Enhancing Patient/Family Education with Children’s Oncology Group Tools and Resources

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COG Educational Track at APHON 2020
Disclosure

- Elizabeth Duffy, Teresa Herriage, and Wendy Landier have no industry relationships.
- Off label use will not be discussed.
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Background
Patient/Family Discharge Education

- Patient/family education is primarily nursing’s responsibility

- Paucity of evidence to support current practices

- Considerable variations occur in discharge practice
Patient/Family Discharge Education

- Expert consensus on key content essential for discharge education

- Parents preferred education process is not always the actual education process
Receiving Consistent Information

“I would have fifty different doctors telling me things and every doctor’s got a different opinion. So I kind felt like sometimes I got fifty different opinions, you know?”

(father of child with rhabdomyosarcoma)

Rodgers et al., 2016
COG Consensus Recommendation: **Standardize and Individualize**

- **Standardize the content**
  - Essential information only
  - Use of structured tools (e.g., checklists)

- **Individualize the methods**
  - Learning style
  - Language, literacy, culture
  - Emotional state (e.g., feeling overwhelmed)

Landier et al., 2016
Fellowship Project
Fellowship Goals

Implement/evaluate an evidence-based practice change:

Integrate COG standardized new diagnosis education checklist into clinical practice and evaluate outcomes

A Standardized Education Checklist for Parents of Children Newly Diagnosed With Cancer: A Report From the Children’s Oncology Group

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Marilyn Hockenberry, PhD, RN, PPCNP-BC, FAAHN¹
and Wendy Landier, PhD, RN, CPNP, CPON®, FAAHN¹

Table 2. Primary Topic Checklist.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Learner</th>
<th>Pref</th>
<th>Method</th>
<th>Eval</th>
<th>Data/initials</th>
<th>Final checkout</th>
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<tbody>
<tr>
<td>Meeting with physician team for diagnosis and treatment plan</td>
<td></td>
<td></td>
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<tr>
<td>Meeting with social worker to screen for immediate psychosocial needs</td>
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<tr>
<td>Diagnosis parents know how to convey this in an emergency</td>
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<td>When to call for help</td>
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<tr>
<td>Who to call for help</td>
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<tr>
<td>Fever</td>
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<tr>
<td>Temperature-taking</td>
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<td>Handwashing</td>
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<td>Preventing infection</td>
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<td>Treatment side effects to know before next appointment</td>
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<tr>
<td>Home medication Names and purpose</td>
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<td>Home medication Dose and frequency</td>
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<td>Home medication Administration</td>
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<td>Home medication Storage</td>
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<tr>
<td>Home medication: Prescriptions are filled or plan in place to fill them</td>
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<td>Home care company (contact information and supplies)</td>
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<td>Chemotherapy safe-handling/item disposal</td>
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<td>Follow-up appointments</td>
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<td>For patients with external central line</td>
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<tr>
<td>Emergency care of central line</td>
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<td>Demonstration of central line flush</td>
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<td>For CNS tumor patients</td>
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<tr>
<td>Symptoms of increased intracranial pressure, shunt malfunction, headache</td>
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<tr>
<td>Seizures</td>
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<tr>
<td>If applicable</td>
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<tr>
<td>Postoperative care</td>
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<tr>
<td>Pain/pain management</td>
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<tr>
<td>Topical anesthesia for port</td>
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</tbody>
</table>

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Implementation

- Two COG Institutions over 4-5 months
- Collected checklists (primary, secondary)
- Surveyed patients/families following discharge
- Online survey of nursing staff
COG Educational Resources for Families and Nurses

COG Track at APHON

Wednesday, September 2, 2020
10:45 – 11:45 AM

Caring for Your Child at Home
Primary Checklist Topics

- Met with physician for diagnosis and treatment plan
- Met with social worker for psychosocial needs screening
- Diagnosis
  - Parents know how to convey this in an emergency
- When to call for help
- Who to call for help
- Fever
  - Temperature-taking
- Preventing Infection
  - Handwashing
Primary Checklist Topics (continued)

- Treatment side effects to know before next appointment
- Home medication:
  - Names and purpose
  - Administration
    - Dose and frequency
  - Storage/Disposal
  - Prescriptions are filled or plan in place to fill them
- Home care (contact information and supplies)
- Chemotherapy safe-handling and item disposal
- Follow-up appointments
Evaluation

- **Feasibility and fidelity**
  - Use of checklist by RNs
  - Completion of checklist items
  - Assessment to be completed by EBP fellow or research assistant

- **Patient/Parent Satisfaction**
  - Anonymous survey to evaluate discharge education process using Likert-type scale
  - Completed by parent/patient at the first clinic visit after discharge
Checklist Data: Feasibility and Fidelity
Clinical Data: Use of Checklist
Resources/Accessing Care- % Completed

- When to call for help (clinic vs 911)
- Who to call for help
- Temperature taking
- Follow-up appt scheduled

Total N = 69  
Hospital A = 27  
Hospital B = 42
Parent Data: Patient/Parent Satisfaction
“That was my hardest experience just having to juggle the logistics with you know who can I shuffle car pool off with ... you know just like the little logistics that you don’t think crowds you until it crowds you.”

(mother of child with ALL)

Rodgers et al., 2016
Parent Satisfaction (N = 47)

Content with discharge education included enough information so that I could care for my child

I received enough (not too much) information with the discharge education

I received a consistent message with the discharge education

I understood the content in the discharge education

% Strongly agree  % Agree  % Not sure/neutral

0  10  20  30  40  50  60  70  80  90
1. What did you find helpful during the new diagnosis education process?

- I felt that people (doctors, nurses, etc.) were wonderful, compassionate for us and what was placed in our life
- Always someone to ask a question; many people there to support
- Family Handbook explanation
  - The binder was great and organized
"I’d say the only thing is just trying to retain everything with the fog that you’re in from being hit with it.” (mother of child with Ewing sarcoma)

Rodgers et al., 2016
2. How can we improve our teaching process?

- Don't give too much information too fast
- I have no new ideas, the process was great
- Nothing, everything was good
- Give more time before discharge
3. Additional comments:

- We are very happy with the care our son is receiving.
- Love this place - love the warmth of all our caregivers. Feels like a team.
- I want to stress how comfortable I felt asking questions. I also NEVER felt that anyone was short on time or on a run to get to the next patient. I felt well cared for.
- Thank you for all the support received from doctors, nurses, interpreters. Specially, for the support given our child. (Translated by Spanish interpreter)
“Cause I know that first meeting was three hours and … I'm sure that they told us three hours worth of information [but] I don’t remember three hours worth of information.”

*(mother of child with ALL)*

Rodgers et al., 2016
Nurse Data: Feasibility and Fidelity
Describe what worked well about the tool

- **Prioritizing** education, streamlined, looks nicer/easier to read. I love the revised form! From feedback parents gave me, it seemed less overwhelming to them.
- Limiting the amount of information to 'survival' decreases the amount of stress to our families.
- The tool is really nice for families who have a short first hospital stay. It allows them to feel confident utilizing their resources when they are at home without overwhelming them with other details.
- It's great! It will be the norm in time for teaching the basics to families, good initial content for safety when discharged.
Standardization

- I like how the slides corresponded with certain pages of the **new oncology family handbook**. It helped the flow of the teaching.
- It makes sense **not to overload** the family with too much information up front and just keep the information to the basics for the initial teaching.
- **Standardization** and knowing which topics to cover in each session.
Describe any barriers you experienced using the tool:

**Process**

- Great *process*
- **Paper checklist** and the process of obtaining it at discharge to scan in the medical record.
- **Phase two** seems to get lost when
  - there is a longer than expected first admission or,
  - if the patient is discharged home and readmitted shortly after.
- Come up with something so that the RN doesn’t forget to get the **checklist** from the room before discharge.
Describe how this process could be improved:

Primary Checklist Content

- I really think that **blood counts** should be included in the primary teaching.
- Parents need to be aware of counts to understand the significance of fevers and the need to return immediately to the ER for antibiotics, etc.
- Sometimes hard for families since we don't go into details about the **cells**
- There have been **topics** that parents ask questions about that are not on the first session that have been placed on the second or third session.
Paper/EMR/Communication

- The Cerner documentation should be the same as the paper form. I would love if the Cerner documentation appeared exactly as the paper form does.
- Process of coordination of education in the inpatient to outpatient and back.
- Documentation of each session in the EMR in a place that both outpatient/inpatient can see.
- Process for tracking phase one and two education within the EMR.
COG New Diagnosis Guide Slide Deck

New Diagnosis Guide
Caring for Your Child at Home
COG New Diagnosis Guide Slide Set

How is cancer treated?

Each type of childhood cancer is treated differently. Your child’s treatment may include one or a combination of the following:

- Chemotherapy
- Immunotherapy
- Surgery
- Radiation

Central Venous Line: Port

Emergency Help

Call 911 immediately if your child:

- Is not breathing or has severe difficulty breathing
- Has skin and/or lips that look blue
- Is having a seizure
- Does not wake up after you have tried to wake them

When to Call for Immediate Help

Insert your hospital/clinic phone numbers here:

Fever:

Insert your hospital/clinic fever guidelines here

Chills (shivering)

Do not wait until the clinic opens
Teach from tablet, laptop, flip book

The world's childhood cancer experts
COG New Diagnosis Guide Slide Deck

- How do I obtain the NDG Slide Deck?
- Can I add my own hospital specific information?
- Is there a cost?
Smartphone App Project
Background

- Smartphones are ubiquitous among adults of parenting age
  - >88% of 18-49 year-olds own a smartphone
- Smartphone apps provide a significant opportunity to meet the educational needs of parents across a wide spectrum of:
  - Literacy levels
  - Economic circumstances
  - Information needs
  - Learning preferences
- Smartphone apps allow for incorporation of audio, graphics, and video into educational content

Smith 2017; Davis et al., 2017
Project: Brief Summary

- **Goal**: Develop a smartphone app for use by parents of children newly diagnosed with cancer that:
  - Delivers high-quality information, and is
  - Functional, aesthetically pleasing, and engaging
- Content informed by the COG expert consensus recommendations
- Key stakeholders involved at each stage of development
  - Parents
  - Clinicians
  - App developers
  - Research team
- Iterative process for development, incorporating stakeholder feedback at each step
- Evaluation for usability and acceptability by parents of pediatric oncology patients

**Funding**: Kaul Pediatric Research Institute, Children’s of Alabama
App Development Process

STEP 1
- Initial design
- Wireframes

STEP 2
- Early prototype
- Alpha testing

STEP 3
- Prototype refinement
- Beta testing

STEP 4
- Test refined App prototype in clinical setting
- Evaluate usability/acceptability
- Modify based on feedback
- Finalize app for dissemination

YEAR 1
APP DEVELOPED

YEAR 2
APP REFINED
Step 1: Initial Design/ Wireframes

- **Who?**
  - Stakeholders (parents, clinicians)
  - App development team (programmers, graphic designers; iOS/Android)
  - Research team

- **What?**
  - Identify key content for inclusion
  - Determine preferred layout and aesthetic features

- **How?**
  - Develop wireframe (blueprint/mockups)
  - Defines structure, content, and functionality of App
Step 1: Wireframes

**NEWLY DIAGNOSED SETUP**

The nurse can help setup this information.

<table>
<thead>
<tr>
<th>PATIENT SETUP</th>
<th>MY INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIAGNOSIS</td>
<td>Select Entry</td>
</tr>
<tr>
<td>AGE GROUP</td>
<td>Select Entry</td>
</tr>
<tr>
<td>CHILD’S DOCTOR</td>
<td>JANE DOE</td>
</tr>
<tr>
<td>OFFICE HOURS #</td>
<td>XXX.XXX.XXXX</td>
</tr>
<tr>
<td>AFTER HOURS #</td>
<td>XXX.XXX.XXXX</td>
</tr>
</tbody>
</table>

- Emergency Room Card
- Preventing Infection
- Fever
- Medicines
- Who/When/How to Call
- Clinic and ER Visits

Newly Diagnosed Patient Setup
Please tap here to setup initial patient information.
Step 2: Alpha Testing of Early App Prototype

- **Who?**
  - Clinicians (Nurses, NPs, physicians)
  - Parents of children diagnosed at least 1 year ago

- **What?**
  - Identify initial design problems

- **How?**
  - Research team presented scenarios and asked participants to perform tasks using the app
  - Participants were observed performing tasks, and their actions mapped in order to understand the app’s functionality and intuitiveness (cognitive walkthrough)
  - Qualitative interviews were conducted to determine overall feedback
  - Aggregate findings presented to Stakeholder Advisory Board
Early App Prototype

Fever

When should I check my child's temperature?
Check your child's temperature any time that your child:
- Feels warm to the touch
- Does not feel well

What is a fever?
- Fever is a temperature of 100.4°F or higher

What should I do if my child has a fever?
- Call 205-628-2800
- This nurse will give you further instructions
- Do NOT give your child ibuprofen for fever
- (acetaominophen, ibuprofen, aspirin)

What else should I know?
- Be prepared - your child can get a fever at any time!
- Be ready to return to the hospital:
  1) Have a bag packed for you and your child
  2) Make a plan for:
     - Who will take your child to the hospital
     - Who will care for your other children

Video: How to take your child's temperature

Taking your child's temperature

C205_Enhancing Patient Family Education
Alpha Testing: Results

- Needs design and functionality changes to keep parents engaged
  - Journaling: Ability to keep personalized records
    - Labs
    - Weight, height, vitals
    - Notes
    - Treatments
  - Appointment tracker
  - Quick access to emergency information
  - Enhanced searchability of content
  - One-touch dialing to reach healthcare team
Refined App Prototype

Design

Functionality

Journaling

Searchability
Step 3: Beta Testing of Refined App Prototype

- **Who?**
  - Clinicians (Nurses, NPs, physicians)
  - Parents of children diagnosed at least 1 year ago

- **What?**
  - Assess overall quality of app

- **How?**
  - Participants explore app over 1 hour to evaluate overall content, functionality, and app intuitiveness
  - Asked to think of questions that they had (or for clinicians, questions parents had) when their child was newly diagnosed, and use the app to find answers to these questions
  - Rating of App on Mobile Application Rating Scale (MARS) / Qualitative interviews
  - Aggregate findings presented to Stakeholder Advisory Board
  - Prototype further refined
### Results: Year 1

#### PARENTS (N=12)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>%</th>
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<tbody>
<tr>
<td><strong>Child’s Diagnosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leukemia</td>
<td>6</td>
<td>50%</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>Solid Tumor</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Time from Diagnosis</strong></td>
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<td></td>
</tr>
<tr>
<td>Months: Mean/SD</td>
<td>24.9</td>
<td>±4.3</td>
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<tr>
<td><strong>Relationship</strong></td>
<td></td>
<td></td>
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<tr>
<td>Mother</td>
<td>9</td>
<td>75%</td>
</tr>
<tr>
<td><strong>Parent Age</strong></td>
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<tr>
<td>≥40 years</td>
<td>9</td>
<td>75%</td>
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#### CLINICIANS (N=17)

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<tr>
<td><strong>Role</strong></td>
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<tr>
<td>Physician</td>
<td>4</td>
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<tr>
<td>RN</td>
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<td>NP</td>
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<td><strong>Psychosocial Team</strong></td>
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<td>3</td>
<td>18%</td>
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<td><strong>Sex</strong></td>
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<tr>
<td>Female</td>
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<tr>
<td><strong>Clinician Age</strong></td>
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<tr>
<td>≥40 years</td>
<td>6</td>
<td>35%</td>
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</table>
Results: Year 1 – Mobile Application Rating Scale (MARS)

- Assessment of App quality during the design/development phase
  1=lowest quality level; 5=highest quality level (Perceived impact is rated only by clinicians)

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>MEAN RATING</th>
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<tbody>
<tr>
<td>Overall Rating</td>
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<tr>
<td>Perceived impact</td>
<td>4.6</td>
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<tr>
<td>Subjective quality</td>
<td>4.2</td>
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<td>Information</td>
<td>4.8</td>
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<tr>
<td>Aesthetics</td>
<td>4.5</td>
</tr>
<tr>
<td>Functionality</td>
<td>4.6</td>
</tr>
<tr>
<td>Engagement</td>
<td>4.3</td>
</tr>
</tbody>
</table>
Results: Year 1 – Qualitative Interviews

- Many positive features: Emergency Room Card, quick access to critical information, journaling feature to track lab values and vital signs
- Opportunities for improvement:
  - Content: Additional details to ER card; Additional team members to contacts; Display labs and measurements as per hospital standard; Add med list and reminders; Add content beyond new dx
  - Layout:
    - Change order of educational topics
    - Curate content based on time from diagnosis
    - Move controls to bottom of screen
  - Functionality: Improve appointments, search bar, flagging, adding notes; sync w/EMR
Year 1 Feedback Incorporated

New Home Page

Content Curated by Time from Dx

COG Content Incorporated

Appointment Functionality Improved
Step 4: Pilot Testing

- **Who?**
  - Parents of children diagnosed at least 2 months ago

- **What?**
  - Evaluate and refine the app in a clinical setting

- **How?**
  - Download the app on their own phone
  - Asked to complete defined tasks in-person, then to use at home x 2 weeks
  - After using app x 2 weeks, parents completed Systems Usability and Acceptability Scales (SUS/SAS) and completed qualitative interview
  - Aggregate findings presented to the Stakeholder Advisory Board
  - Final recommendations for refinements made to App developers
## Results: Year 2

### PARENTS (N=20)

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<tr>
<th>Characteristic</th>
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<tbody>
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<td><strong>Child’s Diagnosis</strong></td>
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<tr>
<td>Leukemia/Lymphoma</td>
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<td>85%</td>
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<td>Solid Tumor</td>
<td>3</td>
<td>15%</td>
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<td><strong>Time from Diagnosis</strong></td>
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<td>Months: Mean/SD</td>
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<td>±7.0</td>
</tr>
<tr>
<td>Median/Range</td>
<td>10</td>
<td>3-30</td>
</tr>
<tr>
<td><strong>Relationship</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>16</td>
<td>80%</td>
</tr>
<tr>
<td><strong>Parent Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥40 years</td>
<td>4</td>
<td>20%</td>
</tr>
</tbody>
</table>
Results: Year 2 – System Usability Scale (SUS)

- Rates app on ease of use, integration of functions, consistency, intuitiveness, and overall usability (>70% = “good”)

<table>
<thead>
<tr>
<th>App Property</th>
<th>Mean Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of use</td>
<td>87%</td>
</tr>
<tr>
<td>Integration of functions</td>
<td>80%</td>
</tr>
<tr>
<td>Consistency</td>
<td>86%</td>
</tr>
<tr>
<td>Intuitiveness</td>
<td>89%</td>
</tr>
<tr>
<td>Overall usability</td>
<td>87%</td>
</tr>
</tbody>
</table>
**Results: Year 2 – System Acceptability Scale (SAS)**

- Compared to written educational materials that you have received about your child’s care in regard to the following qualities, the app is:

<table>
<thead>
<tr>
<th>App quality category</th>
<th>Same as written</th>
<th>Superior to written</th>
<th>Inferior to written</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informational content available</td>
<td></td>
<td>72%</td>
<td>28%</td>
</tr>
<tr>
<td>Ease of understanding information</td>
<td></td>
<td>56%</td>
<td>39%</td>
</tr>
<tr>
<td>Ease of access to information</td>
<td>22%</td>
<td>72%</td>
<td>6%</td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>28%</td>
<td>61%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Proportion of parents
Results: Year 2 – System Acceptability Scale (SAS)

- Parental preference for educational materials about their child’s care:
  - Written materials only: 83%
  - App only: 11%
  - Both: 6%
Results: Year 2 – Qualitative Interviews: Positive App Qualities

“It is the same information [as the written materials], it was just easier to find...going through the app was less time consuming. Easier to find the information.”

“I love the emergency room card. That’s like one of my favorite things... I found it very helpful, the fact that it is right there, is convenient. Plus there is like little tabs, and you can click and scroll instead of frantically flipping through pages trying to find it, it is like right there.”

“I am very fond of [the app]. I am very much into my cell phone. I do like a paper copy of everything but to be one hundred percent honest with you, I didn’t read any of it. But once I got the app, it opened my eyes to what I didn’t read in the paper.”
Results: Year 2 – Qualitative Interviews: Positive App Qualities

“I like the ease of access... it was very user friendly, very easy to use. I like the different things like where I can put the appointments in, information like his weight and stuff, so I can keep up with it.”

“I think it is real easy to use. I like it. It actually gave me a reminder last night to come here [clinic] today. I mean I remembered, but I was like, ‘what is this?’ It came up on my watch and everything. It was helpful.”

“When you are first diagnosed I was thinking ‘I wish somebody had given me this and told me all of this.’ It eased my mind a lot. Plus you are stuck in that hospital room upstairs. You don’t want to sit and read a book when you are upset. So you want to play on your phone, yeah, so if I had [the app] to like mindlessly scroll on, it would have been very beneficial.”
Results: Year 2 – Qualitative Interviews: Not for Everyone

“...I guess I thought it was too cumbersome to be worthwhile. When it comes to the information that was in the binders, I liked that I could read, highlight, take notes on what the information was...I’m more of a book-in-hand kind of person, so I prefer that...for people who are more into technology, it is good. But, I just don’t feel like...I feel like this information is so important it deserves a book. It deserves notes and highlights and tabs, and stuff like that which, I mean, I couldn’t do with this. And if I was talking to another parent, even if it was someone who is really into technology, I would be like: ‘You need to physically read this, put it in your hands.’ But again, I mean, it’s useful.”
Results: Year 2 - Remaining challenges

- EMR interface
- Medication list/calendars/reminders
- Treatment roadmaps
Conclusions

- App can make educational materials more accessible for many (but not all) families
- May help in making critical information more readily available to parents
- Features beyond educational content necessary to engage users over long-term
- Not all desired features could be incorporated
- More research needed to determine optimal use of smartphone app in educational process for newly diagnosed families
Coming Soon: COG KidsCare App

Through the generous support of the St. Baldrick’s Foundation
COG KidsCare App

App ID Screen  Home Screen  Info Tabs
COG KidsCare App

Info: Port

An internal central venous line (sometimes called a port) stays under the skin. Examples of internal lines include a Medi-Port or Port-a-Cath®. The port is a round, disc-like device that is usually placed in the chest. A special needle is used to access the port and deliver therapy. Medicine can be used to numb the skin over the port before the needle is inserted.

Info: LP

A lumbar puncture (also called a spinal tap) is a test that is done to see if there are cancer cells in the fluid that cushions the brain and spinal cord. This fluid is called cerebrospinal fluid or CSF. Your child will be asked to lie on their side with the chin tucked to the chest and knees pulled up. In some cases children can sit up and curl the back by tucking the chin to the chest.

Info: Coping

Toddlers are beginning to want to do more on their own. Your toddler’s favorite words may be “me do” or “no.” Growing toddlers need to be able to do some things by themselves to promote a sense of control. Toddlers show you how they feel by their actions because they do not have the words to describe their feelings.
COG KidsCare App

Info: Cancer Types

Journal

Appointments

Leukemia is a cancer of the blood-forming cells that are produced in the bone marrow. Bone marrow is found in the center of bones and serves as a blood-making “factory.” Three types of blood cells are made in the bone marrow. Red blood cells carry oxygen to the body, white blood cells fight infection, and platelets help stop bleeding.

Call Your Healthcare Team
COG KidsCare App

My Team

ER Card

Settings

C205_Enhancing Patient Family Education
Coming Soon - COG KidsCare App: Customizable Content
COG KidsCare App: Long-Term Goals

- Results of this study set the stage for future testing of the app in a clinical trial within the Children’s Oncology Group in order to determine effectiveness of the app in enhancing information access and sustained learning.
Thank you!

- ...to the families, nurses, physicians, nurse practitioners, psychosocial team, app developers, and research team members who contributed to this work.
Resources for Patient/Family Education: APHON

https://aphon.org/education/patient-family-resources
Resources for Patient/Family Education: COG

https://childrensoncologygroup.org/index.php/cog-family-handbook

or Google “COG Family Handbook”
# Abbreviations

<table>
<thead>
<tr>
<th>FULL TERM</th>
<th>ABBREVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute lymphoblastic leukemia</td>
<td>ALL</td>
</tr>
<tr>
<td>Association Pediatric Hematology Oncology Nurses</td>
<td>APHON</td>
</tr>
<tr>
<td>Children's Oncology Group</td>
<td>COG</td>
</tr>
<tr>
<td>Electronic medical record</td>
<td>EMR</td>
</tr>
<tr>
<td>Emergency Room</td>
<td>ER</td>
</tr>
<tr>
<td>Evidenced based practice</td>
<td>EBP</td>
</tr>
<tr>
<td>Nurse practitioner(s)</td>
<td>NP(s)</td>
</tr>
<tr>
<td>Registered Nurse(s)</td>
<td>RN(s)</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>SD</td>
</tr>
</tbody>
</table>
References

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