

ONLINE SUPPLEMENT

Addendum to methods section

Detailed survey adaptation process and design

The questionnaire for the survey was adapted from another study that also investigated user experience of an electronic system in resource-constrained settings.¹ We made significant adjustments to five questions relevant to the national TB registry and retained other questions with modifications in sentence structure as appropriate for our purpose. Over several years and in collaboration with the UCDC and local technical partners,² we conducted in-depth training and orientation programs to ensure that users and decision makers at varying levels of the health system have both knowledge and skills on the features of the registry, including case management, medicines supply management, report generation, and administration. Therefore, we introduced a new question, “*I have the required capacity to use all features of the national TB registry linked to my responsibilities.*” We changed the Likert scale from the original survey to range from strongly disagree to strongly agree but retained the 0 to 7 scale. A higher score indicates a higher level of agreement or better user experience for a certain question. For the two reverse-worded questions, lower scores indicate the level of disagreement with the question. For example, a lower score for disagreement with: “*Generating reports from the paper system is faster than the national TB registry*” would suggest that the user agrees that it is faster to generate reports from the registry than with the paper systems. Because we utilized Survey Gizmo, an online portal to administer the survey, we added logic for the questions on perceived satisfaction with and reliability of e-TB Manager and on the adequacy of e-TB Manager training received. If a respondent chose 0, 1, or 2 on the left end of the scale for the range of disagreement, Survey Gizmo would show an additional question only to this subset of respondents. In the additional question, we asked the respondent to explain why a low rating was chosen and offered a list of choices based on our programmatic experience (see table S2). With six demographic and user characteristic questions and 12 core questions, the total length of the survey was a minimum of 18 questions and could increase to 21 questions if the user chose a rating of 0, 1, or 2 for the three logic-based questions that were optional. At the end of the survey, there was an optional open text-box that invited users to offer any comments or feedback. The survey was designed to be completed in the range of 5 to 10 minutes.

Efforts to ensure anonymity of responses

Responses to all core questions, including age category and gender, were required except for the question on location of user (i.e., national/oblast/rayon) to further ensure anonymity. We did not expect the respondent to name a specific oblast or rayon but rather to select “national”, “oblast” or “rayon” from a drop-down menu. However, to prevent the impression that the respondent could be identified through a combination of age category, number of years of experience using the registry, number of years of experience working in a TB program, gender, location, and type of registry module being used, the question on location was optional. For the same reason, we did not ask the user to specify health profession (e.g., general physician, TB doctor/specialist, nurse, pharmacist, laboratory technician, health worker). If a question was marked required on Survey Gizmo and the respondent skipped that question and attempted to submit, an error message would be displayed stating that response has not been submitted because questions marked with a red asterisk (*) must be answered.

¹ Were MC, Emenyonu N, Achieng M, et al. Evaluating a scalable model for implementing electronic health records in resource-limited settings. *J Am Med Inform Assoc.* 2010 17(3):237-44. doi: 10.1136/jamia.2009.002303

² USAID. Ukraine Tuberculosis Control Partnership Project: Final Report. TASC2 TB IQC, Delivery Order 3. 2012. Contract Number GHS-I-00-03-00034-00. Implemented by Program for Appropriate Technology in Health.

Survey translation and administration process

The survey was translated into Ukrainian and verified by two subject matter experts for accuracy of translation and relevance of wording. The Ukrainian language survey was submitted to the UCDC official overseeing the national TB registry, who granted approval after verifying the anonymous nature of the survey. The translated survey was then loaded onto the Survey Gizmo and pretested several times to ensure smooth functioning. The survey was conducted in September and October 2015 and administered to 565 active users. The UCDC disseminated the survey to active users on 17th September 2015 utilizing direct e-mail invitation method and provided the non-trackable hyperlink to the survey. No respondent identifiers, such as the name of the health facility or user e-mail addresses, were tracked. The UCDC also contacted all 24 oblast-level administrators because they had updated e-mail addresses for users in their oblast and requested them to disseminate the anonymous survey.

Study limitations

There are some limitations to our study. Due to the anonymous nature of the survey, we were unable to compare differences among non-respondents with those who responded to the survey to address non-response bias. We also did not compare early responders with late responders to assess whether there was any influence in the results. Only one reminder was sent on 12th October during the survey period. A second reminder to complete the survey could not be sent because it was a busy quarterly reporting period for all registry users and the central office did not want to burden officials and users with more requests. The central office also relied on many oblasts to further disseminate the survey invitation as oblast officials maintain updated email addresses of all users. The decision to send a reminder was up to the oblast officials. Despite efforts to make clear each question and in appropriate local language, it is likely that some users may have misunderstood the question. The two reverse worded questions (Q9, Q 10) and one negatively worded question (Q3) may have caught users off guard and affected their response. We did not address any confounding variables in our study. Despite these limitations, we strove to analyse and report findings on our user experience survey based on the STROBE statement and recommended best practices.³

Ukraine’s administrative structure

Details on Ukraine’s administrative structure are available in the OECD Territorial reviews (see pages 36 and 75).⁴

Level	Unit	
First	Cities of republican subordination	Oblast
Second		Rayons
Third		Settlements

OECD Territorial reviews (Ukraine) cited source: World Bank (2012b), “Eurasian Cities: New Realities along the Silk Road”, Eastern Europe and Central Asia Report, Washington D.C.

In Ukraine, there are 24 oblasts (regions) and Kiev as a city by state subordination. Registry users are assigned to the oblast level if they are part of the oblast reporting to the central government. If the registry user does not belong to the whole oblast but to the rayon (a district or city that is part of the oblast), he or she is assigned to the rayon level. Each oblast is divided into rayon and city by oblast subordination, which is usually its main city and the

³ Bennett C, Khangura S, Brehaut JC, Graham ID, Moher D, Potter BK, Grimshaw JM. Reporting guidelines for survey research: an analysis of published guidance and reporting practices. PLoS Med. 2010;8(8):e1001069. doi: 10.1371/journal.pmed.1001069

⁴ OECD (2014), OECD Territorial Reviews: Ukraine 2013, OECD Publishing. <http://dx.doi.org/10.1787/9789264204836-en>

biggest cities of region. For example, Dnipropetrovsk, a large city, and Dnipropetrovsk rayon have the same level of oblast subordination.

Table S1: Comparison of responses by location of user

	Total (n=294)	Oblast (region) (n=79)	Town/Rayon (district) (n=215)	p-value
Q1: Satisfaction	5.55 (1.42)	5.66 (1.31)	5.51 (1.45)	p=0.42
Q2: Have capacity	5.68 (1.35)	5.77 (1.24)	5.65 (1.39)	p=0.48
Q3: Do not need more training	3.91 (2.41)	3.72 (2.51)	3.98 (2.37)	p=0.41
Q4: Support and infrastructure	4.89 (1.90)	4.73 (2.01)	4.95 (1.86)	p=0.38
Q5: Enter or find information	5.14 (1.90)	4.80 (1.90)	5.27 (1.88)	p=0.05
Q6: Case management	6.14 (1.31)	6.20 (1.33)	6.12 (1.30)	p=0.63
Q7: Training is adequate	4.87 (2.01)	4.96 (2.06)	4.84 (1.99)	p=0.65
Q8: Information is available	6.05 (1.26)	5.80 (1.38)	6.15 (1.20)	p=0.03*
Q9: Paper system is faster [#]	2.62 (2.53)	1.94 (2.33)*	2.87 (2.55)	p=0.005**
Q10: Errors or inaccuracies [#]	3.00 (2.51)	2.51 (2.54)	3.18 (2.48)	p=0.04*
Q11: Workplace productivity	5.72 (1.62)	5.82 (1.57)	5.68 (1.63)	p=0.50
Q12: Reliable	5.82 (1.42)	5.77 (1.54)	5.83 (1.38)	p=0.74

[#]negatively worded questions

* p<0.05 **p<0.01

Table S2: Reasons for disagreeing with statement on perceived satisfaction, training received was adequate and perceived reliability.

Note: If the respondent chose 0, 1, or 2 in the 0 to 7 scale, then only for that subset of respondents, the following options are presented and they are asked to choose as many reasons as applicable.

Reasons for not being satisfied with the registry	
Reasons	Frequency
Not important to my work	2
Not enough technical support	0
Not adequately trained to use	1
It creates additional work	3
Takes too long to use	3
Difficult to use	1
Inadequate infrastructure (computer, electricity, internet access, etc.)	3
Other - Specify (Required)	1
Total unique user responses	5

Reasons for disagreeing that training received was adequate	
Reasons	Frequency
Training was not provided in my preferred language	1
Training did not cover the registry modules I use	8
I did not understand the training	1
Training was conducted a long time ago	16
Training was too short	26
Other – Specify (Required)	10
Total unique user responses	
	44

Reasons for disagreeing that registry is reliable	
Reasons	Count
The registry platform crashes	4
Data I enter into the registry is lost	3
System alerts are not useful	1
The registry reports do not produce correct data	2
The registry modules take a long time to load	2
Others - Specify (Required)	1
Total unique user responses	
	5

Table S3: Selected comments drawn from the user experience survey coded by most frequent themes

Note to reader –The purpose of table S3 is to provide additional information on the themes presented in Figure 1 of the manuscript. The anonymous comments should be interpreted with caution as some or many of them may have been addressed by UCDC in the months after conduct of the survey. For example, the server issues were fixed and registry speed has relatively improved. The number of active user base doubled over a nine month period after conduct of the survey.

Theme	Comments
System Issues	<p><i>“It is difficult to get in Case Module almost every day from 10 AM to 4 PM except for weekends. Many users work with registry within their personal time or enter information from home. The Registry freezes a lot and that is why it takes a lot of time to reenter information. We face the same problems with Medicines Module.”</i></p> <p><i>“Do not shut down the Registry right before cohort reports”</i></p> <p><i>“I suggest improving the speed of the Registry (it takes too long for each page to load).”</i></p>
Reporting issues	<p><i>“It is impossible to receive GeneXpert report from the Registry for Annex 1 as of 13/10/2014 N1776, which is time consuming and causes going back to paper based forms. Also, it is necessary to add function to selection – GeneXpert testing.”</i></p> <p><i>“It is necessary to improve TB 11 report with regard to DST in patients that were treated for the second time”</i></p>

Theme	Comments
	<p><i>"Paper based reports still require a lot work and their number is growing even though there is electronic system. Something needs to be done."</i></p>
Modifications needed	<p><i>"To improve morbidity analysis in Reports Module. Create filter"</i></p> <p><i>"While entering data into registry there should be an option to move from field to field using Enter key instead of moving cursor with a mouse, it will save time and allow for effective use of resources."</i></p> <p><i>"In ADR Report it is necessary to provide list of names of patients with ADRs."</i></p>
Retraining needed	<p><i>"Trainings for registry users were rather limited, and those that were conducted did not provide complete information regarding practical application, in particular, about special aspects of entering specific data on registry cases."</i></p> <p><i>"For National Registry users to provide regular (once a year) trainings to improve work in the Registry and exchange experience."</i></p> <p><i>"As there are users who even don't know how to work with the computer but at the same time express their desire to work with the registry, perhaps it would be helpful to develop a series of tasks or exercises. Also, it would be great to create testing database for teaching the users."</i></p> <p><i>"Trainings for all registry users for unified and correct entry of data about patients and rapid generation of reports."</i></p>
Data entry issues	<p><i>"Improve data entry into TB-03-04 forms in line with data entry into the Registry."</i></p> <p><i>"It was possible to copy case data and laboratory tests into the next case. I am thankful for possibility 'to copy test results'. Is it possible to copy CASE DATE from TB patient Medical Record TB 01 to MDR TB patient Medical Record (4th category)?"</i></p>
Computer access needed	<p><i>"Registry would be a good thing if every physician providing care to patients had a computer on his/her desk. But when one physician is charged to enter information into registry for six other physicians because of lack of computer skills due to retiring age or some other circumstances, registry becomes unmanageable and takes time from patients"</i></p> <p><i>"To my opinion, [while] introducing registry, it is important to provide computers and internet access to every rayon"!</i></p> <p><i>"Upgrading of computer equipment [required]"</i></p> <p><i>"To provide computers to hospitals so patient data can be entered from the first day of their treatment at the hospital."</i></p>
Data quality	<p><i>"Registry is useful if there are ideal patients. But patients do not adhere to the terms of examination and treatment which leads to discrepancies between paper based forms and registry data."</i></p> <p><i>"It is impossible to see errors in the Registry by each patient; [must] review rayon reporting information."</i></p> <p><i>"It is impossible to trust the data from registry for 100% due to the lack of data quality and timely submission of data by the users."</i></p>

Theme	Comments
<p>Physician resistance</p>	<p><i>"Medicines Module has been implemented... Ladies and Gentlemen, you should understand yourselves that those responsible for this Module should be a pharmacist or an accountant rather than a TB specialist! These are fun times now for TB specialists [doctors] – they are fighting against paper based forms, registry, reports, replies to inquiry letters and with TB!"</i></p> <p><i>"Most of the users think of registry as of burden. At oblast level they are constantly looking for someone to do this job for them and enter information into the Registry. And filling out paper based forms is not done the best way either. TB specialists are always looking for excuses to enter data.</i></p> <ul style="list-style-type: none"> • <i>[For example they say], we don't have Internet access.</i> • <i>[If they] have internet access, [they say] we don't have computers</i> • <i>[If] computers were provided, [they say] we have too much work, etc.</i> <p><i>"There is no distinct order from MOH which clearly states that a doctor has to work with the registry, that's why the treatment process is separated from a person who works with the registry. Doctors DON'T WANT to work in the registry."</i></p>
<p>Patient aspects</p>	<p><i>"Registry is useful if there are ideal patients. But patients do not adhere to the terms of examination and treatment which leads to discrepancies between paper based forms and registry data."</i></p> <p><i>"If a patient doesn't follow the rules (the terms of examinations do not always correspond to the protocol) the paper-based report do not always correspond to the reports from the registry."</i></p> <p><i>"To provide in the registry, a window (a page) for communication with colleagues from different regions, which will make the patient information transfer from one region to another easier."</i></p>
<p>Expand registry access</p>	<p><i>"The Registry is available for limited number of people. It is necessary to provide access to all TB specialists, then registry will fulfill its purpose."</i></p> <p><i>"[I hope for the] possibility of case management at rayon level."</i></p>
<p>Benefits</p>	<p><i>"Registry enable users to see data on patients registered on other territories to provide assistance to patients that arrived from other locations without documents."</i></p> <p><i>"The National Registry is a reliable assistance to medical specialists since we are able to receive data about patients that were referred to the tertiary level."</i></p>

Table S4: Usability statistics among active users of national TB registry ranked by cumulative transactions per oblast

Oblasts of Ukraine ^a	Number of active users per oblast (n=1,319) ^b	Number of active users exclusively in rayons and towns (n=1,015) ^c	Number of active TB Units per oblast (n=647) ^d	Cumulative transactions (n= 5.90 million) ^e	Average transaction per active user ^f	Average transaction per active TB unit ^g	Number of rayons per oblast (n=476) ^h	Number of rayons with active users (n=435) ⁱ	TB burden (36,228) ^j	Rate per 100,000 population
Dnipropetrovsk	80	61	42	689,154	8,614	16,408	22	22	3,996	122.1
Donetsk	68	48	23	623,537	9,170	27,110	18	18	1,742	88.6
Odessa	57	41	44	436,981	7,666	9,931	26	26	3,262	136.7
Mykolaiv	44	44	25	337,088	7,661	13,484	19	19	1,540	132.3
Kharkiv	63	56	35	320,756	5,091	9,164	27	25	1,798	66.2
Kyiv oblast	87	59	32	311,598	3,582	9,737	25	24	1,979	114.8
Kherson	50	35	29	266,192	5,324	9,179	18	18	1,323	124.1
Lviv	91	81	34	262,299	2,882	7,715	20	15	1,859	73.8
Zaporizhia	51	47	26	249,695	4,896	9,604	20	14	1,922	108.9
Ivano-Frankivsk	45	45	17	240,584	5,346	14,152	14	14	921	66.7
Kiev City	57	6	10	190,372	3,340	19,037	--	--	1,814	63.7
Zakarpattia	34	34	18	176,221	5,183	9,790	13	12	1,479	117.7
Vinnitsia	95	57	37	170,192	1,791	4,600	27	27	1,099	68.5
Zhytomyr	40	35	30	162,740	4,069	5,425	23	22	1,360	108.2
Poltava	28	28	15	159,258	5,688	10,617	25	15	1,367	94.9
Luhansk	59	59	34	157,894	2,676	4,644	18	17	604	84
Chernihiv	42	25	25	156,205	3,719	6,248	22	22	1,072	102.4
Khmelnitskyi	33	32	20	155,796	4,721	7,790	20	14	825	63.6
Kirovohrad	51	30	27	154,598	3,031	5,726	21	21	1,115	114.5
Cherkasy	45	29	27	146,491	3,255	5,426	20	20	1,036	83
Volyn	48	48	24	138,813	2,892	5,784	16	16	913	87.8
Sumy	54	34	24	132,437	2,453	5,518	18	18	883	78.8
Rivne	37	22	22	117,077	3,164	5,322	16	15	969	83.5
Ternopil	38	37	16	92,446	2,433	5,778	17	12	590	55.3
Chernivtsi	22	22	11	56,355	2,562	5,123	11	9	760	83.8

This table presents data only on active number of users with at least 1 transaction as of June-2016 in the previous 12 months. A 'transaction' is any activity made by the user in the system that resulted in changes in the database, such as inserting new data or updating/deleting existing data. If a user generates reports from the registry but does not perform any change in the database, it does not count as a transaction. ^a There are 24 oblasts (regions) of Ukraine with Kiev city designated as a special administrative unit, which is separate from Kiev oblast. ^b This column lists number of active users for each oblast regardless of user location. ^c This column lists number of users that are exclusively located in rayons and towns. ^d This column lists number of TB only health facilities (units) or other general health facilities with a designated TB unit. ^e Cumulative transactions since year 2011 to June-2016. ^f Average transaction per user is obtained by dividing cumulative transactions by total number of users in an oblast. ^g Average transaction per TB unit is obtained by dividing cumulative transactions by total number of TB units in an oblast. ^h Number of rayons per oblast obtained from Wikipedia (English version). ⁱ Number of rayons with users illustrates at minimum whether a rayon in an oblast has at least 1 or more users. ^j TB burden data is from 2015 and represents all forms of TB from Ukrainian Center for Disease Control epidemiology report.

Notes on data visualization elements in figure 2

Table S4 presents detailed data from which selected data was visualized in figure 2 (choropleth map). The TB burden in figure 2 was classified as high (1,500 to 4,000 cases), medium (1,000 to 1,499 cases) and low (500 to 999 cases). The average transactions per active user in each oblast were sorted in four categories not exceeding:

- 10,000/active user (4 oblasts)
- 6,000/active user (8 oblasts)
- 4,000/active user (6 oblasts)
- 3,000/active user (7 oblasts)

Table S5: Usability statistics among top 10 TB units by transactions for case registration and key clinical aspects (n, %)

This table presents detailed data from which certain data fields were merged and visualized in Figure 3

Selected data fields from registry's case module	Unit 1 (n=273,951)	Unit 2 (n=252,754)	Unit 3 (n=216,508)	Unit 4 (n=150,876)	Unit 5 (n=147,358)	Unit 6 (n=123,042)	Unit 7 (n=123,070)	Unit 8 (n=117,600)	Unit 9 (n=112,367)	Unit 10 (n=99,957)
Case notification	12,951 (4.7%)	12,990 (5.1%)	7,819 (3.6%)	6,268 (4.2%)	5,635 (3.8%)	7,804 (6.3%)	4,884 (4.0%)	5,144 (4.4%)	3,510 (3.1%)	4,241 (4.2%)
Case data	24,486 (8.9%)	52,054 (20.6%)	18,747 (8.7%)	21,482 (14.2%)	26,985 (18.3%)	22,979 (18.7%)	26,994 (21.9%)	15,767 (13.4%)	19,411 (17.3%)	17,315 (17.3%)
Start treatment	12,563 (4.6%)	13,211 (5.2%)	7,843 (3.6%)	6,355 (4.2%)	5,686 (3.9%)	8,023 (6.5%)	4,999 (4.1%)	5,357 (4.6%)	4,126 (3.7%)	4,374 (4.4%)
Undo treatment	576 (0.2%)	517 (0.2%)	323 (0.1%)	467 (0.3%)	545 (0.4%)	572 (0.5%)	467 (0.4%)	304 (0.3%)	712 (0.6%)	314 (0.3%)
Validate case	12,932 (4.7%)	13,112 (5.2%)	7,812 (3.6%)	6,273 (4.2%)	5,326 (3.6%)	8,017 (6.5%)	4,896 (4.0%)	5,311 (4.5%)	3,503 (3.1%)	4,259 (4.3%)
Register transfer in	2,801 (1.0%)	7,270 (2.9%)	5,618 (2.6%)	5,882 (3.9%)	7 (0.0%)	818 (0.7%)	3,466 (2.8%)	1,241 (1.1%)	2,251 (2.0%)	264 (0.3%)
Transfer to another health unit	2,840 (1.0%)	6,821 (2.7%)	5,727 (2.6%)	5,869 (3.9%)	84 (0.1%)	5,825 (4.7%)	4,126 (3.4%)	1,278 (1.1%)	2,265 (2.0%)	4,523 (4.5%)
Roll back transfer	355 (0.1%)	661 (0.3%)	788 (0.4%)	964 (0.6%)	9 (0.0%)	585 (0.5%)	713 (0.6%)	149 (0.1%)	408 (0.4%)	1,562 (1.6%)
Close case	17,255 (6.3%)	15,224 (6.0%)	11,160 (5.2%)	6,337 (4.2%)	10,049 (6.8%)	4,770 (3.9%)	6,301 (5.1%)	5,520 (4.7%)	6,062 (5.4%)	2,584 (2.6%)
Reopen case	5,620 (2.1%)	9,818 (3.9%)	4,727 (2.2%)	3,163 (2.1%)	5,456 (3.7%)	1,931 (1.6%)	3,982 (3.2%)	1,627 (1.4%)	2,706 (2.4%)	1,365 (1.4%)
Culture	39,297 (14.3%)	29,464 (11.7%)	32,048 (14.8%)	20,845 (13.8%)	19,353 (13.1%)	9,929 (8.1%)	12,026 (9.8%)	14,936 (12.7%)	16,320 (14.5%)	10,797 (10.8%)
Microscopy exam	52,515 (19.2%)	27,886 (11.0%)	47,437 (21.9%)	27,008 (17.9%)	30,124 (20.4%)	18,457 (15.0%)	17,636 (14.3%)	23,359 (19.9%)	17,391 (15.5%)	12,696 (12.7%)
Drug susceptibility test and line probe assay	11,684 (4.3%)	12,245 (4.8%)	8,060 (3.7%)	4,071 (2.7%)	5,420 (3.7%)	3,333 (2.7%)	4,987 (4.1%)	3,961 (3.4%)	4,161 (3.7%)	3,931 (3.9%)
X-Ray	36,410 (13.3%)	17,461 (6.9%)	20,557 (9.5%)	15,133 (10.0%)	13,525 (9.2%)	13,950 (11.3%)	10,021 (8.1%)	15,348 (13.1%)	11,698 (10.4%)	9,778 (9.8%)
HIV exams	12,787 (4.7%)	12,760 (5.0%)	10,951 (5.1%)	5,635 (3.7%)	5,660 (3.8%)	6,346 (5.2%)	4,869 (4.0%)	4,469 (3.8%)	3,745 (3.3%)	4,260 (4.3%)
Comorbidities and associated factors	4,388 (1.6%)	3,782 (1.5%)	3,004 (1.4%)	2,203 (1.5%)	1,648 (1.1%)	869 (0.7%)	1,343 (1.1%)	982 (0.8%)	1,549 (1.4%)	837 (0.8%)
Molecular Biology	2,962 (1.1%)	7,052 (2.8%)	2,983 (1.4%)	2,681 (1.8%)	1,926 (1.3%)	2,476 (2.0%)	2,588 (2.1%)	1,812 (1.5%)	2,301 (2.0%)	2,016 (2.0%)

This table presents anonymous cumulative transaction statistics for selected data fields from the registry’s case module from January 2012 to May 2016. Only top 10 of 647 active TB health units that account for nearly a third of cumulative transaction volume are listed in this table.

Notes on data visualization elements in figure 3

Table S5 presents detailed data from which selected data was visualized in figure 3. The following selected data fields were merged and represented in figure 3:

- Case notification and case data = “case management” in figure 3
- Register transfer in, transfer to another health unit and roll back transfer = “patient transfer” in figure 3
- Close case and reopen case = “close/reopen case” in figure 3

Table S6: Correspondence of paper based reporting systems with the registry

Oblast	"Report on total number of TB cases of I, II and III category (based on bacterioscopy/culture analysis data, table 1000) TB 07" for quarters 1-2 in 2015, prepared in the Register [e-TB Manger]			Quantity of patients with resistant TB receiving treatment under the Global Fund, as of 01.10.2015			"Report on spit conversion for TB patients at the end of intensive phase of treatment TB 10 (quarterly)" for quarters 1-2 in 2015, prepared in the Register [e-TB Manger]			"Report on the results of treatment of tuberculosis patients registered 12-15 months ago, TB 08 (quarterly)" quarters 1-3 in 2014 (Table 1000, new cases, smear positive)		
	Included in paper based reports (quantity of cases)	Included in report generated by e-TB Manger (number of cases), First quarter 2015	Data Consistency Rate	According to provided operative information	Based on e-TB Manger reporting as of 20.Nov.2015	Data Consistency Rate	Included in paper based reports (number of cases)	Included in reports generated by e-TB Manger (quantity of cases)	Data Consistency Rate	Included in paper based reports (quantity of cases)	Included in reports generated by e-TB Manger (quantity of cases)	Data Consistency Rate
Vinnitska	569	571	100.4	166	166	100.0	261	252	96.6	240	232	96.7
Volynska	542	541	99.8	59	54	91.5	224	218	97.3	185	171	92.4
Dnipropetrovska	2181	2184	100.1	752	769	102.3	916	923	100.8	704	706	100.3
Donetska	850	1794	211.1	380	651	171.3	438	813	185.6	399	787	197.2
Zhytomirska	560	562	100.4	146	154	105.5	312	313	100.3	348	348	100.0
Zakarpatska	568	569	100.2	139	174	125.2	330	330	100.0	271	272	100.4
Zaporizka	786	798	101.5	252	261	103.6	399	402	100.8	363	365	100.6
Ivano- Frankivska	735	738	100.4	58	57	98.3	280	282	100.7	225	225	100.0
Kyivska	837	840	100.4	209	227	108.6	349	351	100.6	294	299	101.7
Kirovohradska	575	575	100.0	168	171	101.8	312	313	100.3	281	281	100.0
Luhanska	209	188	90.0	36	117	325.0	113	101	89.4	157	152	96.8
Lvivska	1194	1186	99.3	168	161	95.8	494	467	94.5	303	289	95.4
Mykolaiivska	721	721	100.0	203	212	104.4	265	266	100.4	279	278	99.6
Odeska	1629	1631	100.1	522	526	100.8	767	769	100.3	684	684	100.0
Poltavska	636	635	99.8	140	172	122.9	286	286	100.0	220	215	97.7
Rivnenska	457	460	100.7	87	95	109.2	220	219	99.5	172	170	98.8
Sumska	579	578	99.8	118	136	115.3	347	345	99.4	217	217	100.0
Ternopil'ska	274	273	99.6	54	54	100.0	102	100	98.0	103	104	101.0
Kharkivska	745	753	101.1	361	324	89.8	378	380	100.5	337	341	101.2
Khersonska	606	606	100.0	264	275	104.2	296	296	100.0	257	259	100.8
Khmelnitska	547	547	100.0	92	108	117.4	197	198	100.5	146	144	98.6
Cherkaska	528	531	100.6	118	121	102.5	256	260	101.6	204	203	99.5
Chernivetska	300	301	100.3	46	48	104.3	211	179	84.8	138	105	76.1
Chernihivska	454	454	100.0	94	106	112.8	198	197	99.5	205	200	97.6
Kyiv city	926	931	100.5	148	169	114.2	443	447	100.9	352	353	100.3
Total in Civilian Sector	18008	18967	105	4780	5308	111.0	8394	8707	103.7	7084	7400	102.1
Penitentiary System	756	670	89	107	123	115.0	180	138	76.7	101	71	70.3
Total in Ukraine	9287	19636	211	4887	5431	111.1	8574	8845	103.2	7185	7471	104.0

Analysis performed by the Ukraine Center for Disease Control. Data is from February 2015

Original Ukrainian version publicly available at http://ucdc.gov.ua/en/pages/diseases/tuberculosis/register_of_patients.

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