



Data-driven Implementation Mapping for the selection of implementation strategies: case example of bladder cancer surveillance

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IIR 18-215

Agenda

1. Overview of the clinical problem
2. Framework and potential strategies
(TICD & ERIC)
3. Overview of Implementation Mapping
4. Walk through the mapping steps with examples

Q&A

Participants (4)

Search

Panelists (4)

- Florian Schroeck
Me, internal
- Robert Auffrey
Host, internal
- A. Aziz Ould Ismail
- Lisa Zubkoff

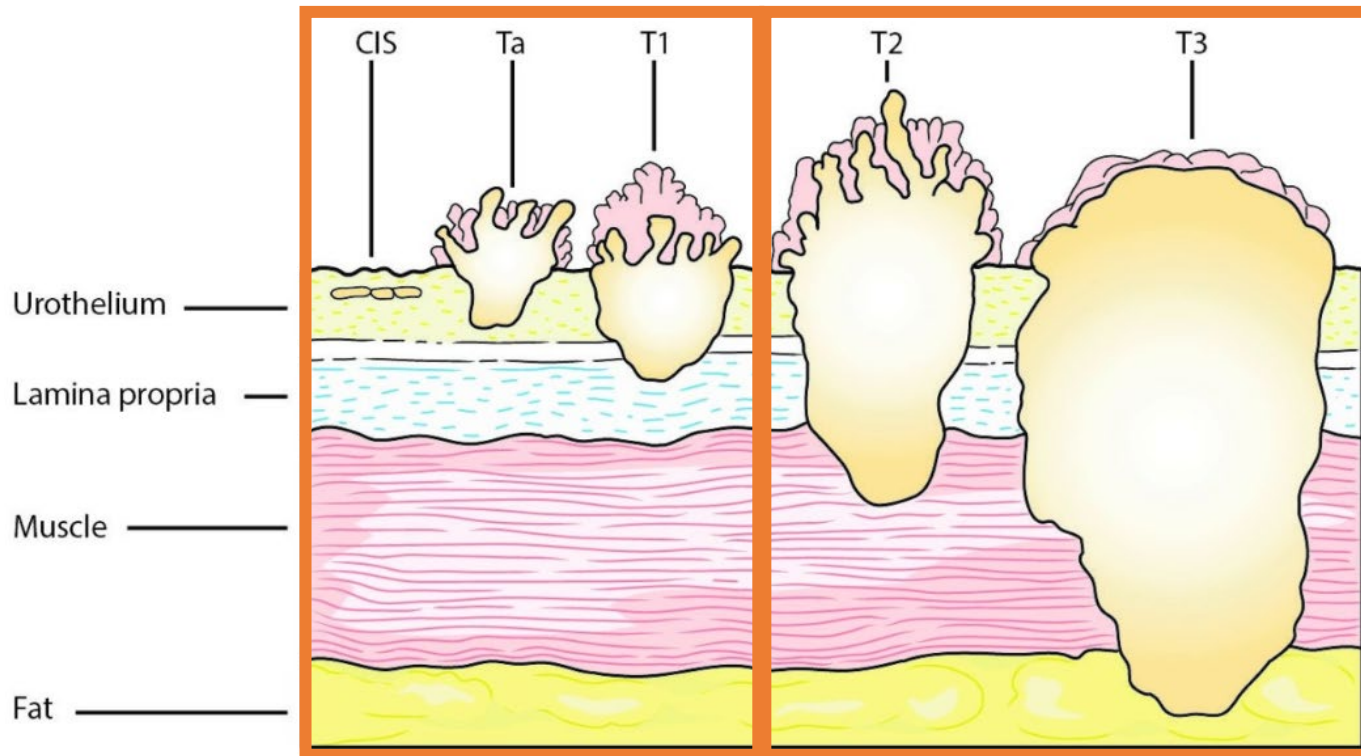
Attendees (0) [View all](#)

Chat

Notes

Participants Chat

Bladder Cancer in VA

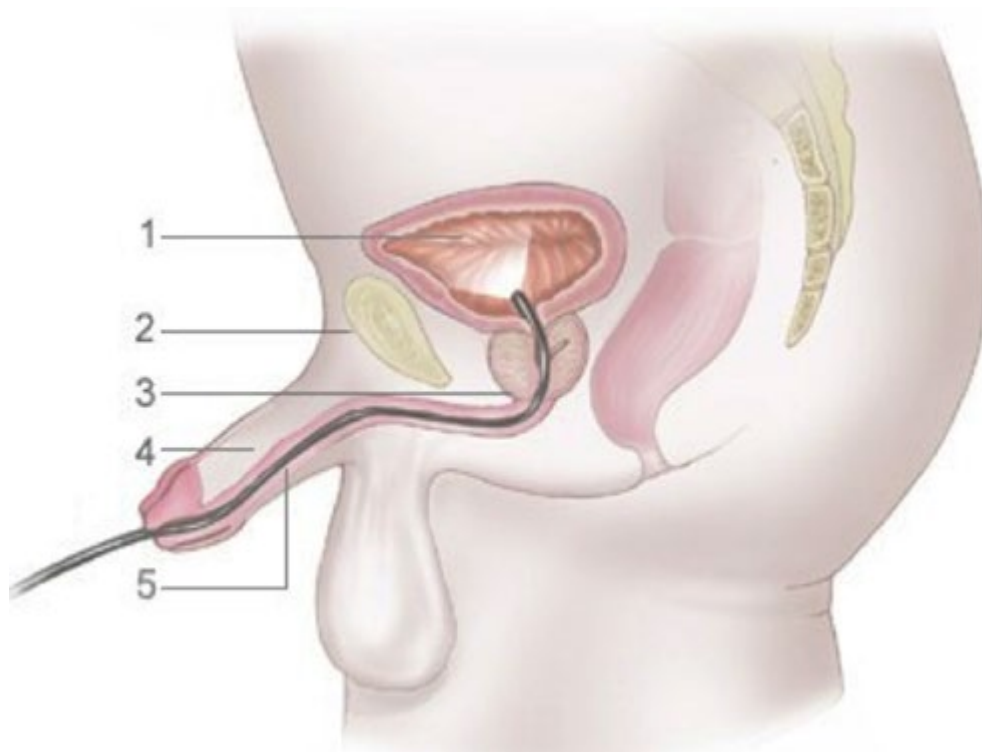


Non-muscle
invasive
bladder
cancer

Early Stage

75%

Risk-Aligned Surveillance for Bladder Cancer



Low-risk
→ ~1 / year

High-risk
→ 3-4 / year

Risk-Aligned Surveillance for Bladder Cancer

Year	Panel
2005	First International Consultation on Bladder Tumors
2006	European Association of Urology
2011	International Bladder Cancer Group

Low-risk
→ ~1 / year

High-risk
→ 3-4 / year



American
Urological
Association

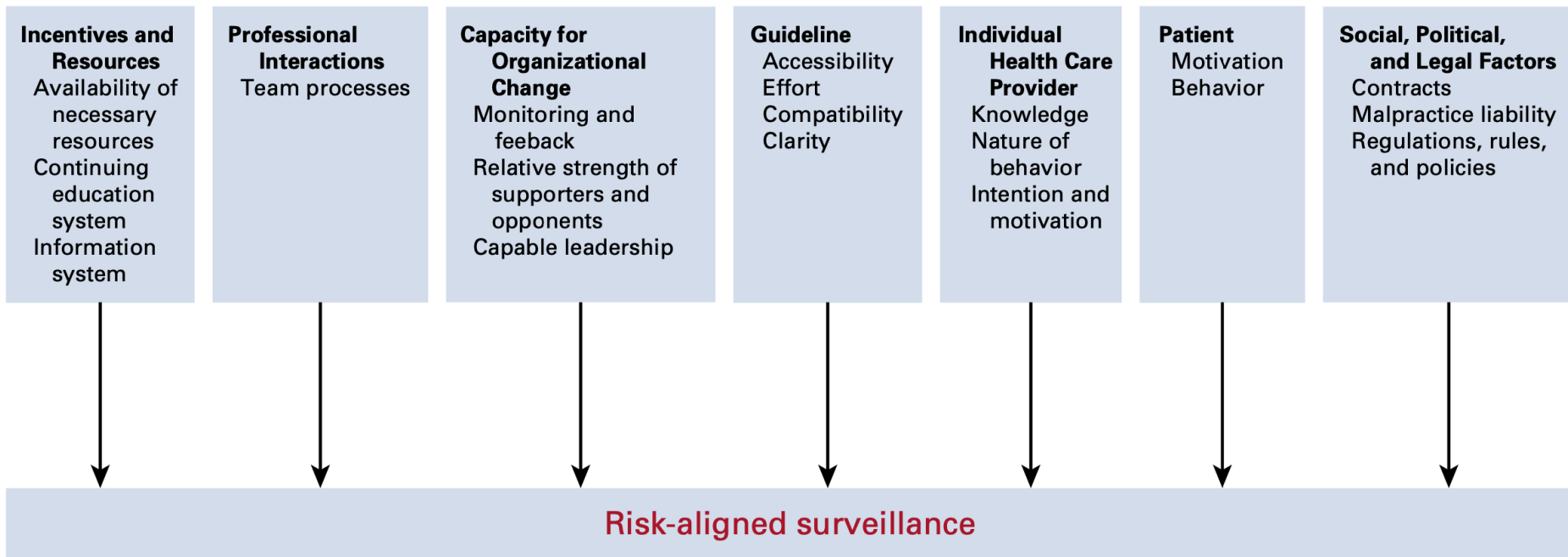


National
Comprehensive
Cancer
Network®

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Tailored Implementation for Chronic Diseases (TICD)



Powell et al. *Implementation Science* (2015)
DOI 10.1186/s13012-015-0209-1

RESEARCH

A refined comp
results from the
Implementing C

Byron J Powell^{1*}, Thomas J Waltz²,
Monica M Matthieu^{6,7}, Enola K Pro

Table 3 ERIC discrete implementation strategy compilation (n = 73)

Strategy	Definitions
Access new funding	Access new or existing money to facilitate the implementation
Alter incentive/allowance structures	Work to incentivize the adoption and implementation of the clinical innovation
Alter patient/consumer fees	Create fee structures where patients/consumers pay less for preferred treatments (the clinical innovation) and more for less-preferred treatments
Assess for readiness and identify barriers and facilitators	Assess various aspects of an organization to determine its degree of readiness to implement, barriers that may impede implementation, and strengths that can be used in the implementation effort
Audit and provide feedback	Collect and summarize clinical performance data over a specified time period and give it to clinicians and administrators to monitor, evaluate, and modify provider behavior
Build a coalition	Recruit and cultivate relationships with partners in the implementation effort
Capture and share local knowledge	Capture local knowledge from implementation sites on how implementers and clinicians made something work in their setting and then share it with other sites
Centralize technical assistance	Develop and use a centralized system to deliver technical assistance focused on implementation issues
Change accreditation or membership requirements	Strive to alter accreditation standards so that they require or encourage use of the clinical innovation. Work to alter membership organization requirements so that those who want to affiliate with the organization are encouraged or required to use the clinical innovation
Change liability laws	Participate in liability reform efforts that make clinicians more willing to deliver the clinical innovation
Change physical structure and equipment	Evaluate current configurations and adapt, as needed, the physical structure and/or equipment (e.g., changing the layout of a room, adding equipment) to best accommodate the targeted innovation

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Overview of Implementation Mapping

Objective: Use a systematic process to select implementation strategies most likely to work.



Implementation Mapping: Using Intervention Mapping to Develop Implementation Strategies

Maria E. Fernandez^{1}, Gill A. ten Hoor², Sanne van Lieshout³, Serena A. Rodriguez^{1,4},
Rinad S. Beidas^{5,6}, Guy Parcel¹, Robert A. C. Ruiter², Christine M. Markham¹ and
Gerjo Kok²*

Overview of Implementation Mapping

1. Needs assessment

2. Identify observable actions that need to be performed (*performance objectives*) & Identify what needs to be changed to accomplish “*performance objectives*”

3. Select implementation strategies

4. Produce implementation materials

5. Evaluate implementation outcomes

All TICD Determinants
All ERIC Strategies

The image shows a large, tilted grid or matrix, likely representing implementation mapping data. The grid has a blue header and a pink footer. The main body of the grid is white with black text and dots. The text is organized into columns and rows, with some cells containing more detailed text than others. The grid is tilted at an angle, making it difficult to read the specific content, but it appears to be a complex data structure used for implementation mapping.

1. Schroeck et al. *Implementation Science* (2022) 17:58
2. <https://doi.org/10.1186/s13012-022-01231-6>

METHODOLOGY

- 3.
4. Data-driven approach to implementation mapping for the selection of implementation strategies: a case example for risk-aligned bladder cancer surveillance

Florian R. Schroeck^{1,2,3,4*} , A. Aziz Ould Ismail¹, David A. Haggstrom^{5,6,7}, Steven L. Sanchez⁵,
DeRon R. Walker⁵ and Lisa Zubkoff^{8,9}

Open Access



Step 1: Needs Assessment

Imp. Mapping Process

Facilitators and Barriers

Example

Interviews with clinicians:
“Reminders could be very helpful”

Step 2a: Performance Objectives

Imp. Mapping Process

Necessary *observable* actions to provide risk-aligned surveillance

Example

Clinician conducts risk assessment and selects appropriate frequency of surveillance

VA Step 2a: Performance Objectives



TICD Domain	Determinant	Performance Objective	How we got to performance objective
Capacity for Organizational Change	Capable Leadership	Leader voices support for appropriate frequency of cystos	A quarter felt that there is a lack of leadership support

VA Step 2a: Performance Objectives



TICD Domain	Determinant	Performance Objective	How we got to performance objective
Capacity for Organizational Change	Capable Leadership	Leader voices support for appropriate frequency of cystos	A quarter felt that there is a lack of leadership support
Healthcare Provider	Nature of behavior	Clinician conducts risk assessment and then selects appropriate frequency of cystos	Standard process described in many interviews

Step 2b: Change Objectives

Imp. Mapping Process

Changes needed to
accomplish each
performance objective

Example

Clinician electronically
documents risk
assessment and the
appropriate frequency of
surveillance

Step 2b: Change Objectives

TICD Domain	Determinant	Performance Objective
Health-care provider	Nature of behavior	Clinician conducts risk assessment and then selects appropriate frequency of cystos

Step 2b: Change Objectives

TICD Domain	Determinant	Performance Objective	Incentives and Resources – Information System	Guideline – Source of recommendation	Patient - Behavior
Health-care provider	Nature of behavior	Clinician conducts risk assessment and then selects appropriate frequency of cystos	electronically documents risk-ass the b er cancer and the appropriate frequency of future cystos	0	

All TICD Determinants

Step 2b: Change Objectives

TICD Domain	Determinant	Performance Objective	Incentives and Resources – Information System	Guideline – Source of recommendation	Patient - Behavior
Health-care provider	Nature of behavior	Clinician conducts risk assessment and then selects appropriate frequency of cystos	electronically documents risk-ass the b er cancer and the appropriate frequency of future cystos	0	

All TICD Determinants

Step 2b: Change Objectives



Q&A

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1. Needs assessment

2. Identify observable actions that need to be performed (*performance objectives*) & Identify what needs to be changed to accomplish the performance objectives

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Step 3a: Implementation Strategy Matrix

Imp. Mapping Process

Linking potential implementation strategies to unique change objectives

Example

Develop a reminder in the EHR to integrate the appropriate frequency of surveillance cystoscopy procedures

VA Step 3a: Implementation Strategy Matrix – Raw Data

TICD Domain	Determinant	Change Objective
Incentives and Resources	Information System	electronically documents risk-assessment of the bladder cancer and the appropriate frequency of future cystos

VA Step 3a: Implementation Strategy Matrix – Raw Data

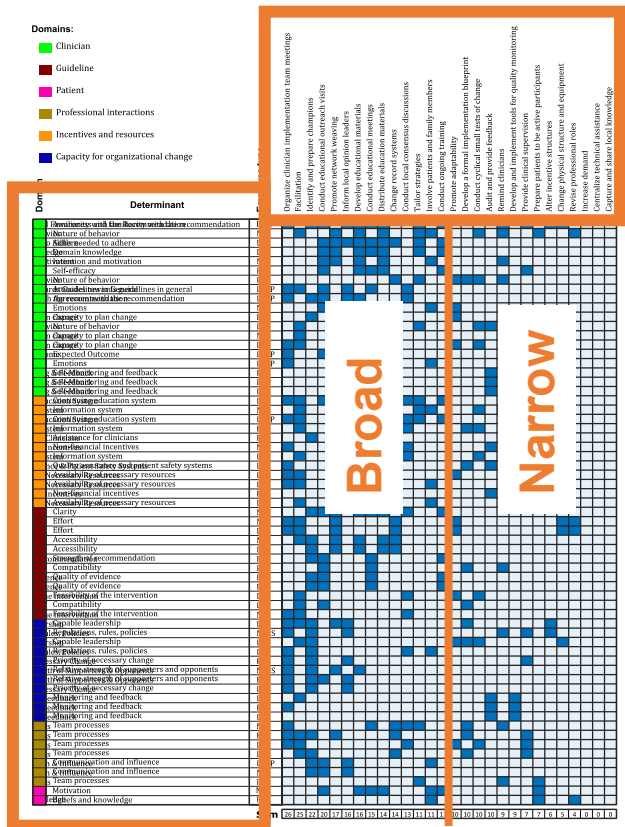
TICD Domain	Determinant	Change Objective	Change Record System	Conduct Educational Meetings	Involve patients
Incentives and Resources	Information System	electronically documents risk-assessment of the bladder cancer and the appropriate frequency of future cystos	add templates in EHR to document the risk assessment and the appropriate frequency of future cystos	0	0

All ERIC Strategies

VA Step 3a: Implementation Strategy Matrix – Visualization

Change Record System
Conduct Educational Meetings
Involve Patients

- Assistance for clinicians
- Non-financial incentives
- Information system



Step 3b: Prioritization of Strategies

Imp. Mapping Process

Based on:

Scope

Time Commitment

Impact

Example

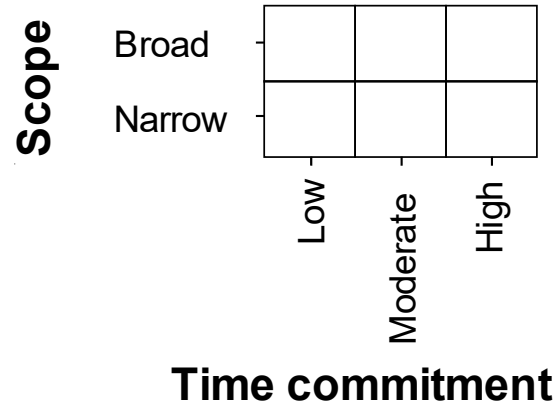
Change record system with
EHR template:

Scope: broad

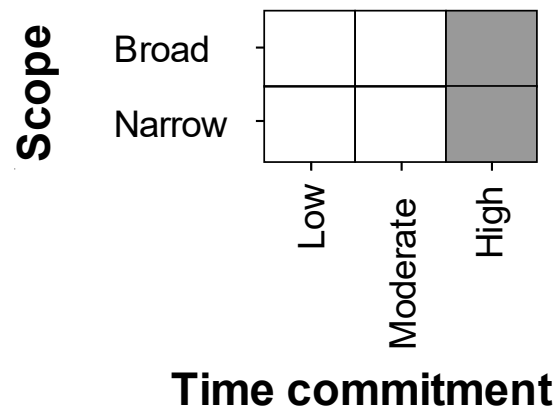
Time Commitment: moderate

Impact: high

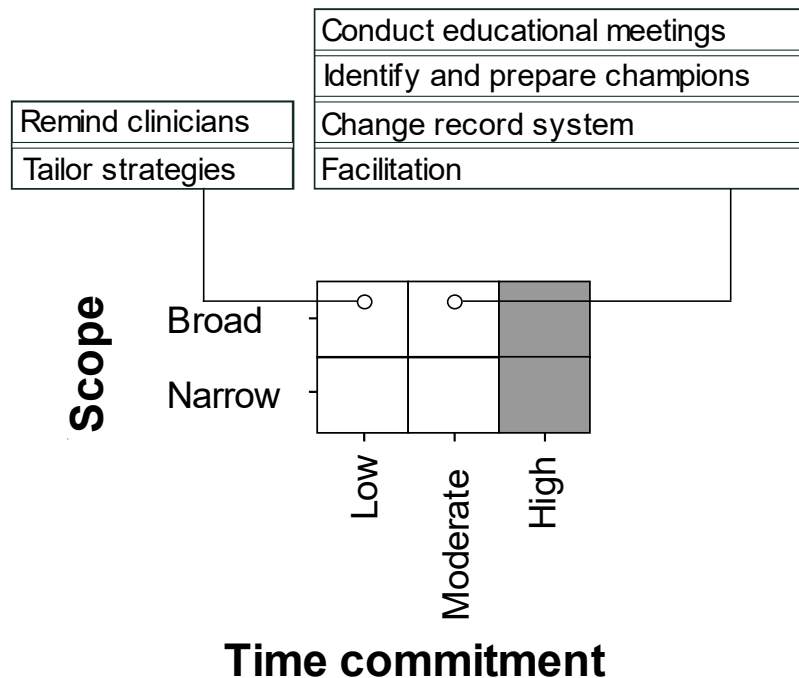
Step 3b: Prioritization of Strategies



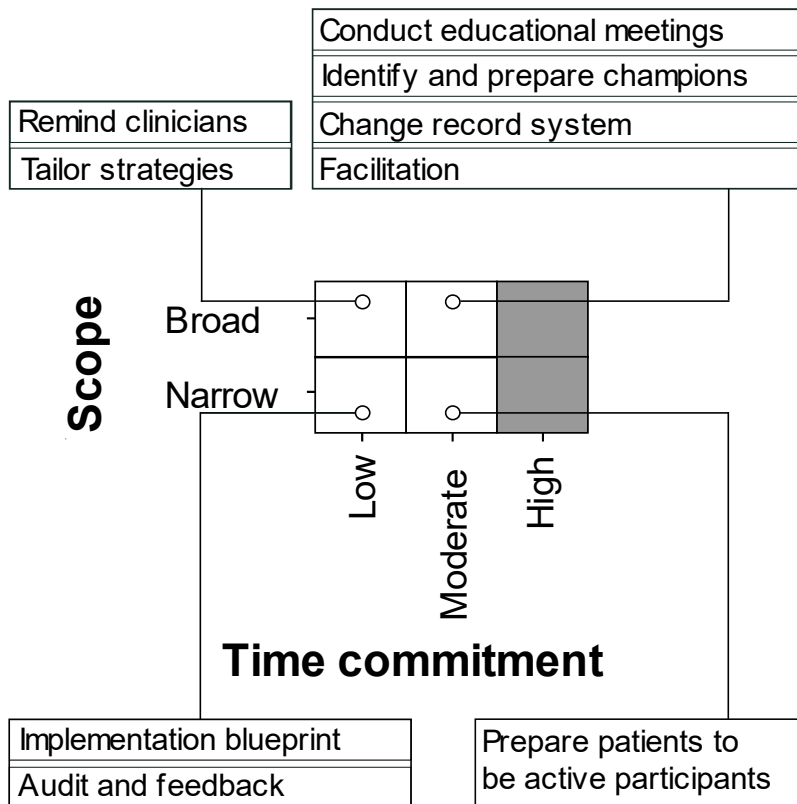
Step 3b: Prioritization of Strategies



Step 3b: Prioritization of Strategies



Step 3b: Prioritization of Strategies



Overview of Implementation Mapping

1. Needs assessment

2. Identify observable actions that need to be performed (*performance objectives*) & identify what needs to be changed to accomplish the performance objectives

3. Select implementation strategies

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Step 4a: Specification

Imp. Mapping Process

1. Actor
2. Action
3. Action target
4. Temporality
5. Dose
6. Outcome
7. Justification

Example

1. Champion
2. Tech team to implement template
3. Providers
4. Ongoing
5. Every encounter
6. Adoption of risk-aligned surveillance
7. Nudging


VA Step 4b: Implementation Materials



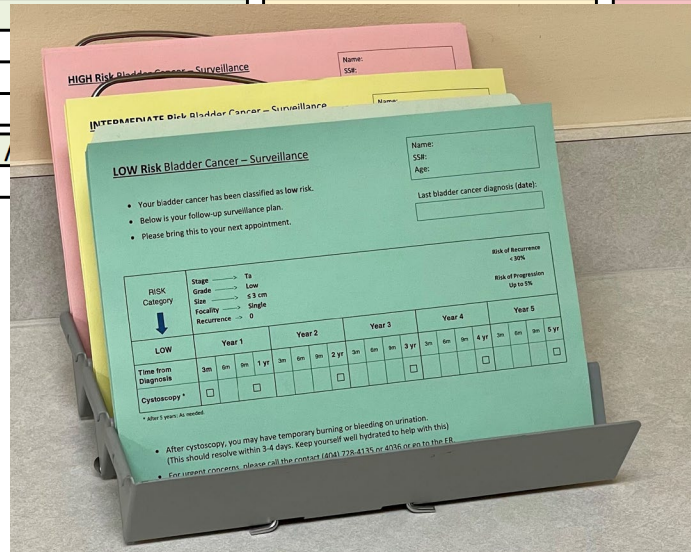
Imp. Mapping Process

Develop Implementation Materials

Non-Muscle Invasive Bladder Cancer Risk Stratification

Low Risk	Intermediate Risk	High Risk
LG Ta \leq 3 cm PUNLMP 	Recurrence within 1 year, LG Ta Solitary LG Ta > 3cm LG Ta, Multifocal HG Ta \leq 3 cm LG T1	HG T1 Any recurrent, HG Ta HG Ta, > 3cm or multifocal Any CIS Any BCG failure in HG patient Any variant histology Any LVI Any HG prostatic urethral involvement

	Surveillance	BCG
Y1	q 3 m + cytology	Induction: weekly x6
Y2-5	q 6 m + cytology	Maintenance: weekly x3
>Y5	Yearly + cytology	
BCG /		



LOW Risk Bladder Cancer - Surveillance

Name: _____ SS#: _____ Age: _____

Last bladder cancer diagnosis (date): _____

- Your bladder cancer has been classified as low risk.
- Below is your follow-up surveillance plan.
- Please bring this to your next appointment.

RISK Category	Stage → Ta	Grade → Low	Size → \leq 3 cm	Locality → Single	Recurrence → 0	Risk of Recurrence < 30%		Risk of Progression Up to 5%							
						Year 1	Year 2	Year 3	Year 4	Year 5					
LOW															
Time from Diagnosis	3m	6m	1 yr	3m	6m	2 yr	3m	6m	3 yr	6m	1 yr	3 yr	6m	1 yr	3 yr
Cystoscopy *	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	

- * after 3 years. As needed.
- After cystoscopy, you may have temporary burning or bleeding on urination. (This should resolve within 3-4 days. Keep yourself well hydrated to help with this.)
 - For urgent concerns, please call the center at (603) 778-4135 or 4766 or go to the ER.

Overview of Implementation Mapping



1. Needs assessment

2. Identify observable actions that need to be performed (*performance objectives*) & Identify what needs to be changed to accomplish the performance objectives

3. Select implementation strategies

4. Produce implementation materials

5. Evaluate implementation outcomes

VA Step 5: Implementation Outcomes

VA
HEALTH
CARE

THE
Dartmouth
INSTITUTE

FOR HEALTH POLICY & CLINICAL PRACTICE
GEISEL SCHOOL OF MEDICINE AT DARTMOUTH

Imp. Mapping Process

Example

Evaluation of
Implementation Outcomes

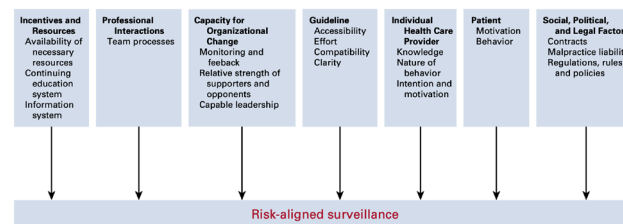
Acceptability
Appropriateness *Interviews*
Feasibility

Fidelity
Penetration *Tracking*
Sustainability

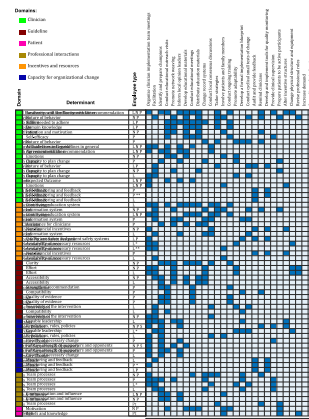
Adoption *Chart Review*

Contribution to the Field

- Prior work: employed advisory panels
- Considered every TICD determinant & every ERIC strategy
- Data visualization



This table represents a comprehensive dataset of determinants and strategies. It features a wide range of columns, likely representing different determinants or strategies, and many rows of data. The table is partially obscured by a large yellow arrow pointing towards the heatmap on the right.



Discussion Points

- Labor intensive
- Did not compare standard vs data-driven Implementation Mapping
- Value: rigorous & comprehensive

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Implementation Science

METHODOLOGY

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