به یامدها بیندیش تا در بحران‌ها گرفتار نشوید

امیرالمومنین علی (ع)
‘What is striking is that there has been much written often covering similar ground . . . but rigorous implementation of identified solutions has often been sadly lacking.’

Wanless 2004, p.3
When ‘solutions of yesterday become problems of today’: crisis-ridden decision making in a complex adaptive system (CAS)—the Additional Duty Hours Allowance in Ghana
### Table of Contents

- **KEY MESSAGES**
- What are policy challenges for policy making?(‘policy resistance’)
- What is complex adaptive system (CAS)
- Why systems thinking is important?
- What are systems thinking tools and approaches?
- Relationship between Stakeholder analysis, Policy analysis and systems thinking and Capacity building
What is the role of System thinking in complex adaptive system
Who can use System thinking?
Illustrating the importance of System thinking in a case study of decision-making processes around the ADHA policy
The ADHA saga: actions, decisions, intended and unintended effects
Three Key Messages

One

- Thinking about health systems as complex adaptive systems (CAS) is an essential step in directing the current global interest and debate about how to strengthen health systems in LMICs towards achieving the desired health systems goals.

- The Additional Duty Hours Allowance saga in Ghana illustrates the importance of this and the challenges and results of crisis driven, linear and reductionist decision making within CAS.
Building capacity to understand and apply systems thinking principles in CAS, and how to evaluate and consider alternative reform pathways within such systems, should be an important component of efforts to strengthen health systems of LMICs.
Three Key Messages

Capacity building should include social science skills such as:

- stakeholder analysis
- listening and dialogue
- ongoing systematic examination of consequences
- inclusion of and brainstorming with relevant stakeholders
- negotiation
- conflict resolution
Big challenge for policy makers in implementing a policy

‘policy resistance’ Sterman (2006)

- Implementation of new policies in the health sector is sometimes defeated by the health system’s response to the policy itself.
- This can lead to counterintuitive or unanticipated effects
- It arises from a ‘narrow, reductionist world view’ and a related ‘mismatch between the complexity of the systems we have created and our ability to understand them’.
Characteristics of complex adaptive systems (CAS)

- made of separate parts
- relationship and interconnectedness between the parts
- constantly changing
- governed by feedback
- intervening in one part of the system will almost always have ripple effects in other parts of the system
- self-organize
- adapting based on experience
Phenomena of relevance and some aspects

- Path dependence
- Feedback Loops
- Emergent behaviour
- Phase transitions (tipping points or triggers)
- Scale free networks
Feedback Loops
الگوی جعبه سیاه

"جمعه سیاه" درون داد به یرون داد تبدیل می‌شود

پیامد اجرایی

رویکرد توصیفی
Phase transitions
(tipping points or triggers)
Emergent behaviour
Scale free networks

(a) Random network
(b) Scale-free network
The distinction between policy networks and issue networks revolves around the degree to which stakeholders are involved directly in the policy process.

Four features characterize networks:
- Membership (number and type of members)
- Integration (frequency, continuity and consensus)
- Resources (their distribution)
- Power (balance between members)

(Marsh and Rhodes 1992)
Health systems share the characteristics of complex adaptive systems (CAS)
An important part of complexity in health systems

- They are actors and stakeholders and their power in shaping and responding to change in decision making and implementation (Walt 1994; Erasmus and Gilson 2008).

- Inadequate attention to power, interests and values is a common precursor to unintended consequences and unsuccessful implementation of policies.
Why Actors are important?

هر سیاست = یک تغییر و هر تغییر = برهم زدن تعادل موجود
نقش آفرینان در ایجاد تعادل تاثیرگذارنده.
Another dimension of complexity

- The environmental context within which the events occur further influences and is influenced by the events, adding yet another dimension of complexity.
Why system thinking is important?

- Through a range of tools and approaches, systems thinking calls for:
  - systematically exploring the interconnectedness between different components
  - proactively thinking and Anticipating ....
    - the likely effects of policies, positive or negative, on the various components as well as the full range of actors and stakeholders in CAS
Why system thinking is important?

- Systems thinking concepts and tools are very valuable approaches for policy analysis and dialogue.
- They are relevant to researchers, policy analysts and decision makers alike.
- ST is useful for generating and refining frameworks and theories around health systems.
- ST advance our understanding of public policy decision making, and the real reasons for the success and failure of policies.
Why system thinking is important?

- systematic application of ST concepts in everyday decision making will undoubtedly improve the decision-making process and better inform the design of new policies and programmes.

- ST will also minimize the short-sighted, crisis-ridden, problem-solving approaches.
Why system thinking is important?

- Systems are unpredictable and reactions can sometimes be counterintuitive despite the best of efforts.

- To greatly mitigate them requires a deeper understanding of the fundamental characteristics of complex adaptive systems and putting in place processes to continuously assess and interpret changes in the system and its actors, and based on this understanding initiate rapid responses.
Why system thinking is important?

- paradigm shift
- Systems thinking should be a critical part of policy analysis and vice versa. This inter-relatedness should be factored into capacity building for decision makers.
- ST appreciates the complexity of the health system and the importance of policy triangle framework
Policy Triangle Framework (Walt and Gilson, 1994)

Which or What: is better policy?
Health services should be contracted out?
Policy insurance are needed?
Can not be divorced from?

Who: makes the decision?
Implement them?
Under what condition may execute or ignore that?

Context

Situational
Structural
Cultural
International or exogenous

Actors:
Individuals
Groups
Organization

Content

Problem Identification (What)
Policy formulation (Who, How)
Policy Implementation (The most neglected but most important phase)
Policy evaluation

Process
Use of systems thinking concepts in health field

While systems thinking concepts are well known in other fields, their use in the health field is still in its infancy, despite its great relevance and prospects.
Decision makers in health systems in LMICs need to be provided with training in systems thinking and the use of policy analysis and systems thinking tools and approaches.

Such capacity building should include skills in political and stakeholder analysis, dialogue, systematic examination of consequences, inclusion of and brainstorming with relevant stakeholders, negotiation and conflict resolution.
In this paper, authors apply systems thinking concepts in an analysis of the ADHA saga.

This case study illustrates the challenges of crisis-driven, linear decision making within a CAS.

This study offer lessons on how ‘the solutions of yesterday become the problems of today’.
The overall objective of this study

- It is to advance our understanding of:
  - Decision making and outcomes in health systems
  - Why policies sometimes fail to fully achieve their intended objectives and even produce unplanned effects
  - How can we mitigate these undesirable and unanticipated effects
ADHA decision and two important questions

An allowance calculated and paid over and above a doctor’s salary for hours worked beyond the standard 40 hours per week on which public sector salaries are paid, known as the Additional Duty Hours Allowance (ADHA).

1. Why and how did a seemingly small decision, in a small part of the health system, become the trigger for such large effects?

2. Why and how did the cycles of reaction and counter-reaction continue to generate ever-widening circles of ripple effects over nearly a decade before finally settling down, albeit uneasily?
Methods

- It is a case study of decision-making processes around the ADHA policy.
- This study is an ‘investigation of a contemporary phenomenon in depth and within its real life context especially when the boundaries between the phenomenon and the context are not clearly evident’.
Sources of data

- **Secondary data**
  - review of grey and published literature, policy documents and memoranda

- **Primary data**
  - their observations as actors in the health sector, as participants in some of the processes described

- Inviting some actors in the ADHA saga
  - for the validity of our documentation, analysis and conclusions
Analysis

The analytic framework:

- systems thinking concepts, including Sterman’s (2006) conceptual model of policy resistance
  - A decision, action, inaction or some other intervention within a system, acts as a tipping point or trigger.
  - The environmental context (Figure is of necessity a Simplification)
Analysis the material from the documents

- Constructing historical timelines of events
- Identifying the processes, and cycles of decisions, actions and reactions, intended and unintended effects, triggers, networks and emergent behaviour
- Mapping key actors and stakeholders
Actors and their power, their exercise of power, objectives in exercising power (where it can be discerned), and intended and unintended effects achieved from perspective of different key actors

<table>
<thead>
<tr>
<th>Actor</th>
<th>Power</th>
<th>Exercise of power</th>
<th>Objectives</th>
<th>Actual effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military Hospital ( Ministry</td>
<td>Part of a sensitive sector with known power to bring down governments (history of military</td>
<td>Obtain increased wages for doctors it employs to provide services to the military</td>
<td>Could not be found from document reviews. However, it is know that there was universal discontent among health</td>
<td>Doctors in the Military Hospital are satisfied. Doctors in public agencies are dissatisfied by the selective addressing of a universal cause of doctor discontent. Provides a trigger for simmering national doctor discontent over public sector wages to blow into a full-scale industrial action.</td>
</tr>
<tr>
<td>of Defence)</td>
<td>coup) — in which government tries to provide adequate privileges to pre-empt dissent.</td>
<td>and their families.</td>
<td>was universal discontent among health workers in the country over low wages. Hospital could not attract young doctors.</td>
<td></td>
</tr>
<tr>
<td>Doctors/Ghana Medical</td>
<td>Rare skills, limited numbers, long training period, difficult to replace. Major public</td>
<td>Withdrawal of services to their large clientele.</td>
<td>Get better pay.</td>
<td></td>
</tr>
<tr>
<td>Association</td>
<td>respect and influence because of their actual and potential large clientele of citizenry (all voters) for whom they are seen to hold power of discretion and decision making over 'life and death' issues by virtue of their knowledge and skills services.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Final analysis

- The information was used to develop causal loop diagrams using Vensim software.
Causal Loop Diagram of Population, Resources, Consumption, and Pollution
<table>
<thead>
<tr>
<th>معنی</th>
<th>آیکون</th>
</tr>
</thead>
<tbody>
<tr>
<td>اسم، چیزی که جمع می‌شود</td>
<td>متغیر حالت</td>
</tr>
<tr>
<td>فعل، فعالیتی که اندازه متغیر حالت را تغییر می‌دهد</td>
<td>نرخ یا جریان</td>
</tr>
<tr>
<td>تبیین می‌کند، رابطه‌ای عدد ثابتی را نگهداری می‌کند، جمع نمی‌شود</td>
<td>متغیر یا تبیین کننده</td>
</tr>
</tbody>
</table>
The environmental context

- GDP per capita is estimated at US$1542 or I$2930 in 2010
- Brain drain and shortages of highly trained and skilled human resources for health has been and remains a problem
- The average monthly basic salaries for junior and senior doctors
- Low salaries, which were at the heart of the ADHA saga, were and remain one of the many motivators for migration
- The role of the Ministry of Health, labour law
- Street-level bureaucracies
The ADHA saga: actions, decisions, intended and unintended effects
The normal thickness arrows show the core causal loops related to decisions about implementing.

The thicker arrows show the formation of additional causal loops due to payment delays, resulting in ‘reinforcing’ loops of events (delays—increased dissatisfaction—strikes—more delays—more dissatisfaction—more strikes etc.).
1998: initiation phase—introduction of the ADHA

- In 1998, the ‘37’ Military Hospital effected what amounted to wage increases for its doctors.
- Entice young doctors
- Agitating for and initiating industrial action
The GMA presented the government with three options for satisfying the striking doctors. They were:

1. Salary increases, or
2. Compensation for work overload, or
3. Compensation for long hours worked beyond the standard 40 hours per week in the form of an ADHA.

All three were ideas that had been floating around the GMA for some time as possible solutions to the simmering discontent over conditions of service.
The government entered into negotiation with the GMA and selected the payment of an ADHA.

- Buying Time
- No noticeable difference to the government budget
1999–2000: expansion to all health care workers

- Nurses
- Other health sector workers
- ‘representatives of health workers other than doctors’

By September 1999, in response to the strikes and agitations, virtually all permanent workers in the health sector were included in the ADHA.
2001–2005: implementation of expanded ADHA

- late payment of the ADHA
- only language: industrial action
- ADHA management problems
- Problems of Filling of individual time sheets and ‘ADHA Committee’
- increase in health expenditure did not seem to translate into improvements in key health sector indicators
- consolidate the ADHA into salaries. A job evaluation was commissioned in February 2005 to evaluate the various health sector job portfolios. ‘Restructuring the ADHA’ and a circular formalizing the consolidation of ADHA into salaries.
2005–2007: formulation of integration of ADHA into salary reform and implementation

- the next trigger for industrial unrest in the health sector.
  - The process of consolidating the ADHA into salaries
- There were conflicts and strikes over the creation of two pay scales:
  - Health Sector pay Scale 1 (HSS1), at a higher level for doctors
  - Health Sector pay Scale 2 (HSS2), at a lower level for everybody else.
2008–2010: implementation of salary reform/an uneasy calm

- In June 2008, there were still two pay scales but the gaps had been narrowed.

- Once ADHA had been consolidated into salaries, it was no longer a 'special health sector reform', but public sector salary reform.

- It is mentioned to buttress the point that the end of the ADHA saga was an uneasy calm rather than a perfect solution.
Discussion and conclusions

- This case study illustrates the challenges of crisis-driven, linear decision making within a CAS.
- Retrospective analysis of policies, as in this case study, is very helpful in drawing lessons and insights for the future from the experiences, successes and failures of the past.
- But prospective analysis is also critical.
  - (prospective mapping of stakeholders, their interests and power, and the use of force field analysis and causal loop diagrams and advocacy coalitions)
key domains of interest in analyzing policy

Policy Engagement Framework

Political situational analysis
- Content
- Context
- Actors
- Process

Strategies to change
- Positions
- Power
- Players
- Perspectives

Successful formulation & implementation of policy
force field analysis

Interest Group A

Policy-makers

Interest Group B

Political power and skill

Public policy outcomes favourable to Group A

Public policy outcomes favourable to Group B

Pressure
Eliminating or mitigating restraining forces will enable the driving forces to push through the status quo, making achievement of the goal possible.
Why did the military hospital pay rise becoming the tipping point for policy change at the point it did?

The **Kingdon Theory** and a **window of opportunity**

The military hospital pay rise, in creating a pay differential for similar work, opened a window of opportunity that became a tipping point.
’Streams’ model

- How issues get onto the policy agenda and how proposals are translated into policy.

- ‘Windows’ open (and close) by the coupling (or de-coupling) of three ‘streams’:
  - problems
  - policies
  - politics

Kingdon (1995)
Figure 4.1  Kingdon’s three stream model of agenda setting
Source: Adapted from Kingdon (1984)
Kingdon’s Model

Process Streams

Problem Stream
- Indicators
- Focusing events
- Definitions
- Values
- Comparisons
- Categories

Policy (Alternative) Stream
- Alternatives
- Policy Communities
- Advocacy
- Policy Entrepreneurs
  - “softening up”
  - “testing the waters”
- Criteria for survival:
  - Technical feasibility
  - Value acceptability
  - Political feasibility
  - Emergence of consensus

Politics Stream
- Power
- Resources
- Symbolism
- Timing
- National mood
- Organized forces
A further lesson is the need to institute constant ongoing analysis as part of early warning systems for signs of ‘potential trouble’ in health systems.

Once decision making becomes mired in crisis, it can be difficult to do the needed careful analysis of anticipated and unanticipated effects, and use of tools such as stakeholder analysis and causal loop diagrams.
In conclusion, the study and understanding of systems thinking and complex adaptive systems and capacity building for decision makers in this area cannot be ignored in the current global interest in strengthening health systems in LMICs towards achieving health goals.
Thanks for your attention
Questions
Re-visiting the policy-making process

A useful way of understanding ‘policy is in terms of:

- Context
- Content
- Process
- Power

(Walt 1994)
Simulation Model Diagram of Population, Resources, Consumption, and Pollution