APPLICATION OF THE BUXTON-HANNEY PAYBACK FRAMEWORK TO DoW-SPONSORED RESEARCH IN THE HEALTH & TRAUMA SYSTEM OF UKRAINE FOLLOWING THE RUSSIAN INVASION, 2022-2025

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INTRODUCTION

- The Russian invasion of Ukraine in February 2022 escalated a decade-long conflict, dragging both countries into war
- One year into the war, 267 of 720 Ukrainian healthcare facilities were directly attacked, severely damaged, or destroyed[1,2]
- H.R. Defense Authorization bill 7776, SEC 736 directed the DoW to establish a partnership with Ukraine for improving medical trauma care and supporting research development[3,4]
- **Our study utilized the Buxton-Hanney Payback Framework to assess & catalog medical research outcomes from the DoW investment in Ukraine since the Russian invasion**

METHODS

- Buxton Hanney Payback framework assesses the impact of health research by categorizing outcomes across five domains[5]
- Inclusion criteria
  - Projects with DoW or Defense Health Program (DHP) funding
  - Research related to Ukraine's health & trauma system
- Study Population: Research investigators and experts involved in DoW-funded research on Ukraine medical trauma care, 2022-2025
- Data collected during virtual meetings with PIs:
  - Study dates, targeted demographics populations, funding source, funding amount
  - Project outcomes across each domain of the framework

Table 1. Buxton-Hanney Payback Framework Domains

Domain	Description
Knowledge Production	Publication, conferences, training works cited
Future Research	Develop researchers, facilitates future research
Policy Development	Government, regulatory, organizational policy changes
Health Sector Benefits	Changes in medical practice, institutions, reduction of cost, equitable healthcare access
Economic Outcomes	Creation of new economic opportunities, facilitates healthier workforce

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RESULTS

- We contacted 11 PIs between January and April 2025, with 7 agreeing to participate
- We identified 80 project outcomes among the Buxton Hanney categories
- Knowledge Production (57): Manuscripts, conference proceedings, "train-the-trainer" courses
- Future Research (16): Student development, development of research tools (i.e. TBI diagnostic tools)
- Informing Policy (3): Tourniquet and blood transfusion protocol modifications
- Health Benefits (1): Improved active-conflict trauma response
- Economics (3): Resurgence in clinical trials and business

Table 2. DHP Ukraine Health Research

Project		Award (USD)	Project Timeframe	Topic
A		$10M+	Feb '23 – Sept '25	Assessment of health & trauma system
B		<$499K	Aug '24 – July '26	Sexual Violence & Mental Health
C		$1M-4.9M	Sept '24 – Sept '26	Behavioral Health & PTSD
D		<$499K	Aug '24 – Aug '25	Combat Casualty Training
E		$500K-999K	Sept '24 – Aug '25	Mass Casualty Analysis
F		$1M-4.9M	Sept '24 – Sept '26	Brain Trauma Diagnostics
G $1M-4.9M	G 1	$500K-999K	Oct '24 – Oct '27	War Casualties Pain Intervention
	G 2	$500K-999K	Oct '24 – Oct '27	
	G 3	$500K-999K	Oct '24 – Oct '27	
	G 4	$500K-999K	Oct '24 – Oct '27	

Table 3. Buxton Hanney Categorical Outcome Count

Project	Knowledge Production	Future Research	Informing Policy	Health Benefits	Economics
A	37	12	3	1	3
B	1	1	0	0	0
C	4	1	0	0	0
D	4	0	0	0	0
E	5	0	0	0	0
F	3	2	0	0	0
G	7	0	0	0	0
Totals	**57**	**16**	**3**	**1**	**3**

Discussion

- First application of the Buxton Hanney Payback framework model into DoW-funded research
- Research outputs modernize life-saving medical improvements in Ukraine
- Previous studies applied model retrospectively, capturing outcomes in stable, centralized civilian systems
- Our prospective application and adaption to a decentralized, dynamic combat environment records real-time outcomes and impacts of research
- Buxton-Hanney framework proves advantageous for continued military applications
  - DoW Centers of Excellence, such as the Joint Trauma System, can adopt model to assess initiatives and justify funding
  - Scale framework across large-scale initiatives, from multi-site collaboration to long-term DoW investments
  - Prospective framework approach captures immediate impacts and allows priority adjustment

LIMITATIONS

- Potentially misses long-term impacts due to the recency and ongoing nature of the invasion
- Recall bias among PIs
- Study excludes stakeholder impact, potentially omitting important project outcomes and systemic impacts

CONCLUSIONS

- Investigations of Ukraine health & trauma research demonstrate a variety of outcomes, especially within the knowledge production & future research domains
- Sustained funding for health & trauma research may provide both immediate & long-term benefits for both the Ukrainian population & international allies

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