



## Medals4Mettle

A novel method to teach  
humanistic behavior to medical  
students

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**M**edals4Mettle (M4M), a 501(c)(3) public charity founded in 2005, collects ribbons and medals earned by athletes who complete endurance events (marathons, half-marathons, triathlons, and half-triathlons), and awards them to children and adults

suffering with illness. The University of Louisville School of Medicine (ULSOM) medical students presented the concept for M4M to the school's faculty in 2008, and formed the first chapter of M4M at a medical school.

M4M's mission provides medal donors a simple, meaningful, and effective opportunity to communicate compassion to fellow human beings and their families. M4M has awarded more than 55,000 medals—primarily to children—in more than 80 hospitals around the world through an expanding volunteer network of 70 chapters. ULSOM student leaders and faculty have sustained and grown M4M every year since 2008.

Athletes donate their medals to pay-it-forward in recognition, support, and celebration of another human's mettle for enduring a much more difficult race. Anonymously donated medals are awarded to recipients by chapter coordinators and volunteers.

The ULSOM template provides the opportunity for students to identify a pediatric patient and family months before the endurance race, and then award the medal that student earned upon completing the race, i.e., at ULSOM students run in the Kentucky Derby Marathon/Half Marathon.

Involvement with the student's assigned patient well before the awards ceremony is appealing because the lesson of empathy is more likely to take hold. The awarded medal is only a symbol, not the main purpose, and adds the opportunity for enduring humanistic behavior in the student's development as a physician.

The ULSOM medical students and faculty embraced the concept as an opportunity for the students to understand and empathize with all the encumbrances of disease. It is also an opportunity for students to learn that disease and illness have a name and a family.



University of Louisville School of Medicine student Amber Todd with her "buddy."

Students run a distance event that helps them understand that the struggle required to complete the race is much less than the struggle their patients and families face every day.

The program brings students together to share a fellowship with their classmates and share the experience of personally awarding their medals to their patients.

The program also provides an opportunity for faculty to teach how being a physician is a noble humane mission, and that physicians must commit to providing the best possible care for their patients.

The novel ULSOM M4M program has demonstrated positive outcomes to enhance the medical student-patient bond. It is sustained by the students, supported by faculty, and researched with scientifically peer-reviewed outcomes.



University of Louisville School of Medicine student Nick Donde with his "buddy."

The students are energized to run for their patients, and are encouraged to personally relate to the M4M T-shirt slogan, "Someone is in a tougher race than you are right now." Their experience is personal, unique, and authentic. They run the endurance event as a team of peers, and the experience extends beyond medical school into residency.

Medical students who are unable, or choose not to run,

can share in the experience by volunteering on the day of the race and awarding medals donated by athletes who are not medical students but wish to pay-it-forward.

### Enhancing the medical student-patient bond

After signing up for the April Kentucky Derby Marathon or Half-Marathon, medical students at ULSOM are matched with their "running buddies," many of whom are patients at the University of Louisville Pediatric Cancer and Blood Disorders Clinic.<sup>1</sup> The patient coordinators and nurses display M4M flyers in the clinic and discuss the program with patients. Once a patient decides to participate, they fill out a Health Insurance Portability and Accountability Act (HIPAA) compliance form. Because patients undergoing treatment may not have appointments during the months of recruitment, outreach is also done via phone.

Student coordinators preserve continuity by randomly assigning patients to students, and reassigning previous patient participants with their established student-partner.

Throughout the months of training for the marathon, students meet with their patients and families, often connecting via e-mail or phone. Students are encouraged to learn more about their patient-partners and their illnesses, how the family and patient are coping with the diagnosis, and to foster a relationship that is mutually beneficial for



Indiana University School of Medicine student David "Taylor" Crismon with his "buddy."

## The University of Louisville School of Medicine Medals4Mettle Template

### Step One

(2-4 months before Award Ceremony)

#### Students

- Sign up and pay fee for endurance event (approximately \$75)
- Students are matched with “running buddies”- selected pediatric patients from Hematology/ Oncology/Chronic disease etc.
- Student Coordinators assign patients randomly or to previous students for continuity

#### Patient Coordinator/ Nurses

- Distribute M4M flyers to patients and families
- Discuss HIPAA compliance forms
- Recruit patients by phone who visit clinic less frequently

#### Patients/Families

- Sign HIPAA form and contact information form if they wish to participate

### Step Two

#### Students

- Train and complete event
- Connect with patient and family
- Learn about child, child’s illness, how child and family are dealing with illness, foster relationship with child and family

#### Patient Coordinator/ Nurses

- Facilitate communication between patient, family and student

#### Patients/Families

- Can attend endurance event and even cross finish line with student

### Step Three

#### Students

Award medals to patients with families present

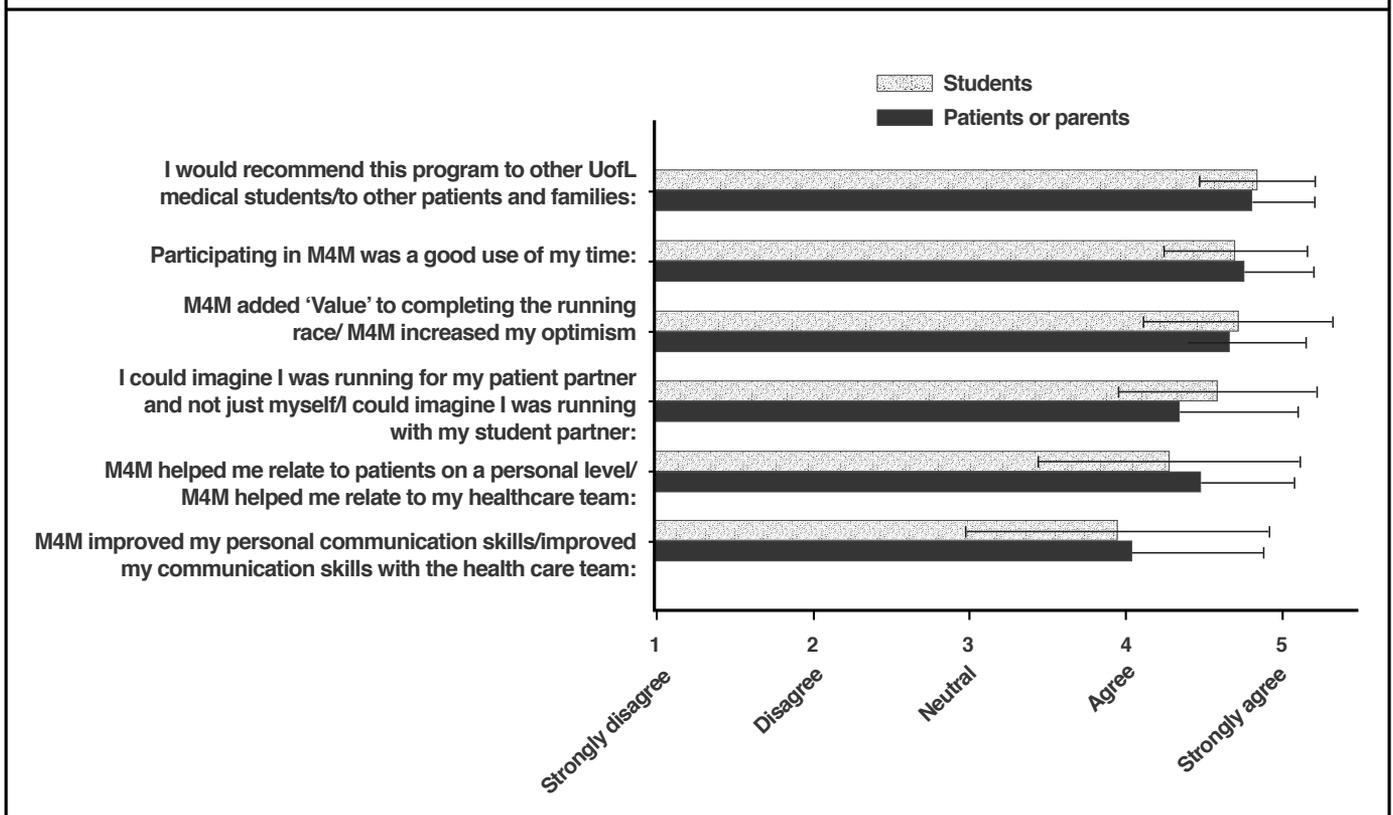
#### Award Ceremony University

- **Provide facility for ceremony**
- Optional:**
  - \$200 for M4M shirts designed by students
  - \$250 for ceremony refreshments
  - Anonymous donors and other sources provide funds

#### Patients/Families

- Attend ceremony

Figure 1. Comparison of scaled responses from students and patients or parents.



all involved. Patients who are physically capable are encouraged to attend the race and cheer for their partner, and cross the finish line with them.

The cost to the students for participating in the program is the race registration fee of \$75. There are no costs to the patients or their families. Program expenses include student designed M4M shirts (\$200), refreshments at the ceremony (\$250), and informational flyers and posters (\$75).

### Program evaluation

Medical students, patients, and family members who participated in the ULSOM chapter of M4M between 2008 and 2014 were invited to participate in a study. A total of 126 students and 63 patients were invited to complete the surveys including students and patients who had participated for several years in a row. Only one survey per participant could be completed regardless of the number of years they participated in the program.

Surveys consisted of six Likert scaled questions anchored with five response points ranging from “Strongly Disagree” to “Strongly Agree,” and three open ended questions. The six Likert scale questions were designed to provide quantitative data for description and comparison, and the three

qualitative questions were designed to capture specific language. The questions were reciprocal to support comparison of student and patient data.

Student and patient participants were invited to respond to the survey during the 2014 M4M ceremony held at ULSOM. Students and previous years’ participants who were unable to attend the ceremony were emailed the survey, informed of the procedure, and given one month to complete the survey online.

For the quantitative analysis, comparisons between students and patients on the Likert scale items were analyzed using the Mann-Whitney U test. Means and standard deviations were depicted in graphic form. All p-values were two-tailed. Statistical significance was set by convention at  $p < 0.05$ . SPSS Version 22.0 was used for the analysis.<sup>2</sup>

Qualitative analysis was completed using Pundit’s variation of Glaser and Straus constant comparison,<sup>3</sup> which is useful with broad topic qualitative data sets. Three reviewers coded open-ended data independently, and then came to consensus on the final codes assigned. The frequency of each code by comment, and by respondent group (students or patients) was calculated using Excel.

Data was collected from 62 out of 126 medical students

(49 percent), and 21 of 63 patients (33 percent). The bar chart of means and standard deviations (see Figure 1) depicts the similarities between the two groups.

The Mann-Whitney U statistic showed no significant differences between groups for any of the scaled questions. All mean scores were greater than 4.0, with the exception of the student response to the question regarding the program improving communication skills. Specifically, mean scores for student responses were 4.84, 4.70, 4.72, 4.59, 4.28, and 3.94. For patient responses, mean scores were 4.81, 4.76, 4.67, 4.35, 4.48, and 4.05.

Table 1 depicts the percentage of responses analyzed by code, question, and group. Four predominant codes showed more consistency among and between groups, and across questions, than other codes.

## Results

The results suggest that M4M is a successful program that encourages humanism in medical students while connecting them with patients battling severe illnesses through a unique and beneficial experience. While the study's results revealed myriad qualitative differences explaining why there was initial involvement in the program, there were striking quantitative similarities in both student and patient scaled responses.

All study participants agreed, or strongly agreed, to recommend this program to others, and felt that it was a good use of their time. In addition, the majority of respondents agreed, or strongly agreed, that M4M helped students relate to their patients on a personal level, and helped the patient relate to their health care team.

Several qualitative patterns emerged from the survey that were reflected in both patient and student responses. Four categorical themes were consistent across responses to all questions for both groups—a child/patient benefit in participating in the program; the program allowing for one to connect with others; the desire to participate in the program again; and that it was a wonderful program overall. One parent commented, “Sarah loved meeting her runner and spending time with her. I feel like we really connected. It meant so much to us that a young student took time from her busy schedule to run this race and donate her medal to Sarah.”

Another parent remarked, “It is amazing to see what it means to your child and your student as they get to know each other. The inspiration and the bond created are incredible.”

Students were equally as excited about participating in the program with one commenting, “I had no idea how

fulfilling it would be to get to know the kids, and experiencing the real sense of solidarity that seems to be absent in my clinical rotations. It's a wonderful use of your time in medical school and offers a chance to connect to a patient and to better explore the humanistic aspect of the medical field.”

Students appreciated the experience of forging a special relationship with a patient outside of the hospital or clinic. They acknowledged it as an opportunity to discover humanism in a creative manner, and expressed the desire to continue participation in the program.

The patient, family, and medical student connected on a level not often experienced by students in their typical medical school curriculum. Through participation in M4M, a paradigm of interaction can be integrated into the clinical setting so that students develop a heightened sense of caring and compassion that will manifest in their subsequent patient encounters.

The only area of dissatisfaction with the program voiced by student participants was the desire to be paired with their running buddies (patients) at an earlier time. This would allow the pair to create a longer-lasting, more meaningful relationship prior to the race and ceremony.

The major limitations of this study were that it was conducted at a single institution, and that it followed a single M4M event. The population was too small to conduct a pilot study of the survey, so the validity was based off of expert review, which was another limitation.

It is possible there was some response bias among participants, however not all responses were positive. There was an area of dissatisfaction indicating that respondents felt free to offer their opinion.

A post-hoc power analysis indicated the sample size of 62 medical students and 21 patients would achieve 80 percent power to detect a significant difference between groups given a moderate to large effect size of 0.65, and a significance level of 0.05 using a two-sided Mann-Whitney U test.<sup>4</sup> If smaller effect sizes between groups exist, statistical significance may not have been detected due to the small sample.

## Sharing the program with other schools

Participating in the M4M program is a positive experience for all parties involved. Replication of the program requires a few simple components:

1. Funding for the race entry fee, race shirts, and ceremony—approximately \$1,500 for 20 student runners;
2. A community-based half or full marathon racing event;

**Table 1. Percentage\* of comment type (code) by question and group.**

	Q1. Why did you participate in the M4M program?		Q2. How did the program meet your expectations?		Q3. What would you tell other medical students about the program?	
Code	Student	Patient/ Parent	Student	Patient/ Parent	Student	Patient/ Parent
Personal benefit (e.g. get back into running, healthy)	38%	0%	1%	0%	7%	0%
Opportunity to give back (service)	13%	4%	0%	0%	9%	0%
Motivating and inspiring	11%	0%	3%	0%	0%	0%
Child/patient benefit	<b>22%</b>	<b>36%</b>	<b>1%</b>	<b>5%</b>	<b>11%</b>	<b>10%</b>
Connect with others	7%	0%	<b>13%</b>	<b>19%</b>	<b>11%</b>	<b>20%</b>
Wanted to participate again	4%	9%	<b>9%</b>	<b>29%</b>	<b>2%</b>	<b>20%</b>
Adds value to running	5%	0%	0%	0%	2%	23%
Invited to participate	0%	<b>23%</b>	14%	0%	0%	0%
Awareness of childhood cancer	0%	<b>4%</b>	0%	0%	0%	7%
Support UL oncology department	0%	5%	0%	0%	0%	0%
Met or exceeded my expectations	0%	0%	30%	9%	0%	0%
Made suggestion for improvement	0%	0%	12%	0%	2%	0%
Wonderful program	<b>0%</b>	<b>18%</b>	<b>18%</b>	<b>38%</b>	<b>18%</b>	<b>19%</b>
Just do it!	0%	0%	0%	0%	38%	10%

\*Percentage of all replies per open-ended question by group.  
**Bold** indicates a predominant code across question and groups.



From left, Pradip Patel, MD; Taylor Hodge, MD, University of Louisville School of Medicine Medals4Mettle Student Coordinator 2018; and Steven F. Isenberg, MD.

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3. A venue to host the post-race celebration/medal gifting;
4. Faculty time to provide mentorship;
5. Students to participate in the program; and
6. Patients to participate in the program.

At ULSOM pediatric patients with hematologic or oncologic illnesses are included, but other institutions could include patients with other chronic illnesses, or even the adult population.

### Conclusion

M4M is a replicable model for other graduate health care professional schools to use and adapt as a tool for teaching humanistic behavior in a unique and effective way.

“To celebrate and reward the collective courage of all human beings” has been the mission of M4M over the past 11 years, and the innovations of the M4M program at ULSOM provide a novel technique to teach humanistic behavior to medical students.<sup>5</sup>

M4M is an activity led and embraced by the students who manage it as a team. It has been scientifically verified for its value to all involved, and proudly represents the medical profession. The humanistic behavior that participating students develop with their patients facilitates their transformation into a physician.

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