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The importance of good governance in hospital payment reform – A case study from Ukraine

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ABSTRACT

In 2005, Ukraine embarked on hospital financing reforms that included the introduction of a Diagnosis Related Group (DRG) based payment system for acute inpatient care. The primary purpose of introducing activity-based funding was to provide incentives for hospitals to use their limited resources more efficiently.

Following an extended period of preparation and planning during which technical assistance was provided by various development agencies, Ukraine took action to implement the DRG system at a national level in April 2018, through a World Bank project. While some progress was made, the execution of the reform faced challenges with the organisation and administration of the implementation process, and duplication of effort. The consequence of these shortcomings was that the newly introduced system was not capable of measuring inpatient DRG activity at a level of accuracy necessary for the determination of hospital performance and the subsequent calculation of payments.

If the expected outcomes of DRG implementation in Ukraine are to be realised, stakeholders including both beneficiary agencies and development organisations, will need to improve program governance through better coordination of their activities towards a common goal.

1. Introduction

Ukraine has a population of 41.4 million [1] and is considered a lower middle-income country [2]. Administratively, the country is divided into 27 regions that include 24 provinces called oblasts. The Ministry of Health (MOH) is responsible for policy making whereas the recently established National Health Service of Ukraine (NHSU) acts as the purchaser using funds allocated from the national health budget.

According to the World Bank, government funding of health care in Ukraine does not meet community needs - in 2018, it was 3.7%, of gross domestic product compared to the European Union average of 5.9% [3]. Importantly, out-of-pocket (OOP) payments in Ukraine are reported to be the single largest component of health expenditure, amounting to 49% of the total, which is one of the highest levels in Europe [4]. According to the WHO, 93% of all Ukrainian households report paying OOP, with11% pushed into poverty as a result [5].

In recognising these funding constraints, the Ukraine Government increased the overall health budgets in 2020 by 13% [6]. Lawmakers are also considering longer-term options to address the funding shortfall, such as the establishment of a complementary health insurance system [7], and the introducing formal co-payments [8]. However, both proposals are being reviewed for compliance with the constitution.

Ukraine has a diverse public hospital ownership structure. Tertiary hospitals are operated by both the MOH and oblasts, whilst secondary hospitals are owned and operated by local-government and city administrations [3]. Hospital funding comes from four recognised sources: the NHSU which is responsible for most of hospital income; regional jurisdictions which provide supplementary funding; not-for-profit local health insurance funds (*likarniana kasa*); and patients through co-payments and contributions [3].

Recent hospital sector reform initiatives are intended to improve the efficiency of the hospital sector. Hospital numbers have been reduced and hospital management has been given greater operational autonomy. Nevertheless, the sector is still relatively large, and Ukraine has more beds per capita (879 hospital beds per 100,000 people) than comparator countries in Europe. In terms of performance, the average

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length of stay (ALOS) is 11.8 days, compared to 6 days in EU countries. Importantly, hospital spending accounts for almost 50% of the total healthcare expenditure, and therefore, the quest for good value from these large funding allocations is an important government priority [6].

Proposed hospital payment reforms include the replacement of the existing historic inputs-based funding system by a DRG based hospital payment model where the level of hospitals' inpatient funding is determined by their output. The key principle behind this system is that hospitals that are more cost efficient than the average will benefit because their payments will be based on average DRG prices – thus their income will be greater than their costs. Hospitals that are less cost efficient than the average on the other hand, will need to work at being more cost efficient to break even. Importantly, this change from inputs to output-based funding leads to a new operating environment in which hospital management can no longer rely on a regular historic annual budget but must earn an income which is related to the volume and complexity of their hospital's inpatient case activity. Such a shift in approach can be complicated in a setting such as Ukraine, where the country is faced by the challenges of underresourcing, plurality of funding and disparate hospital ownerships.

2. Materials and methods

The study documents the successes and shortcomings of a hospital funding reform intervention in Ukraine, the implementation of the DRG system. In the main, it draws on relevant and presumably reliable sources of publicly available information from donor agencies, beneficiaries, and the media. The sources include Ukrainian Government websites, as well as those of international development agencies such as the World Bank (WB) and the United States Agency for International Development (USAID), both of which were involved in the reform program (Table 1). The information gathered has been supplemented by the authors' first-hand knowledge of the actions taken in implementing the reforms.

The data provides insights into the general policy environment in which the project was being planned and implemented, as well as the roles and interests of the stakeholder organisations, both donors and beneficiaries. The study assembled information on significant events and their timelines, and documented the findings as a narrative to inform on the DRG project implementation processes and their impact. The findings were appraised in the context of the key DRG implementation building blocks: the patient classification system; data collection and analysis; DRG pricing; and the payment model.

3. Results

3.1. Preparation for DRG implementation

While development agencies showed interest in health financing reform in Ukraine much earlier, the formal process begun at the government level in October 2017 with the passing of the Financial Guarantees of Health Care Services Law. This landmark legislation formed the framework for ensuing health financing reforms and the creation of the NHSU as the national healthcare purchasing agency [9].

Development agency involvement which preceded the legislation begun some twelve years earlier. In 2005 the EU initiated the debate on hospital payment reform and DRGs through a program of technical assistance. The WB became involved in this reform area in 2014 through its project, Serving People, Improving Health [10]. It commissioned a consultancy to develop a detailed national DRG implementation plan, which in turn was followed in 2016 by a technical assistance project which included the development of an institutional framework for DRG implementation, the procurement of the Australian AR-DRG classifications, and the preparation of the terms of reference for a DRG implementation project to be funded under the loan [11]. The project begun in 2018 and provided for the national piloting of the AR-DRG system in a 100 hospitals. It was administered by the MOH for completion in 2020, and its key objective was to demonstrate the viability of the DRG based payment model and its potential for improving the cost efficiency of the hospital sector [12].

USAID entered the hospital financing reform space in Ukraine in 2015, at about the same time as the WB, through its Health Finance and Governance (HFG) assistance program. A hospital payment piloting project was undertaken by the MOH in Lviv, Poltava and Odessa oblasts, where unlike the WB initiative, it piloted a DRG variant of its own design. After HFG ended in 2018, USAID's involvement in DRG implementation continued under a new umbrella, the Health Reform Support (HRS) activity. This project directed its funding to the newly formed NHSU for use in its health system payment reform activities [13,14].

As a consequence of the parallel involvement by the WB and USAID, Ukraine was working with two DRG variants, AR-DRGs and a DRG system of its own design. In February 2019 the MOH approved Poltava Oblast's continuation of DRG piloting it began under the USAID project [15]. The project progressed along a track that was quite different to that of the MOH's AR-DRG pilot being undertaken in parallel under a WB loan. Poltava's locally conceived DRG classifications were intended to accommodate all acute inpatient cases into 50 DRG classes, whereas the AR-DRG variant provided for 803 DRG classes. As it happened, Poltava's intention to adopt a lesser number of DRG classes gained traction with the NHSU which as the heath purchasing agency, took the initiative in the implementation of hospital financing reform with the support of USAID.

As illustrated in Fig. 1, by 2019 the MOH was working on DRG implementation through two parallel and seemingly un-coordinated activities. The first activity was the WB funded AR-DRG pilot which used classifications procured under licence, and was due for completion in June 2020 [10]. The second activity was USAID's collaboration with the NHSU which was committed to a DRG implementation start date of 1st January 2020, a timeline set by the Financial Guarantees of Health Care Services Law [9]. Moreover, the NHSU adopted an approach used in the Poltava project, now apparently supported by both USAID and WB [16], to use a payment model based on 50 DRG classes.

This duplication of effort persisted until the latter part of 2019 when the NHSU discontinued development of its own DRG variant and begun to work within the framework of the AR-DRG variant. Following this change in approach it begun to make use of the results of the training and development activities undertaken under the AR-DRG pilot project [17]. Ultimately, in December 2019, the Government acted to formally adopt AR-DRG classifications of diagnosis and interventions as a national standard for DRG implementation in Ukraine [18] and NHSU abandoned its efforts to comply with the 1st January 2020 implementation timeline.

3.2. Implementing the DRG system

While the MOH's 100 hospital AR-DRG pilot was progressing to its conclusion in 2020, the NHSU continued its efforts to roll-out of its own DRG system nationally, although its approach was to begin contracting hospitals on the basis of global budgets related to inpatient case throughput, rather than activity as measured by DRGs. NHSU's initial DRG implementation effort involved a DRG classification which comprised 131 DRG classes [19]. However, this plan was discarded due to resistance from hospitals which argued that using such a limited number of DRG classes would not reasonably reflect the clinical complexity of their caseload for payment purposes [44]. This reaction by hospitals, together with the onset of COVID-19 resulted in NHSU's postponing its introduction of DRGs in its hospital payment system

Table 1
Information sources in the public domain.

Organisation and Document name	Document website	Date of last access
World Bank		
Population – Ukraine	https://data.worldbank.org/indicator/SP.POP.TOTL?locations=UA	28 Oct 2021
Tracking the Health Resources in Ukraine	https://elibrary.worldbank.org/doi/abs/10.1596/30182	28 Oct 2021
Loan appraisal document serving people, Improving Health Project, Ukraine	https://documents1.worldbank.org/curated/pt/973321468306920750/text/PAD9390PAD0P14010Box385413B00OUO090.txt	4 Nov 2021
International Consultant coordination of system DRG	https://wb.moz.gov.ua/en/procurement.html?action=view&id=73	4 Nov 2021
Restructuring paper on a proposed Project Restructuring of Serving People, Improving Health	https://documents1.worldbank.org/curated/en/421391553624523589/pdf/Disclosable-Restructuring-Paper-Serving-People-Improving-Health-Project-P144893.pdf	4 Nov 2021
Governance in health care delivery: raising performance	https://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-5074	5 Nov 2021
World Bank Ukraine Facebook: Ukraine AR-DRG Project	https://www.facebook.com/WorldBankUkraine/posts/2529606140679381	31 Oct 2021
WHO		
European Observatory on Health Systems and Policies, Health Systems in Transition - Ukraine: Health System Review	https://www.researchgate.net/publication/301790259_Ukraine_health_system_review	28 Oct 2021
Global Health Expenditure Database	https://apps.who.int/nha/database/	10 Aug 2021
Can people afford to pay for health care? New evidence on financial protection in Europe	https://apps.who.int/iris/handle/10665/311654	10 Sep 2021
Co-payment policy: considerations for Ukraine	https://apps.who.int/iris/handle/10665/341727	28 Oct 2021
European Observatory on Health Systems and Policies, Strengthening Health System Governance	https://www.euro.who.int/_data/assets/pdf_file/0004/307939/Strengthening-health-system-governance-better-policies-stronger-performance.pdf	10 Aug 2021
European Observatory on Health Systems and Policies, Diagnosis-Related Groups in Europe - moving towards transparency, efficiency and quality in hospitals	https://www.euro.who.int/_data/assets/pdf_file/0004/162265/e96538.pdf	5 Nov 2021
Diagnosis-Related Groups: a question and answer guide on case-based classification and payment systems.	https://www.who.int/publications/i/item/WHO-UHC-HGF-Guidance-20.10	31 Oct 2021
DRG-based payment systems in low and middle income countries	https://apps.who.int/iris/bitstream/handle/10665/75150/HSS_HSF_DP.E.10.2_eng.pdf?sequence=3&isAllowed=y	31 Oct 2021
Health Financing Reform in Ukraine-Progress and Future Directions	https://www.who.int/europe/publications/i/item/WHO-EURO-2022-5657-45422-65003	18 Nov 2022
Government of Ukraine and agencies		
Financial Guarantees of Health Care Services Law No. 2168-VIII	https://zakon.rada.gov.ua/laws/o/2168-19	10 Aug 2021
National Health Reform Strategy for Ukraine 2015–2020	https://en.moz.gov.ua/uploads/0/16-strategy_eng.pdf	4 Nov 2021
Poltava - Financing and Management of Health Care	https://polinfo.gov.ua/915-u-poltavi-pidbyly-pidsumky-realizatsii-v-oblasti-proektu-finansuvannia-ta-upravlinnia-okhoronoiu-zdorovia	28 Oct 2021
Cabinet of Ministers Decree of 27 February 2019 No. 131	https://zakon.rada.gov.ua/laws/show/131-2019-%D0%BF#Text	10 Aug 2021
Ministry of Health Notification - National classifications of diseases and interventions have been approved	https://moz.gov.ua/article/for-medical-staff/zatverdzheno-nacionalni-klasifikatori-hvorob-ta-intervencij?fbclid=IwAR3sxTIgNl8tgqgzHztxKLMwdBrb0Oce0F6obz0pc3q6aQSs97bqoTg-knk	5 Nov 2021].
Cabinet of Ministers of Ukraine Decree, February 5, 2020, № 65 (annex 2)	https://zakon.rada.gov.ua/laws/show/65-2020-%D0%BF/ed20200205#Text	15 Aug 2021
Cabinet of Ministers of Ukraine Decree, February 15, 2021, № 133	https://zakon.rada.gov.ua/laws/show/133-2021-%D0%BF/ed20210215#Text	5 Nov 2021
Kiev Health Department, Errors in records of payments - the results of monitoring by the NHSU	https://www.vz.kiev.ua/pomylky-v-zapysah-chy-nakruchuvannya-vyplat-rezultaty-monitoryngu-nszu/	31 Oct 2021
National Health Service of Ukraine, Strengthening of monitoring	https://nszu.gov.ua/novini/posilennya-monitoringu-z-boku-nszu-651	10 Oct 2021
Ministry of Health of Ukraine. Order 14.10.2013 № 880	https://zakon.rada.gov.ua/rada/show/v0880282-13#Text	22 Oct 2021
Ministry of Health of Ukraine. Order 29.08.2014 № 605 On approval of the Action Plan for the implementation of the system of diagnostic-related groups in Ukraine	https://zakon.rada.gov.ua/rada/show/v0605282-14#n7	22 Oct 2021
Ministry of Health of Ukraine. Order 12/17/2015 № 865 About introduction of system of diagnostic-related groups Ukraine	https://zakon.rada.gov.ua/rada/show/v0865282-15#Text	22 Oct 2021
Cabinet of Ministers of Ukraine Decree dated December 27, 2017, № 1075	https://www.kmu.gov.ua/ua/npas/pro-zatverdzhennya-metodiki-rozrahunku-vartosti-poslugi-z-medichnogo-obslugovuvannya	22 Oct 2021
Ministry of Health of Ukraine. Order 12/07/2018 N 2281 On amendments to the List of pilot health care facilities for the implementation of diagnostic-related groups	http://moz.gov.ua/article/ministry-mandates/nakaz-moz-ukraini-vid-07122018–2281-pro-vnesennja-zmin-do-pereliku-pilotnih-zakladiv-ohoroni-zdorov'ja-dlja-vprovadzhennja-sistemi-diagnostichno-sporidnenih-grup	22 Oct 2021
USAID		
USAID Health Reform Support- Ukraine, 2021, Q2 Quarterly Performance Report	https://pdf.usaid.gov/pdf_docs/PA00XDTV.pdf	28 Oct 2021
USAID advertisement for trainers with AR-DRG experience	https://www.prostir.ua/?jobs=eksperty-z-dsh-stta-drg-training-experts	5 Nov

(*continued on next page*)

Table 1 (*continued*)

Organisation and Document name	Document website	Date of last access
P4H Social Health Protection Network		2021
Implementing health financing policies to overhaul the healthcare delivery system in Ukraine	https://p4h.world/en/news/ukraine-planning-launch-health-insurance-system-2023	2 Jun 2021

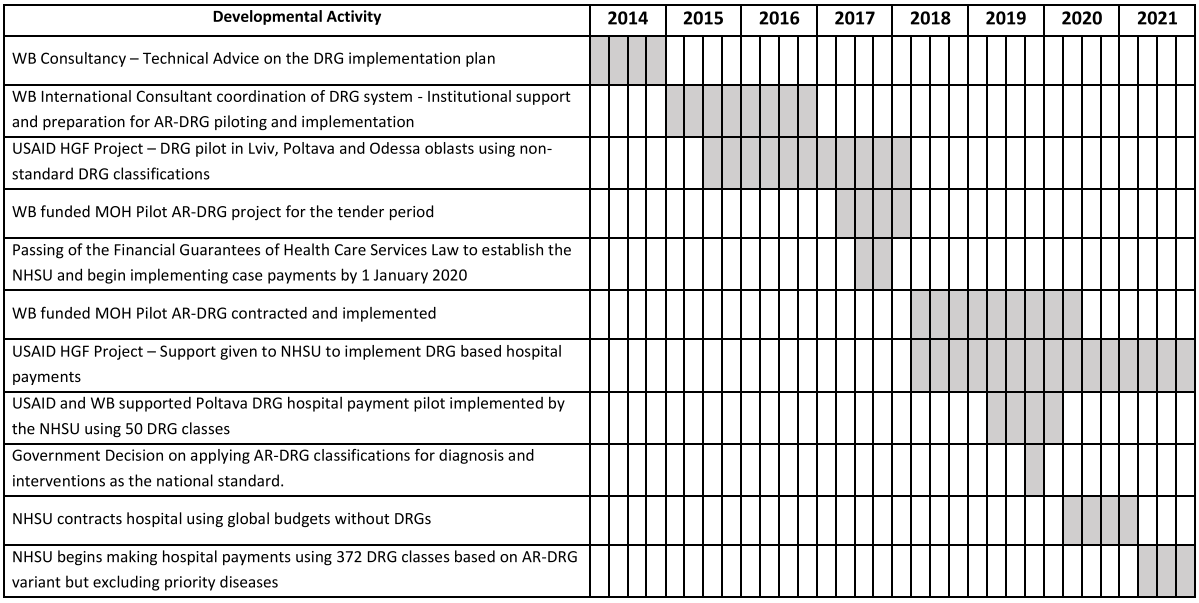

Fig. 1. DRG system development activities in Ukraine in the period 2014–2021.

until 1st April 2021, at which time it introduced a DRG variant that comprised 372 DRG classes.

NHSU's latest DRG classifications were based on the AR-DRG framework and its preliminary Adjacent DRG group allocation, before splitting for case complexity. Importantly, its DRG payment model excluded MOH's designated priority disease categories (myocardial infarction, acute stroke, childbirth, complex neonatal cases, treatment of haematological diseases, COVID-19 treatment, and psychiatric care) which were to be funded through separate allocations outside the DRG payment system. DRG based payments were to be transitioned from 5% of the applicable inpatient budget to 15% by the end of 2021 [20].

Fig. 1 illustrates, the various DRG implantation activities undertaken by the MOH, NHSU, WB and USAID over the eight-year period from 2014 to 2021. The duplication of effort is evident for a number of activities.

4. Discussion

4.1. The matter of governance

Governance has been defined as the process of decision-making and policy implementation. Shortcomings in governance arise when policy implementation fails due to factors such as inadequate management capacity, conflict of interests, bureaucratic rigidity, and poorly conceived interventions [21].

Shortcomings in the governance of healthcare systems can result in poor policy outcomes such as ineffectiveness and inefficiency of service provision [22]. In the context of hospital payment reform, effective implementation of DRG systems requires management and governance structures that support a planned and strategic deployment of the new payment method [23]. This, however, has not been the experience in Ukraine, where the course of DRG focused reforms has been tested by a lack of coordination and a tendency by stakeholders to act autonomously [6].

For instance, while general advances in health system reform were being made, the discordant interventions of the MOH and NHSU hindered progress of DRG implementation. For example, the MOH entered into a WB funded contract to pilot AR-DRGs in 2018 with a completion date of June 2020, in the face of the Financial Guarantees of Health Care Services Law which called for implementation of DRGs to begin six months earlier, in January 2020. During this period, the MOH sanctioned concurrent DRG development activities which used different classifications and followed different timelines. Importantly the NHSU which, as the delegated purchaser of health care, became the key beneficiary of DRG reforms that were being administered by the MOH. By 2018, the NHSU gained institutional momentum and with funding and technical assistance from USAID [17], as well as the WB [16], assumed responsibility for DRG implementation including projects administered by the MOH.

The problems with the governance of DRG implementation in Ukraine were in full view of donors. Notably, while both the WB and USAID, were collaborating on health reform projects aimed at improving health system governance in Ukraine [22,10], neither agency intervened to prevent the duplication of effort by the MOH and NHSU.

In summary, shortcomings in the governance of DRG implementation at the national level resulted in a flawed implementation of the DRG system in Ukraine, while the incongruous behaviour of USAID and the WB contributed to an ambivalence that frustrated coherent policy decision making.

4.2. DRG building blocks

According to the WB, 1st April 2021 marked the first anniversary of Ukraine's hospital DRG payment reform intended to create incentives to improve hospital efficiency, contain costs, and increase the transparency of funding [6,23,24,25,26]. While the WB elected to observe this occasion, the Ukrainian hospital payment system remained largely unchanged, and hospitals continued to be paid through global budgets [6]. In casting a positive outlook on the outcome of the DRG reforms however, the Bank concluded that "the main building blocks needed for using the DRG system for reimbursement are in place but need further refinement" [26]. Below is a discussion of the DRG implementation process in Ukraine in the context of the four DRG building blocks [27] which are described in Fig. 2.

4.3. Patient classification system (PCS)

The purpose of the PCS is to accurately measure the level of inpatient activity through DRGs. It is the first and fundamental building block in implementing the DRG system as it allocates cases into groups that are clinically meaningful, and which have similar resource consumption and therefore price. In most cases, countries embarking on the implementation of DRGs adopt one of the internationally proven DRG variants which comprise between 500 and 800 DRG classes [31]. Although, it is uncommon for countries to attempt to design their own DRG classifications and DRG grouper software when starting out [28,29,30], the NHSU followed this path and settled on a solution that uses only 372 AR-DRG classes [20] and which excludes the variable of case complexity. The challenge faced by the NHSU is how to meaningfully calculate hospital payments if their PCS does not accurately reflect case complexity (and the associated intensity of resource use), a functionality that is available in the piloted AR-DRG classification which comprises 803 groups [6]. This shortcoming will prevent the fashioning of effective payment system incentives for hospital efficiency gains, which is the central objective of Ukraine's DRG implementation program.

4.4. Data collection and analysis

Whether the DRG system can achieve its goals depends to a great extent on the validity of hospital activity data that it produces. In addition to the rigour of the PCS, the validity of the DRG system depends on the accuracy of case data reporting, including the timely and complete coding of both diagnosis and interventions for every inpatient case. If the NHSU intends to change its current approach and make use of the complete AR-DRG classifications in the future (with 803 groups), it will need to embark on a comprehensive national DRG coder training program for all hospitals and relevant agencies. The training program should also develop purchasing agency audit capacity to monitor and control coding compliance and thereby safeguard the integrity of the system [32,33].

4.5. DRG price setting

A further prerequisite of an effective activity-based payment system using DRGs is that hospitals are paid fairly for work that they do, which means that DRG case prices should reflect average costs of production by hospitals. This precondition cannot be met however, using a PCS of 372 DRG classes proposed by the NHSU, as the measure of case resource use at this preliminary level of grouping can vary by as much as 300% [34]. Similarly, this shortcoming will compromise the calculation hospitals' average cost per DRG weighted case, which is one of the measures of their cost efficiency – and it follows that if efficiency cannot be measured, it cannot be shown to have improved. In terms of DRG price setting, NHSU's application of incomplete AR-DRG system precludes it making effective use of the available AR-DRG price-weights, which in most cases are used by jurisdictions as the first reference in DRG pricing.

4.6. Payment system

The last element of the DRG implementation process calls for assembling of the previous three DRG building blocks into a coherent and transparent hospital payment model. In principle, the payment system should confine hospitals to 'hard budgets' where hospitals are censured if they breach budget limits. Without this constraint, hospitals have little motive to improve their efficiency. In practice, the introduction of the DRG activity-based payment system and hard budgets is usually phased-in over time to give hospitals the opportunity to adapt to the new payment method and prevent financial stress if applied without time for adjustment. In the case of Ukraine, the development of an inclusive and meaningful DRG payment model faces three key challenges. The first is that the current hospital payment system relies on multiple funding sources. Given that NHSU's DRG payments only cover a proportion of hospitals' real cost, their potential impact on changing hospital behaviour is diluted. Secondly, payments based on hospital activity calculations using a limited PCS are unlikely to result in a fair distribution of available funds across the hospital system. Thirdly, the DRG system implemented by the NHSU does not fund all acute inpatient care as its payment formula excludes designated disease categories [35]. These categories are funded through separate allocations that amount to 17% of NHSU's total acute inpatient care budget. It is unclear why NHSU's budget was split into separate categories as case types included in the designated programs also appear in DRG classifications, and their exclusion unnecessarily complicates the effective implementation of the DRG system in its totality.

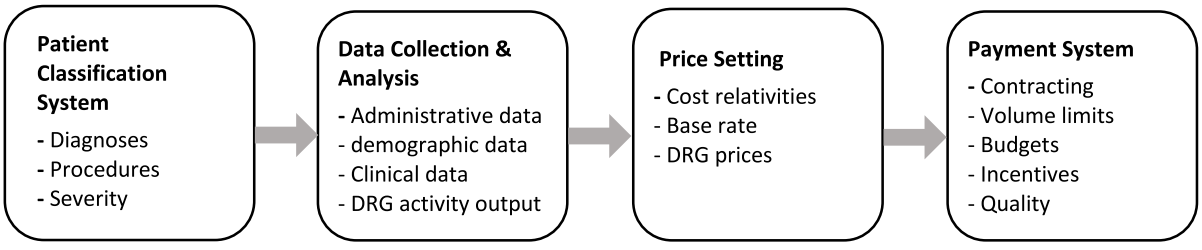

Fig. 2. DRG payment system implementation building blocks. Source: Adopted from Scheller-Kreinsen D, Geissler A, Busse R. The ABC of DRGs. The Health Policy Bulletin of the European Observatory on Health Systems and Policies. 2009.

5. Conclusions and recommendations

The reform of national hospital payment systems such as the introduction of DRGs, calls for a considered involvement of stakeholder institutions and other actors such as development agencies which provide policy guidance as well as technical assistance. In addition to changes in approaches to financial accountabilities by both care purchasers and hospitals, such reforms will incorporate new methods of measuring hospital activity and data collection, and their success will rely on the building of technical capacity within a sound institutional framework.

In the case of Ukraine, it can be argued that given that hospital payment reforms were initiated in 2005, and that significant resources were applied during the intervening period, the country should be in a more advanced phase of implementing the DRG based payment system. The lessons learnt from the Ukraine experience are discussed below.

Build a solid foundation for DRG reform and define stakeholder responsibilities. While not necessarily technically complex, DRG implementation can be institutionally demanding. It calls for capacity building for both purchaser organisations and hospitals and can be politically sensitive as it implies funding transparency which may trigger dissent. Importantly, stakeholder responsibilities must be clearly defined. For example, the DRG system should have an owner agency that has the required technical capacity, and which is responsible for the ongoing development of both the DRG classifications and the payment system. In this instance, it is unclear whether the MOH or the NHSU is the 'owner' of the DRG system, and the problems caused by the discrepancy of their actions may have been mitigated, had the institutions shown greater cohesion in their approach, as they were both striving for similar outcomes.

Clarity and consistency of laws and regulations. The Ukrainian system calls for Government Decisions on matters which in other jurisdictions may be regulated at lower administrative levels. For instance, Government orders on DRG implementation were issued on matters such as DRG planning [36,37,38], case costing methodology [39], and the selection of pilot hospitals [40]. Importantly, actions under the Financial Guarantees of Health Care Services Law such as the setting up the hospital payment reform timeline [9] was not harmonized with the MOH's other DRG piloting activities. When taken together, it is likely that the various laws, decisions, and orders on matters of detail, created a regulatory environment that obstructed clarity of vision to the detriment of the coherence of the hospital payment reform agenda.

Coordination of donor activities. It is self-evident that donor agencies working on reforms should coordinate their activities to avoid confusion and duplication of effort. In this instance, it appears that both the WB and USAID had similar objectives, and indeed the WB mentioned USAID as its development partner [10]. As it happened however, their apparent enthusiasm to become involved in DRGs contributed to the fragmentation of the implementation process, where the agencies supported different DRG implementation strategies. There is also an argument that the WB could have taken a firmer stance in influencing the MOH to take greater control over the DRG implementation process and could have acted to exclude itself from supporting the DRG activities initiated by the NHSU. While the reasons for this inaction are not known, a possible explanation may be its reported institutional priority of meeting its country lending targets [41] and maintaining its position as a key player in the hospital funding reform agenda.

Learning from international experience. There is evidence that the sharing of international experience in DRG implementation can greatly assist countries in developing models that suit their local conditions [23] - but it is also important that the right lessons are learned. For example, countries such as Kazakhstan which chose to develop its own DRG classifications faced challenges in its implementation [28], others such as Germany had success in evolving the AR-DRG system into its own variant [25], while yet others, such as Croatia are experiencing problems with their DRG payment systems [42]. Ukraine should take advantage of such lessons gained from implementing DRGs in a variety of settings [21,43] and apply them to its own particular circumstances and needs.

In conclusion, it is evident that the Government of Ukraine has demonstrated a clear commitment to hospital payment reform and that progress has been made in the implementation of DRGs. However, despite the laudable objectives of the actors involved, the DRG system being rolled out by the NHSU is not fit-for-purpose as it does not provide for a reliable measurement of hospital inpatient activity.

The learning gained during Ukraine's extended DRG pre-implementation development phase, should have resulted in a more systematic execution phase. For this to be corrected, program objectives should be revisited, and steps taken to ensure that stakeholders have a common vision and an agreed to pathway – an approach that calls for the clarity of their organisational roles and responsibilities.

Confidence in the DRG system should be built through: effective engagement with hospital administrators and the medical profession; evidence-based decision making; and avoidance of ad-hoc changes in classifications and payment rules. Development agency resources should be applied to technical capacity building including an ongoing program of DRG coder training and the development of audit skills. If the NHSU is to be the 'owner' of the DRG system as it currently appears, it must develop technical skills including a good understanding of the principles and logic of the AR-DRG system that will enable it to effectively apply and maintain the classifications over time, in response to changes in local conditions and progress in medical technology.

Importantly, the DRG program should be implemented within a governance framework in which actors recognise and fulfil their responsibilities in a process which is characterised by systematic and coordinated actions, inter-agency collaboration, and a strategic approach where key activities are in congruence and act to reinforce one another [30].

6. Study limitations

The case study documents the history of DRG implementation in Ukraine over an eight-year period and is based on publicly available information. While it reports the facts and explores possible explanations for the problems encountered, it does not attempt to make conclusions about the circumstances that led to decision making by both the beneficiary organisations and development agencies. Further research using in-depth interviews may provide more insights into the described events.

Furthermore, a more detailed account of the technical shortcomings of Ukraine's DRG implementation would benefit from access to hospital activity data from the NHSU's DRG roll-out that used 372 DRG classes, and being able to compare them to hospital activity results had the complete AR-DRG classification been used.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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None.

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