Donor Call Simulation: A Novel Medical Education Tool to Evaluate Trainees' Clinical Decision-Making in Transplant Infectious Disease

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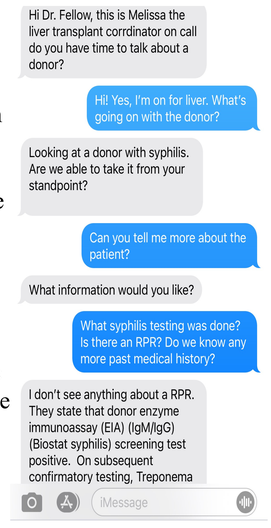
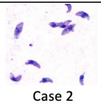
Background

- Simulation is a useful tool in medical education
- Recommending whether to accept or reject an organ for transplantation based on infection risk is a core competency in Transplant Infectious Diseases
- We created a simulation curriculum of "Donor Call" to enhance the skill of assessing organ offers among ID trainees.

Methods

- We created six simulations of brief clinical scenarios with common challenging consultations about accepting or rejecting an organ for transplantation based on risk of infection
- Faculty acted in the role of the transplant coordinator or surgeon and texted or paged the fellow with a simulation case
- Fellows had 15 minutes to ask follow up questions before deciding to accept or reject the organ and explain their decision-making process in a survey.
- Fellows and faculty then discussed the case and decision-making process after the response was submitted
- Fellows completed surveys evaluating its impact and effectiveness one month after the simulation to evaluate its impact and effectiveness.



Case	Simulation Page / Text	Evaluation of Clinical Decision-Making
 Case 5 Syphilis	From the Liver Transplant Coordinator: "We have a donor with a syphilis. Are we able to take it? The donor died in motor vehicle accident. Screening tests results for HIV and hepatitis in the donor were negative. His enzyme immunoassay (EIA) (IgM/IgG) (Biostat syphilis) screening test positive. On subsequent confirmatory testing, Treponema pallidum particle agglutination assay (TPPA) (Mast Diagnostics) was 1:>20,000 and result of Venereal Disease Research Laboratory (VDRL) (Abbott Murex) and IgM tests were negative. We can't find any history of donor getting treatment for syphilis in the past."	☐ Correctly identified that syphilis is not a contraindication to organ transplantation ☐ Correctly identified that late latent syphilis could be treated in the recipient
 Case 2 Toxoplasma	From the Liver Transplant Coordinator: "We have a donor with positive Toxoplasmosis IgM and IgG serologies. Can we still take them? Donor died of intracranial hemorrhage. Donor with no history HIV or being immunocompromised."	☐ Correctly interpreted that these Toxoplasma serologies do not indicate active infection ☐ Correctly identified that recipient would receive TMP/SMX prophylaxis post-transplant which would cover PJP and Toxoplasma

Analysis

Figure 1. Proportion of Learners Correctly Answering Whether to Accept or Decline the Organ for Transplant Based on Infection Risk During the Simulation

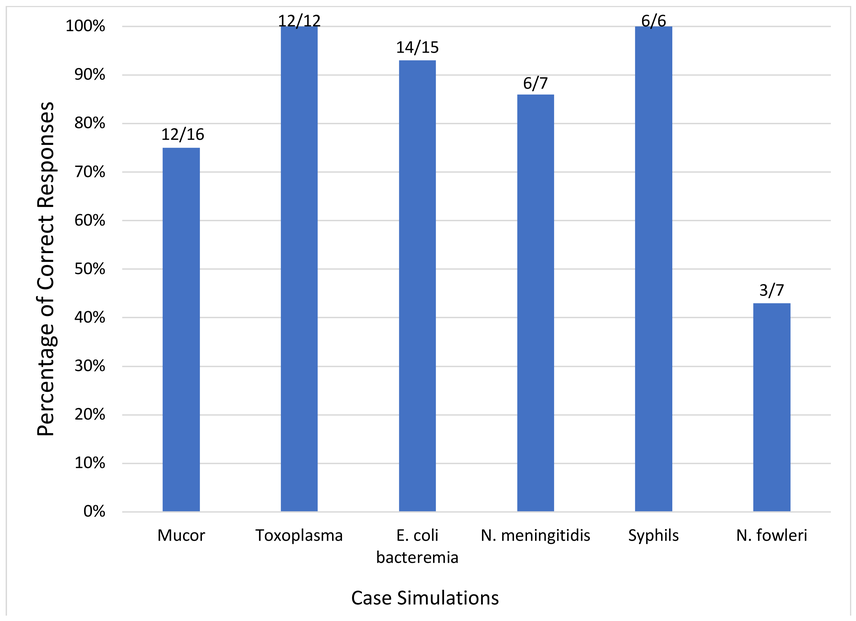
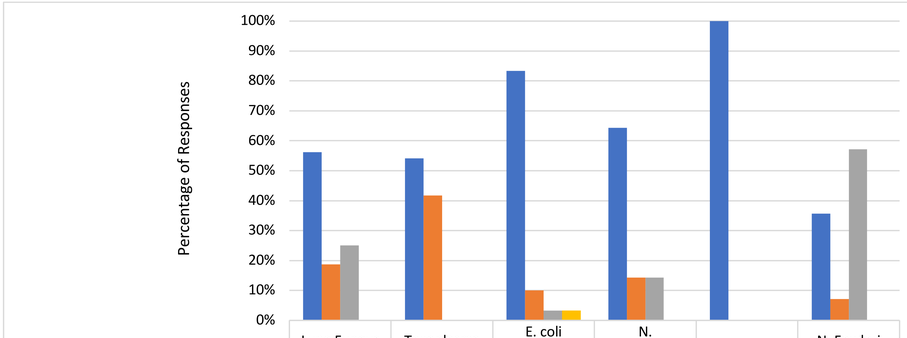


Figure 2. Evaluation of ID Learners' Clinical Decision-Making Regarding their Recommendation to Accept or Decline the Organ for Transplant. Of the 100 clinical decisions made during the simulation, responses were stratified by correct/incorrect answer and correct/incorrect clinical reasoning.



	Lung Fungus (n=16)	Toxoplasma (n=24)	E. coli Bacteremia (n=30)	N. meningitidis (n=14)	Syphilis (n=6)	N. Fowleri (n=14)
Correct answer/Correct reasoning	56%	54%	83%	64%	100%	36%
Correct answer/Incorrect reasoning	19%	42%	10%	14%	0	7%
Incorrect answer/Incorrect reasoning	25%	0	3%	14%	0	57%
Incorrect answer/Correct reasoning	0	0	3%	0%	0	0

Participants

Table 2. Demographics of ID Learner Participants and Training Programs

Participant Characteristics		Number (%)
Gender	Male	10 (62.5%)
	Female	6 (37.5%)
Post Graduate Year of Training	PGY3	1 (6.67%)
	PGY4	6 (40%)
	PGY5	6 (40%)
	PGY6	2 (13.3%)
Number of solid organ transplant patients evaluated by learners prior to simulation	0-5 patients	7 (46.6%)
	6-20 patients	4 (26.7%)
	Over 20 patients	4 (26.7%)
Learner interest in pursuing a career in Transplant ID prior to simulation	Minimal to no interest	4 (26.7%)
	Moderate to extreme interest	11(73.3%)

Participating Programs
Medstar Georgetown Infectious Diseases Fellowship, Washington DC
Ochsner Health Infectious Diseases Fellowship, Louisiana
The Ohio State Infectious Diseases Fellowship, Ohio
Stony Brook Infectious Diseases Fellowship, New York
University of California, San Diego Infectious Diseases Fellowship, California
University of Maryland Infectious Diseases Fellowship, Maryland
University of Nebraska Medical Center Infectious Diseases Fellowship, Nebraska

Conclusions

- We developed an effective and feasible simulation for ID learners to develop clinical decision-making skills required to accurately determine organ acceptability for transplant based on infection risk.
- Our simulation provides ID educators a nuanced insight into their learners' thought process by evaluating the clinical reasoning behind decision-making
- Educators can use targeted coaching to correct these deficits prior to trainees transitioning into roles where these decisions are made in real time.
- Post-simulation scores and learners' preparation for clinical practice demonstrate a critical need for further educational developments in this area.