandemic, cases of insomnia and other sleep disorders have skyrocketed among children, emphasizing the need for our services to be readily available. The current wait list for a sleep study is approximately two and a half months. Expanding the clinical services ensures that talented and highly specialized physicians are able to meet the huge patient demand and backlog. The Proposed Project will facilitate expansion of pediatric sleep services for the only pediatric dedicated sleep program in New England, addressing the need for a child in the Commonwealth to drive as far as 94 miles for sleep medicine care as reported by the American Academy of Pediatrics.[[9]](#footnote-9)

**Ophthalmology**

Strabismus is one of the most common eye conditions in children, affecting between 2 and 4 percent of the population. Strabismus occurs when the eyes are not aligned properly. One or both of a child’s eyes may turn inward (esotropia), outward (exotropia), upward (hypertropia), or downward (hypotropia). A child can be born with strabismus, or it can be acquired later in life. Strabismus can also develop as the result of an accident or other health problem. In some children, strabismus is intermittent, while in others it is always present. Early [diagnosis](https://www.childrenshospital.org/conditions/strabismus-and-amblyopia" \l "diagnosis--treatments) is essential in preventing vision loss that occurs as a result of amblyopia, also called “lazy eye.” Amblyopia from strabismus occurs when vision does not develop normally during childhood because the eyes are not aligned. Amblyopia (“lazy eye”) — early treatment is linked to better school outcomes, while lack of treatment linked to need for increased test taking time, psychosocial problems, other learning challenges.

* amblyopia occurs in up to one-half of younger children
* diplopia (double vision) can occur in acquired strabismus in older children and adults
* problems in socializing or working resulting from the appearance and function of the eyes

There are a variety of baby- and child-friendly tests that can help detect strabismus and associated amblyopia. Light reflex testing evaluates the alignment of the eyes by having the child look directly at a point of light. Another test uses prisms to analyze whether the child’s eyes are properly aligned. If the child is not yet able to talk, vision can be assessed by evaluating the child’s ability to fixate on a moving object or the child’s response when one of the eyes is covered. If the child is older, a standard eye chart with either letters or pictures will be used to test vision. If strabismus is treated early, the child will have a better chance to use his or her eyes together to develop binocular vision and depth perception. It's also important to treat strabismus soon after diagnosis to avoid the onset of amblyopia, which can result in permanent vision loss. A recent study showed 82% success rate in amblyopia treatment at BCH compared with a 78% national benchmark. Strabismus surgery can have a high reoperation rate; ours is the only Massachusetts program to use adjustable sutures in children which improves the success rate by 10%. Effective vision screening is essential as the visual outcomes of early treatment are better; also, it is harder to get an older child to adhere to wearing an eye patch. Planned at the Needham site is a range of highly specialized services further improving access and lowering barriers to getting to care critical to healthy care and preventable vision loss. Needham will serve a place to send children diagnosed with these complex problems, with ease of community access given the complexities of urban capacity and access barriers.

*20) Provide a description of how quality/outcomes will be measured and if any of those measures align with current measures.*

Boston Children’s considers advancing pediatric patient safety and quality a core part of our clinical and research missions.  We are widely recognized as a national leader in advancing care delivery for children, and in refining clinical pathways and processes to improve outcomes.  We are a founding member of the Solutions for Patient Safety Initiative at the Children’s Hospital Association.

From a governance perspective, our PPSQ oversees the development of safety and quality plans largely organized according to clinical department.  These are extensive, and cross delivery locations (eg we want our clinical care to be the same quality/safety regardless of clinical setting.  These plans are reviewed by our PCAC a BOT level oversight committee.

**In 2020 the Safety & Quality Strategic Plan for FY20-23 was established through a multi-disciplinary collaborative process across the BCH enterprise.** Boston Children’s Hospital will deliver the safest, highest-quality care, an optimal patient and family experience, and superior outcomes through the shared commitment of our workforce, patients, and families to high reliability, continuous improvement and the transformation of healthcare.

GOALS and STRATEGIES:

OUTCOMES: Provide world-class, equitable, and inclusive care to achieve the best possible health outcomes, including quality of life, for all of the patients we serve.

* Organization-wide framework for high priority quality metrics.
* Optimize data access and quality for established metrics and continuous readiness audits.
* Standardize and integrate clinical practice and decision support into care delivery.
* Coordinate efforts to accurately and efficiently collect patient reported data and measure

Patient Reported Outcomes Measures (PROMs).

* Implement population health management strategies and optimize care coordination initiatives for complex or multidisciplinary patients.
* Coordinate efforts to assure equitable outcomes and reduce disparities across the organization.

SAFETY: Eliminate preventable harm to all patients and staff by preventing the conditions that lead to adverse events; and responding rapidly with resilient systems to patient and staff needs as they evolve.

* Optimize systems to standardize safety event reporting and enhance review and response.
* Facilitate activities to promote high reliability processes and culture across BCH.
* Reduce hospital acquired conditions (HACs) by supporting leadership and infrastructure of HAC teams.
* Develop, refine, and implement processes and resources for facilitating compliance with regulatory standards.
* Develop, evaluate and implement the use of technology solutions and the use of information systems across the enterprise to improve safety.
* Develop and implement activities to promote staff safety across the organization.
* Assess the impact of race, ethnicity and language differences on safety events and identify opportunities for improvement.

VALUE: Eliminate waste and optimize the use of resources to achieve the best possible health outcomes.

* Optimize data access and enhance analytics for value measurement and improvement that consider cost, clinical quality, and experience components.
* Utilize PI methodologies to eliminate waste and optimize resources.

INNOVATION: Be a global leader in innovations to improve safety and quality in the care of children and young adults.

* Advance partnerships with academic and industry colleagues to be a leader in quality improvement science, innovation, and prevention of patient harm.
* Develop proposals to obtain philanthropy and external funding to support innovations in quality and safety.

CONTINUOUS IMPROVEMENT: Create a learning health system that leverages patient and system data in concert with tools and strategies of improvement science to demonstrate continuous improvement in the delivery of care and patient outcomes.

* Further develop and standardize education/training in Performance Improvement Methods and disseminate across the organization.
* Identify and execute high impact clinical process improvement initiatives.
* Optimize data availability for quality measurement and performance improvement.

PATIENT EXPERIENCE: Deliver an optimal care experience encompassing excellence in care, delivered with respect, compassion, communication, and collaboration with patients, families and staff.

* Further enhance the diversity of the patient voice through increased patient and family engagement and actively incorporate feedback into processes and systems across the organization.
* Further improve the patient and family experience around patient access and general perceptions.

Boston Children’s Hospital is committed to improving the health outcomes of all patients. BCH will collect and provide data related to the overall satisfaction of patients who receive care, In addition, Boston Children’s will continue to monitor wait times in order to evaluate changes in access to care. As part of these measurement outcomes, BCH will collect race and ethnicity information on respondents.

|  | Patient Experience | Timeliness of Care | Safety of Care |
| --- | --- | --- | --- |
| Gastroenterology | X | X |  |
| Ambulatory Surgery | X | X |  |
| MRI | X | X | Monitor rate of anesthesia MRI scans (% of scans requiring Anesthesia) |
| Sleep | X | X |  |
| Ophthalmology | X | X | Efficacy of surgical sutures for strabismus correction |

*21) Please provide, for each of the three sites, based on the CHNA from your existing patient population that resides in the areas contiguous to each site:*

* 1. *What health care disparities have been identified?*
  2. *How will the project address them?*
  3. *For patients needing assistance with community-based services post-treatment, have you identified where needs are within the contiguous areas of each proposed site?*

**Response:** The CHNA undertaken for this service area identified disparities related to mental health care access (especially linguistically/culturally competent care for immigrants and speakers of languages other than English) and food security and obesity. More broadly, issues related to early education and care, housing, and transportation were identified as priorities that have implications for the health and wellbeing of families in these communities. The advisory committee convened by Boston Children’s to identify these areas of focus also offered their thoughts on how to prioritize these issues: mental health and wellbeing; access to early education and care; housing and transportation; and food security and obesity. More detail on each of these priorities is provided below:

* **Mental health and wellbeing.** Mental health was identified across every discussion conducted for the CHNA. Participants described increased mental health concerns in light of the COVID-19 pandemic, particularly for school-aged children. Job loss and economic pressures, virtual schooling, social isolation, and the uncertainty associated with the pandemic were all cited as contributors to increased stress, depression, and anxiety among parents as well as youth. For young people, mental health concerns associated with isolation and being prepared for the future were most often discussed. Those working in mental health services described specific challenges faced by mental health providers and staff, who were described as experiencing tremendous pressure over the course of the pandemic.
* **Early childhood education and care.** The advisory committee and focus group participants often spoke of challenges related to early childhood education and care. Participants noted that children with special needs and those experiencing trauma were groups that needed more support in and outside of the classroom. Social service providers indicated that childcare has become increasingly inaccessible, particularly for low-income families. Key informant interviews identified the need for more supports for the early childhood workforce. Secondary data indicate that Brockton, Framingham, and Randolph have preschool enrollment rates for 3 and 4 year olds below the statewide enrollment rate; these communities also reported the highest proportions of students with high needs of the focus communities.
* **Housing and transportation.** Safe and affordable housing is an integral part of the health and well-being of communities. Across the majority of focus groups and interviews, participants described affordable housing as a substantial community concern. Participants consistently mentioned rising rents, and lack of affordable housing options in their communities and linked housing related challenges with adverse health outcomes. Several described how some residents seem to be leaving the area for lower cost surrounding communities. Home ownership rates are below the statewide rate for all focus communities except Randolph. CHNA participants had varying views about the transportation infrastructure in their respective cities, but many noted that public transportation options are often unreliable and cumbersome. Focus group participants who identified as parents spoke about having to leave their communities in order to seek health care for their children.
* **Food security and obesity.** The expense and accessibility of health food was a key topic of concern across the majority of focus groups and the advisory committee. Food insecurity—not having reliable access to enough affordable, nutritious food—was described as an increasing reality for many residents since the onset of the COVID-19 pandemic. Participants spoke about the impacts of consuming unhealthy food in relation to one’s mental wellbeing. Residents across focus groups and interviewees discussed that assistance programs such as food pantries and SNAP benefits are critical to help those who are challenged with affording food.

Although not prioritized for investment, persistent barriers to accessing pediatric healthcare services including high costs of care and long wait times were a cross-cutting theme in conversations with organizational stakeholders and providers. New immigrant children and families faced unique challenges. Organizations serving newly arriving immigrant families spoke about how it can take three to four months for children enrolled on MassHealth to get seen by a pediatrician and how variability in cost of care is a challenge for resource strapped families. One strategy to avoid delays in children’s school attendance was to send families to Urgent Care so that their child could receive the required physical health examination. Recommending care at practices outside the community known for less expensive care was a strategy to help these families avoid expensive medical bills. Bringing Boston Children’s services closer to these communities can ameliorate these access issues. This project will bring additional culturally competent health care capacity, including mental health capacity, closer to these communities. All sites will include social work and interpreter services to support patients and their families both in receiving needed health care and connecting to the broader range of community based services and social supports that are available to address their other needs.

Additionally, through the Community Health Initiatives program, Boston Children will collaborate with these communities to disperse funding to local organizations working on these issues and provide technical assistance and other support to these groups to capitalize on existing strengths in the community. The specific projects that Boston Children’s will fund through the CHI program have not yet been determined, pending an inclusive, community driven process to identify projects that would address the identified priority areas and generate investment in the communities of focus. Boston Children’s has demonstrated through its current CHI funding process that it is committed to being a supportive partner to community based organizations and initiatives that build on existing strengths and serve as opportunities to increase the capacity of individuals and organizations in those areas.

Through its participation in the MassHealth ACO program, Boston Children’s has increased its familiarity with many of the community based organizations and partners that surround the proposed sites and can connect patients to resources.

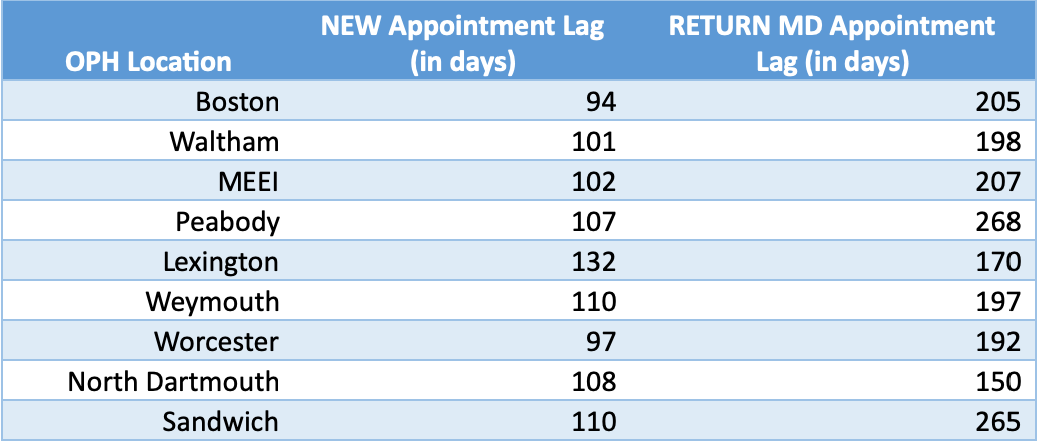
**Factor 5: Relative Merit**

*22) Please describe the capacity constraints of your existing locations that are helping to drive the need for each of the additional sites in this application (Longwood is described as “capacity-constrained” on pg. 14).*

**Response:** Children’s hospitals are uniquely capable of providing the widest range of pediatric services, including care for children with medical complexity and children with rare conditions.[[10]](#footnote-10) As the region’s solely dedicated pediatric hospital, Boston Children’s provides a full continuum of pediatric care across all disease types. Timely intervention and ongoing supportive care help children become the healthiest adults they can be. Pediatric specialty care is decreasing in availability in community hospitals, a trend that has not applied to academic medical centers.[[11]](#footnote-11),[[12]](#footnote-12) Pediatric care continues to transition certain services from inpatient based to outpatient or physician office settings.[[13]](#footnote-13),[[14]](#footnote-14) Transitioning of care safely to outpatient settings is less disruptive to the patient and family***.*** For example, in 2019, 48.1% of Boston Children’s care was provided in outpatient settings. While the setting of care continues to shift to outpatient, the need for wrap around services (e.g., phlebotomy, imaging, and other specialized diagnostic and therapeutic services) are required to provide the necessary care. Last, clustering of pediatric volume to achieve economies of scale in the use of specialized medical equipment for different body types and management of pediatric trained professionals (phlebotomists, technologists, etc.) contribute to cost control. These trends in patient care delivery drive capacity constrains in three main areas on the Longwood campus:

* + Physician exam office space
  + Operating Rooms
  + MRI Imaging

As noted in our response to Question 5, BCH physicians use exam space more productively than similar pediatric facilities. The Longwood campus accommodated over 379,000 ambulatory visits in 2019. Our primary care ambulatory building, Fegan, was constructed in 1967. There is no space left in the building. The cost to modernize individual clinical space to meet current day patient needs is cost prohibitive. The focus of the Project Project is to deliver specialized pediatric care to patients in more accessible locations. For example, the Bailit Report found that the Proposed Project’s planned expansion of ophthalmology care in the community will improve health equity for children in low income and minority communities, for which serves are limited. The Ophthalmology program currently witnesses extended wait times for both new and return appointments driven primarily by a shortage of eye lanes on its campuses.

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As noted in our response to Question 9, the Longwood campus consistently achieves above 70% average operating room utilization vs its peers at an average of 59.4%. The Satellites are performing at the industry average limiting BCH’s ability to rebalance surgical cases from the Longwood campus to the Satellites. Furthermore, the size of a third of the current operating room capacity in the Satellites is well below practice standards. There is no physical space to expand the size of the Lexington ORs. Consolidating ambulatory surgical cases in Waltham and Needham is the most cost effective approach to addressing the needs of our patients.

As noted in our response to Question, we have a backlog of appointment for MRI scans of 1,560 and a wait time of approximately 40 days for sedated studies. The addition of a dedicated pediatric MRI unit in Needham and Weymouth will allow ambulatory scans serviced in Boston to shift to these locations. This additional capacity will allow us to reduce the backlog of sedated scans which can only be done on the Boston campus and provide better access to pediatric focused MRI to patients in the community.

1. <https://datausa.io/profile/geo/massachusetts#category_transportation> (2019 data) [↑](#footnote-ref-1)
2. <https://storymaps.arcgis.com/stories/e59a9c3f62ef40f8880021311b7589f6> (2014 data) [↑](#footnote-ref-2)
3. [NSCH 2019 20: One or more preventive care visits during past 12 months, Massachusetts (childhealthdata.org)](https://www.childhealthdata.org/browse/survey/results?q=8604&r=23) [↑](#footnote-ref-3)
4. From 2020 ACS five year estimates, via data.census.gov [↑](#footnote-ref-4)
5. From 2020 ACS five year estimates, via data.census.gov [↑](#footnote-ref-5)
6. From 2020 ACS five year estimates, via data.census.gov [↑](#footnote-ref-6)
7. From 2018 ACS five year estimates, via data.census.gov [↑](#footnote-ref-7)
8. *See* Pediatric Subspecialty Shortages Fact Sheets, American Academy of Pediatrics, <https://downloads.aap.org/AAP/PDF/Advocacy/Massachusetts_SubspecialtyFactSheet.pdf> [↑](#footnote-ref-8)
9. *See* Pediatric Subspecialty Shortages Fact Sheets, American Academy of Pediatrics, <https://downloads.aap.org/AAP/PDF/Advocacy/Massachusetts_SubspecialtyFactSheet.pdf> [↑](#footnote-ref-9)
10. Berry, J.G., Hall, M., Neff, J., Goodman, D., Cohen, E., … Feudtner, C. (2014). Children with Medical Complexity and Medicaid: Spending and Cost Savings. *Health Affairs, 32(12).* <https://doi.org/10.1377/hlthaff.2014.0828>. [↑](#footnote-ref-10)
11. Franca, U.L. and McManus, M.L. (2017). “Availability of Definitive Hospital Care for Children.” *JAMA Pediatr., 171(9).* <https://doi.org/10.1001/jamapediatrics.2017.1096>. [↑](#footnote-ref-11)
12. Franca, U.L. and McManus, M.L. (2018). “Trends in Regionalization of Hospital Care for Common Pediatric Conditions.” *Pediatrics*, 141(1). <https://doi.org/10.1542/peds.2017-1940>. [↑](#footnote-ref-12)
13. Liptak, G.S., Burns, C.M. and Davidson, P.W. (1998). “Effects of Providing Comprehensive Ambulatory Services to Children with Chronic Conditions.” *Archives of Pediatrics and Adolescent Medicine, 152(10):1003-1008*. <https://doi.org/10.1001/archpedi.152.10.1003>. [↑](#footnote-ref-13)
14. Glied, S. and Cuellar, A.E. (2003). “Trends and Issues in Child and Adolescent Mental Health.” *Health Affairs, 22(5)*. <https://doi.org/10.1377/hlthaff.22.5.39>. [↑](#footnote-ref-14)