

Kyla Blasingame, BA^{2,3}, Shelly Kumar², Amanda Braddock⁴, and Miriah Gillispie-Taylor, MD^{1,3}

¹Division of Rheumatology, Department of Pediatrics, Baylor College of Medicine, ²Texas Children's Hospital, ³School of Medicine, Baylor College of Medicine, University of Texas Southwestern Medical Center⁴

Background

- Gamification builds upon self-determination theory and is an increasingly popular method of learning utilized to improve learner engagement which has also been proven to increase participation and motivation among learners¹
- BCM Pediatrics interns have a unique requirement to spend one week in rheumatology, but no baseline data has been collected regarding their experiences or perceived learning during the week

33%

Of medical schools have no affiliated pediatric rheumatologist²

36%

Of peds residency programs have no affiliated pediatric rheumatologist



Fig 1. Map of the US identifying states with a single or no pediatric rheumatologist^{3,4}

Methods

- In AY 23-24, interns rotating with pediatric rheumatology are given a Bingo card containing 25 unique boxes with various chief concerns, physical exam and lab findings, rheumatologic conditions, clinical criteria, and basic science pearls as well as self-directed learning activities and a goal-setting space (Fig 2).
- As trainees complete activities, a faculty member or fellow initials the associated square
- Completed cards and anonymous surveys were used to assess the perceived utility of the tools
- Based on utility and survey feedback, the bingo card was modified three times; November 2023, February 2024, and June 2024
- After the third version was created, qualitative interviews were done with three faculty members on their perception of the utility of the tool



RHEUM WEEK BINGO

Apply EULAR 2019 or SLICC Criteria	Counsel a patient on the side effects of NSAIDs	See a patient with an auto-inflammatory syndrome	Give a patient a Beighton score	See Gottron's papules or heliotrope rash
See a malar rash	See an IgA vasculitis patient	Explain when to order an ANA	Know criteria for arthritis	Know what mediates CRP
List 4 factors that can falsely elevate ESR	Know criteria for KD	Practice the pGALS exam independently (free space)	Explain what an RF is and when to order	Listen to patient counseling for a pain syndrome
See a pulmonary-renal syndrome patient	Evaluate a patient with recurrent fevers	Perform pGALS while being observed	Counsel a patient with a +ANA	Know standard work up for SLE
See active arthritis	Listen to patient counseling for +ANA	Know standard workup for JDM	See a morphea or scleroderma patient	See systemic onset JIA

My goal for the week is: _____

Fig 2. Bingo card version 4 (current version)

Faculty Feedback

The bingo card helped to “really pay attention to what they [residents] need to know about rheumatology as a general pediatrician.”

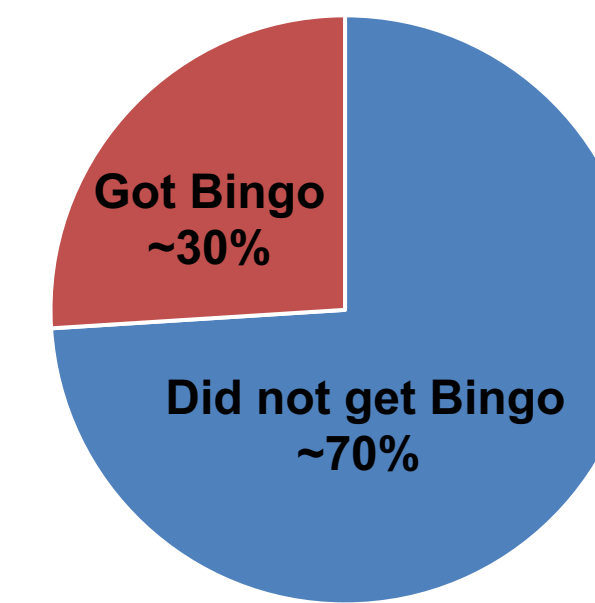
They also noted that they could “look at the card and see what other people have talked about to not repeat details”

They can also use it by “asking them questions to test their retention”

Results

The card was distributed to 50 trainees

- 37 returned their completed bingo tool (74%)
- 22 completed the survey (44%)
- On average, learners completed ~12 (12.05) number of squares/week (ranging from 7-20)



Bingo Breakdown

Fig 3. Pie chart depicting the percent of Bingo cards with 5 squares marked in a row

Variable	N	Mean	Std Dev	Median	Lower Quartile	Upper Quartile
I like using this gamified tool	22	4.23	0.97	4	4	5
I felt this tool helped me decide which patients to prioritize seeing	22	3.86	1.04	4	3	5
I felt this tool helped me see a variety of different patient types and encounters	22	4.14	0.94	4	3	5
I would recommend this tool to others	7	4	1	4	4	5

Fig 4. Table of survey question results. Note that the fourth question was introduced later in the AY than the previous three.

Resident Feedback

“helped them [do their] own self-directed learning about what are essential for rheumatological conditions”

“it was nice to have a framework to focus on”

Provider	Total Number of Signed Squares	Total Half Days	Signed/ Day
Provider 1 (Education Champton)	112	85	1.31764706
Provider 2	23	29	0.79310345
Provider 3	46	39	1.17948718
Provider 4	18	29	0.62068966
Provider 5	20	28	0.71428571
Provider 6	3	9	0.33333333
Provider 7	41	21	1.95238095
Provider 8	69	61	1.13114754
Provider 9	4	15	0.26666667
Provider 10	0	10	0

Fig 5. Table of signed squares per provider per day

Limitations

- Implementation within only one institution with many pediatric rheumatologists
- Incomplete tracking due to unreturned cards or illegible handwriting
- Lack of data on long-term impact on knowledge and application after using the bingo card

Conclusions and Future Direction

- Gamification within the pediatric rheumatology rotation has preliminarily been successful in guiding learners to focus their efforts and learning during their rotation
- Intrinsic motivation seems to be an effective driving force for learning among medical trainees but extrinsic motivation may also promote utility (and a small prize will be given in AY 24-25) (Fig.6)
- We plan to continue to develop these tools with input from learners, and to track addition metrics, including ITE and board scores

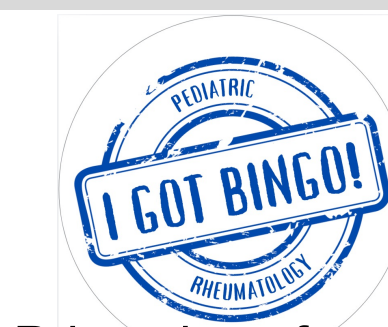
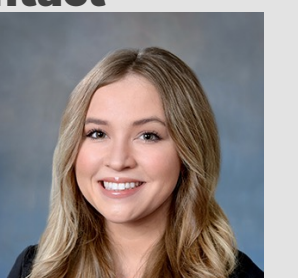


Fig 6. Prize given for successful bingo in AY 24-25

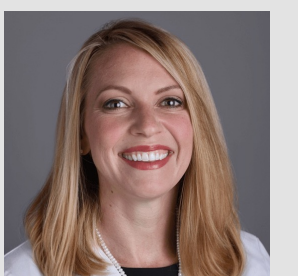
References



Author Contact



Kyla.blasingame@bcm.edu



Miriah.Gillispie-Taylor@bcm.edu