

First-Year Clinical and Financial Impacts of Ambulatory Clinical Pharmacy Services At A Children's Hospital

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Problem

- Clinical pharmacy services have been an integral part of inpatient pediatric care teams for years. However, clinical pharmacy services in pediatric ambulatory clinics are much less common.
- Few studies examine the impact of a pediatric clinical pharmacist in ambulatory settings.

Goal

- Determine the financial and clinical impacts of new pediatric ambulatory pharmacy services at Comer Children's Hospital
- Pediatric neurology (January 2022), heptaology (March 2022), nephrology (June 2022), and rheumatology (July 2022)

Strategy

- Services provided by pharmacist (PharmD) and advanced medication access coordinator (AMAC)

Medication Access

Test claims, prior authorizations, mail order pharmacy management

Medication Education

Medication charts, medication dosing calendars, medication counseling

Clinical Management

Medication reconciliation, clinic visits, drug therapy management, immunization recommendations

Primary Endpoints

- Financial:** total revenue generated by pediatric clinic mail order pharmacy patients
- Clinical:** reduction in medication list errors upon repeat medication reconciliation by PharmD

Secondary Endpoints

- Financial:** proportion of Rx's sent to internal DCAM Pharmacy
- Clinical:** Prior authorization (PA) outcomes, Medication education provided by PharmD, Clinical recommendations made by PharmD

Results

Financial

Annual Revenue Generated by Rx's Filled at DCAM Pharmacy

~ \$700,000

Annual Department Proportion of Rx's Sent to DCAM

2021: 15.3%

2022: 26.3%

Clinical Recommendations

- 58 vaccine administrations to 34 immunocompromised patients
- 57 medication dose adjustments
- 80 new medication recommendations

Medication Access

PA Outcome	Number
Approved, initial request	230 (75.7%)
Approved, appeal	26 (8.6%)
Approved, 2 nd appeal	4 (1.3%)
Denied	32 (10.5%)
Cancelled	12 (3.9%)

Medication Education

- 217 medication charts provided to patients
- 108 medication dosing calendars made for taper/titration plans
- 72 medication counseling sessions

Medication Reconciliation

Medication Reconciliations with Errors – First vs. Repeat Reconciliation

Reconciliation Group	First N (%)	Repeat N (%)	p-value
Total, N = 356	261 (88.5)	34 (60.1)	< 0.001
Average # Meds	7.4	9.7	
Average # Errors	5.1	2	
Neurology, N = 227	194 (92.8)	13 (72.2)	0.003
Hepatology, N = 54	30 (78.9)	10 (62.5)	0.208
Nephrology, N = 51	23 (69.7)	10 (55.6)	0.313
Rheumatology, N = 24	14 (93.3)	4 (44.7)	0.015

Medication Reconciliations – Primary DCAM Pharmacy vs. External Pharmacy

Reconciliation Group	DCAM N (%)	Not DCAM N (%)	p-value
First Reconciliation, N = 295	27/42 (64.3)	234/253 (92.4)	< 0.001
Repeat Reconciliation, N = 61	18/33 (54.5)	19/28 (67.9)	< 0.001

Conclusions

- Integration of a clinical pharmacist in pediatric ambulatory clinics generated ~ \$700,000 of annual revenue for the institution
- Completion of medication reconciliation by a clinical PharmD in high-risk patients significantly decreased the number of reconciliations that contained errors by 28.4%, and decreased the average number of errors found per reconciliation from 5.1 to 2.
- Patients filling at the internal DCAM pharmacy were less likely to have errors in their medication list.
- Of the prior authorizations completed by AMAC and PharmD team the overall approval rating was 85.6%. Half of these PAs were initiated proactively.
- The PharmD provided medication education at least 397 times and made clinical recommendations at least 195 times throughout the year.
- Integration of a clinical pharmacist into the pediatric clinics has a positive impact on patient care

Next Steps

- Expand medication access services: developmental pediatrics, pediatric cardiology, pediatric pulmonology
- Increase focus on improving clinical outcomes
 - Improve hypertension control in nephrology patients
 - Improve in-goal immunosuppression levels in transplant patients
 - Improve medication adherence in transplant and lupus patients
- Pharmacist-provided weight loss drug therapy management

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