

International medical travel market

Global medical tourism market overview

Addressable market analysis Feasible

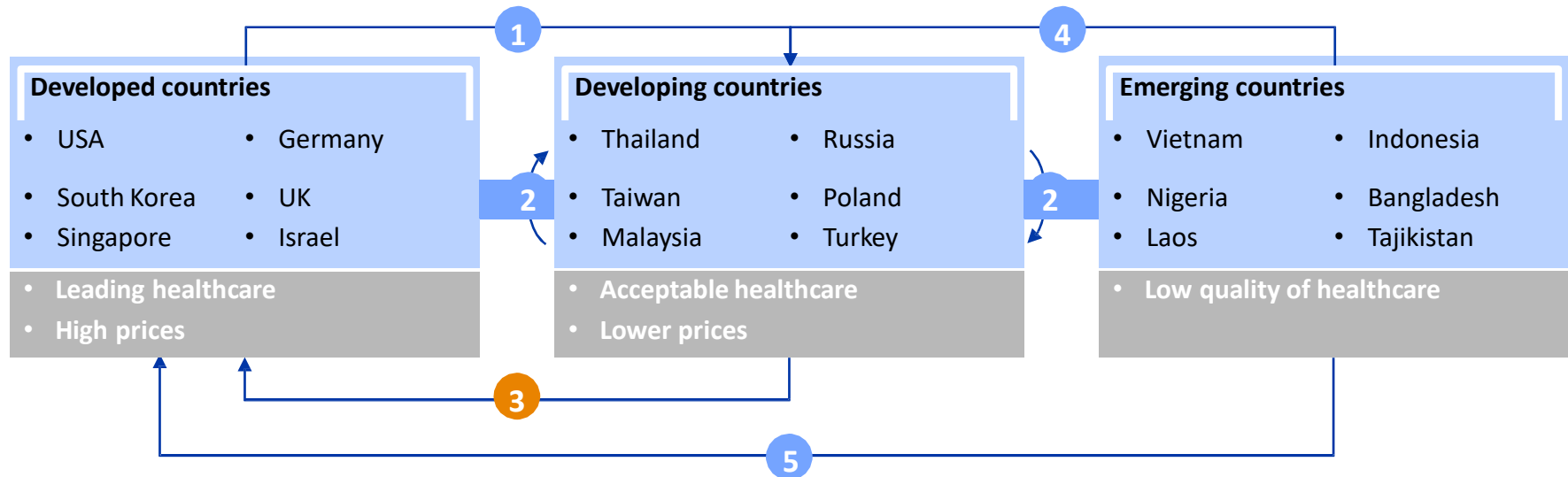
treatment areas analysis

International patient behaviors

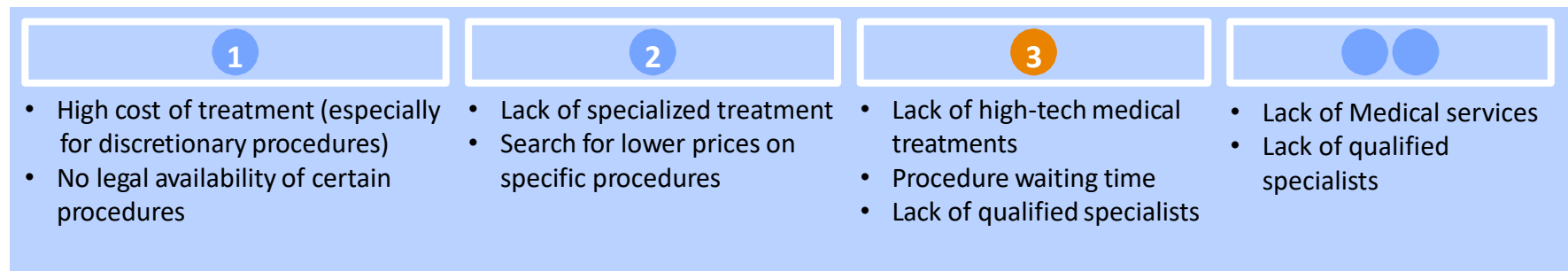
Appendix – international case studies

Major flows of medical tourism globally occur between 3 types of medical systems

Main flows



Drivers for each flow

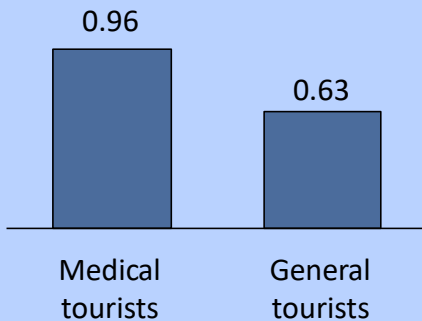


Largest share for Armenia's target region

When it comes to medical treatments, people don't travel long distances, so most of the medical tourism occurs locally

Relative "distance sensitivity" is higher for medical tourists vs general types

Distance sensitivity index



What it means: On average, number of medical tourists decreases by around 0.96 percentage points per 1% increase in **physical distance**

Destination country	Inbound MT, k	Major sources	% local ¹	Flow type
Malaysia	740	ID, IN, JP, CN, MM, SG, NZ	~71%	4
USA	700	MX, CA, Caribbean	~60%	3
Poland	420	DE, NO, DK, SE, RU, NL, BE, UK, IE	~80%	1
Thailand	350	South-East Asia	~80%	2
UAE ²	340	GULF, EG, IN, PK	~60%	4
Taiwan	305	CN, ASEAN	~76%	2
South Africa	300	LS, SZ, MZ, ZW	~80%	4
Germany	250	RU, CIS, UAE, SA	~70%	3
Mexico	250	USA	~80%	1
India	200	BD, AF, BT, MM, NP, PK, LK, OM	~85%	4
Korea	200	CN, RU, JP, MY	~42%	3
UK	150	EU, RU, CIS, ME	~66%	3
Jordan	140	SA, IQ, LY, PS, SY, YE	~60%	4
Turkey	100	LY, RU, GE, IQ, ME, GULF, N.Afr.	~80%	2
Spain	100	UK, FR, NL, RU, DE	~60%	3

Total: ~89% of world medical tourism

~70% - local MT

Armenia | 8

RU, CIS, US, EU, ME – mostly Diaspora

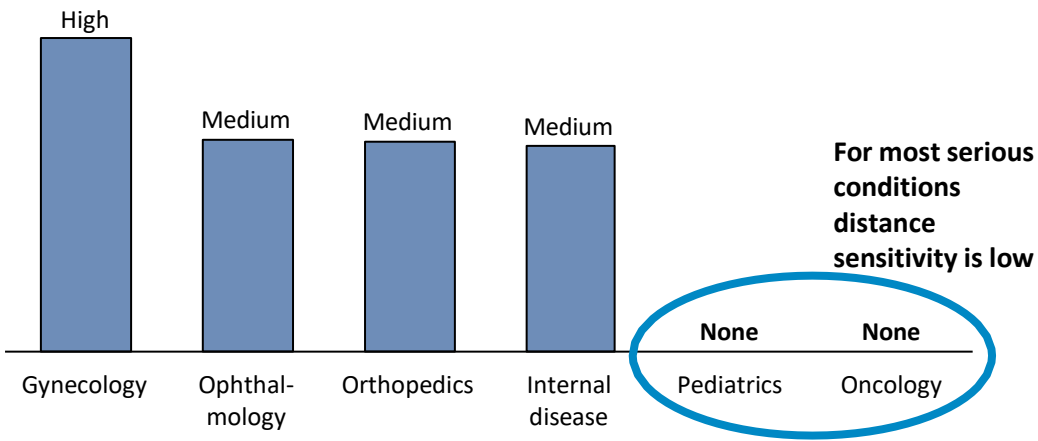
~80% 2

At the same time, there are niche treatments for which there is certain (although relatively small) long distance patient traffic

Examples of long distance travel		
Destination	Niche	Annual flow
Germany	Complicated oncological cases	10k – 50k
Armenia	Orthopedics (Ilizarov apparatus)	10 – 100
Singapore	In-Vitro Fertilization (IVF)	1k – 10k
India, China	Stem cell therapy	10k – 100k
US, Canada	Birth tourism	10k – 100k
US	Complicated pediatric cases	1k – 10k
US	Robotic joint replacement	100 – 1k

Overall narrow niche estimation	
Treatment area	Long distance flow
Oncology	100 – 120k
Cardiology	20 – 30k
Orthopedics	50 – 70k
Fertility	100 – 130k
Stem cell	50 – 70k
Other	50 – 100k
Total	400 – 500k

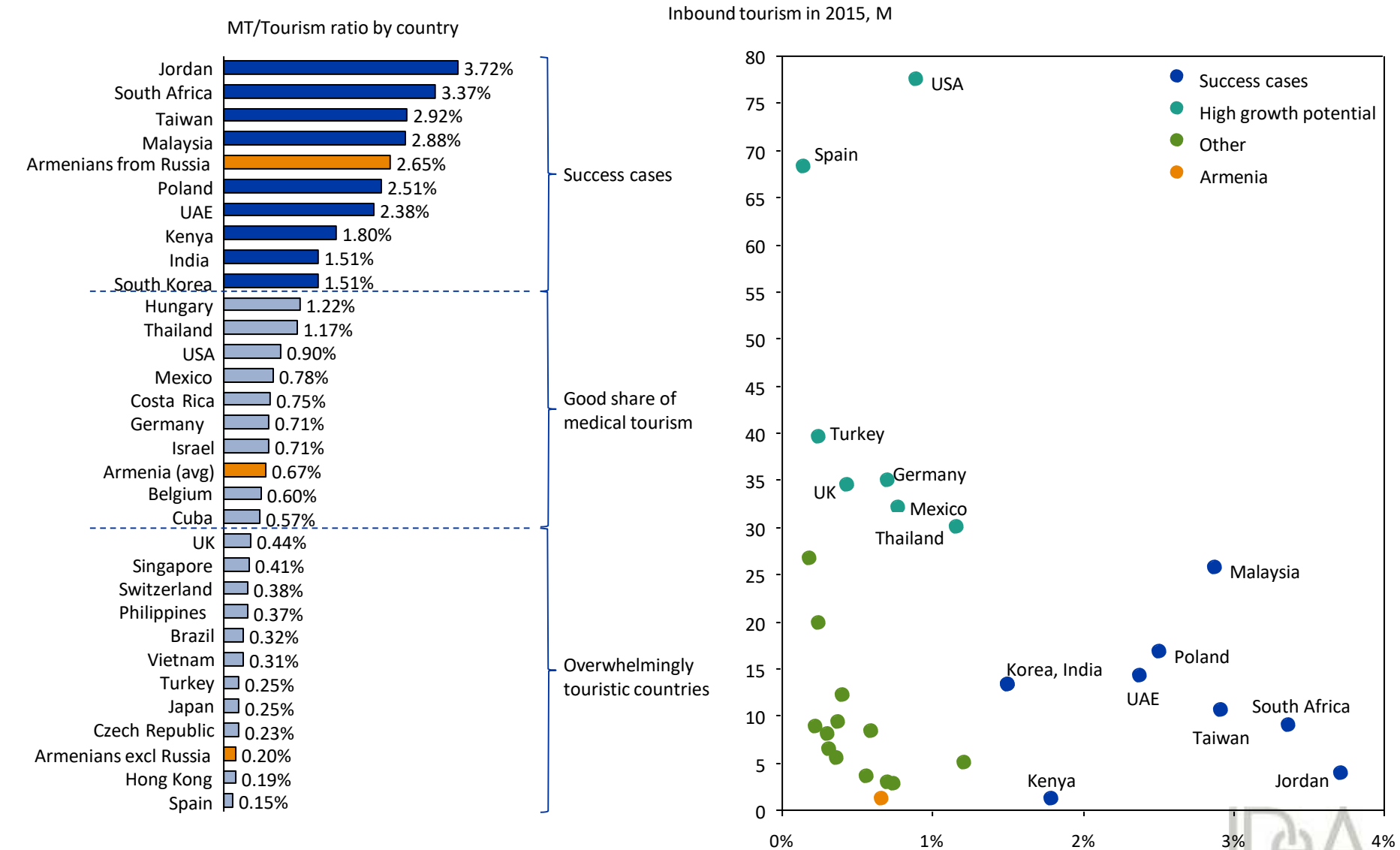
Statistical significance of travel distance in medical tourism volume by treatment area



Comments

However, niche flows are highly fragmented, as shown further; on average, centers targeting niche treatments are small, below 3k patients annually

Medical tourism flows correlate strongly with general tourism and less with quality of healthcare



Medical tourism brokers are an important factor affecting country awareness in patients

Awareness and consideration

- Most medical tourists use web search to get an overview of potential destinations for their desired treatment
- Medical tourism broker websites are overwhelmingly represented in top search results, leading to most patients being exposed to medical tourism brokers' offers

Partnership models

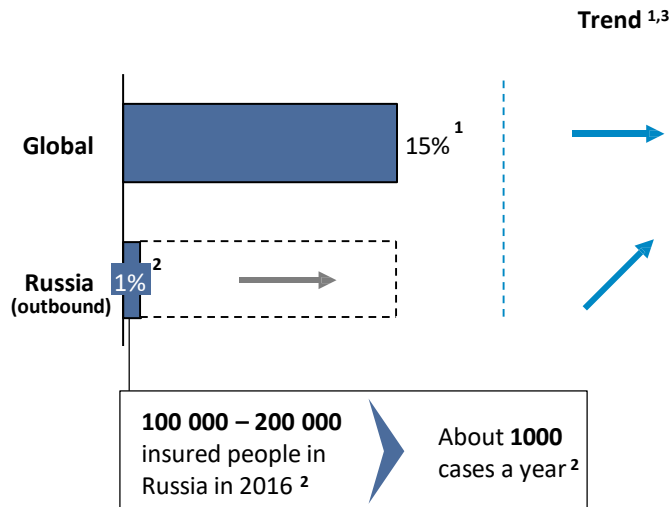
	Payment mechanism	Benefits	Downsides
<div>Commission</div> <div>Used in Israel</div>	<pre>graph TD; Patient --> Clinic; Clinic -- "10% to 20%" --> Broker</pre>	<ul style="list-style-type: none">• No trust issues between patient and medical tourism broker	<ul style="list-style-type: none">• Hospitals have to deal with foreign payments• Illegal in some countries, e.g. US, Germany
<div>"Single invoice"</div> <div>Used in US</div>	<pre>graph TD; Patient --> Broker; Broker --> Clinic</pre>	<ul style="list-style-type: none">• Brokers can negotiate volume discounts• Convenience for clinics	<ul style="list-style-type: none">• Potential trust issues between patient and broker• Illegal in Germany
<div>Own fee</div> <div>Used in Germany</div>	<pre>graph TD; Patient --> Clinic; Patient --> Broker</pre>	<ul style="list-style-type: none">• Legal everywhere	<ul style="list-style-type: none">• Inconvenient for both patients (paying twice) and clinics (foreign payments)

Fragmentation

- Most medical tourism brokers only service 20 to 1,000 patients/yr going all over the world
- Large traffic cannot be secured via one or several leaders; high number of medical tourism brokers will need to be involved to raise awareness and generate substantial traffic

Insurance-driven flows are relatively small at the moment

Estimated share of outbound medical tourism flow



Allianz

Cigna

ZURICH

IMG

aetna

Bupa

Comments

Role of medical insurance in medical tourism

Commercial and government insurance companies in developed capture significant cost savings by offshoring some of medical services.

- Most policies cover up to 50 different medical conditions including cancer, open chest surgery, kidney failure
- Up to half-year franchise (waiting period from the starting date of policy)
- Coverage up to 5 000 000 €
- Cost of policy 1000 € a year
- Examples of providers: Allianz, Zurich, Cigna, IMG, BUPA

Health plans for critical illnesses in Russia

- Health plans for critical illnesses in Russia have almost the same conditions as products from global insurance companies (see next slide)
- Based on expert feedback, the market is slowly but growing; however, not all players pursue it (e.g. Sberbank Insurance closed the program)

1. Interviews with medical travel agencies
2. Information from open sources, Vedomosti, Philips analysis

Example: several key insurers play in the Russian market for international health coverage, which grew in recent years

The most popular voluntary medical insurance products for necessary treatment areas in Russia ^{1,2}

Company	Product	Period	Risks	Coverage	Price, RUB
Alfa Strakhovanie	Alfasinopsis	1 year	Oncology	300 000 \$; Treatment in Israel, Spain, South Korea	3000 – 30 000
Blagosostoyanie	Treatment abroad (extended)	1 year	Oncology, neurosurgery, CABG, heart valve surgery, transplantation	2 000 000 €; Worldwide treatment excl. Russia	12 000 – 29 000
VTB Insurance	Manage health!	3, 5, 7, 10 years	Oncology, CABG, transplantation, stroke, MI, paralysis, end-stage kidney disease	750 000 – 2 400 000 RUB Diagnostics and treatment in Russia	3 000 – 6 000
MetLife	Life companion	1 year	Up to 43 diseases incl. oncology	250 000 – 7 500 000 RUB; Worldwide diagnostics and treatment	> 5 000
MetLife	Harmony	1 year	Oncology and other diseases (depends on age of customer)	250 000 – 7 500 000 RUB; Worldwide diagnostics and treatment	8 000 – 20 000
Raiffeisen Life	Health Standard Plus	1 year	Oncology and other emergency diseases	2 000 000 €; Diagnostics and treatment in EU and Russia	11 000 – 33 000
Renessans Life	Medicine beyond borders	1 year	Oncology, CABG, heart valve surgery, transplantation	500 000 €; Worldwide treatment excl. Russia and USA	> 10 000
Rosgosstrakh	High quality medical care	1 year	High tech medical services in oncology, cardiology, neurology and orthopedy; Target medicines; Rehabilitation	2 000 000 €; Worldwide treatment excl. Russia and USA	> 10 000

Number of insured people in Russia in 2016 is about 6000 - 50 000 per one insurance company²

Number of cases in 2016 is about 2-12 per 1000 insured people³

Market of health insurance for necessary treatment areas in Russia has shown positive dynamics in 2016 (50-150% market growth)²

1. Official websites of insurance companies
2. Vedomosti.ru
3. Interview with experts

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Patient flow in Armenia's macro-region

Armenian diaspora flow potential

Competitive landscape in the region

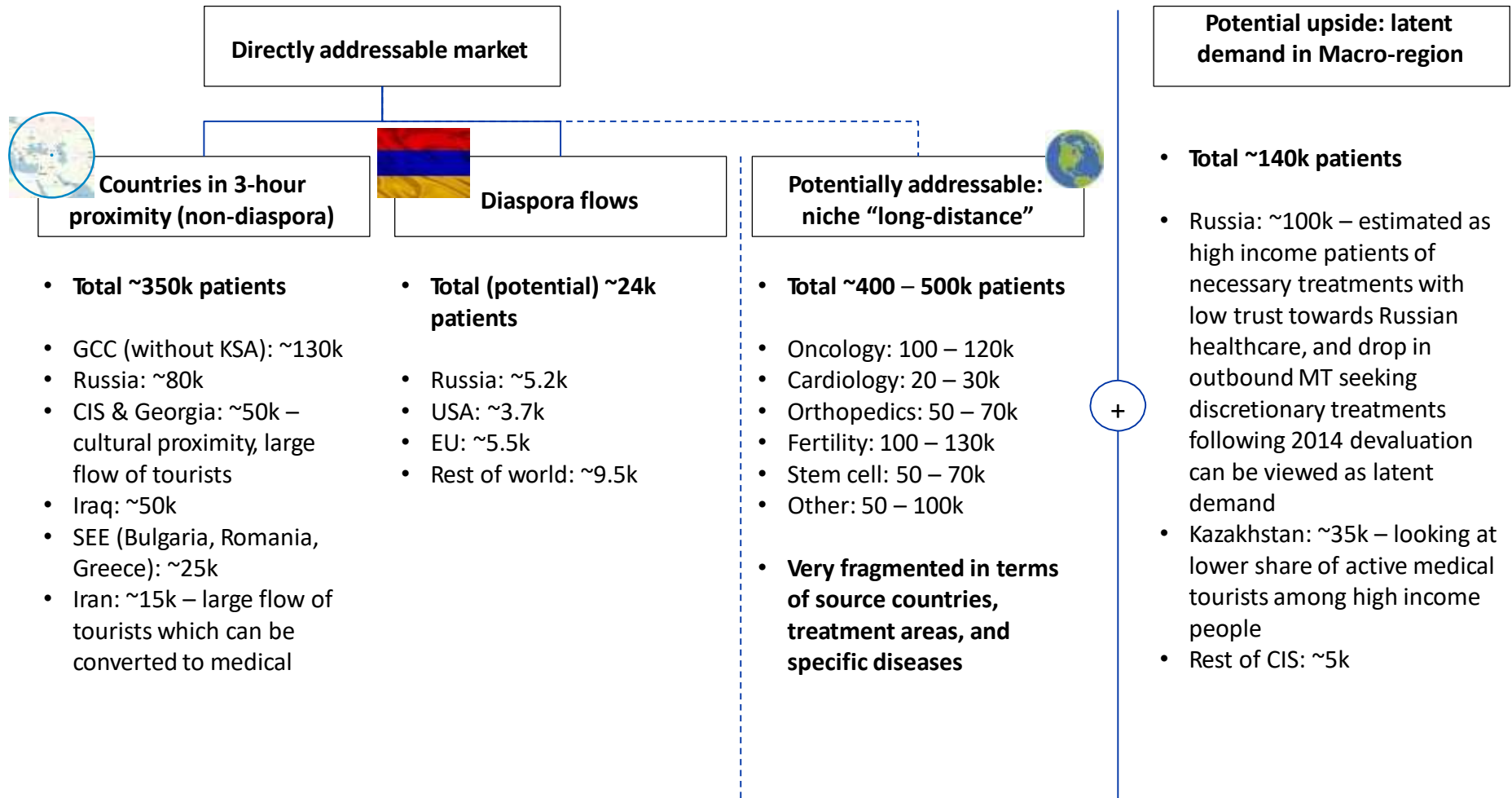
Feasible treatment areas analysis

International patient behaviors

International patient behaviors

Appendix – international case studies

We define DHH addressable market as composition of local patient flows, diaspora and global “niche” flows



For our analysis, we broadly segmented treatment areas sought by medical tourists into “necessary” and “discretionary”

	Necessary		Discretionary	
Definition	Treatment of serious conditions, sought because of medical necessity		Non-necessary treatments, purchased as consumer product at buyers' discretion	
Examples of treatment areas	Cardiology	Oncology	Dental	Aesthetic
	Orthopedics	Neurology	Check-ups	Fertility
What patients normally seek	<ul style="list-style-type: none"> Favorable outcomes Reputable doctors Procedures and technologies unavailable domestically 		<ul style="list-style-type: none"> Lower cost at similar or higher quality compared to home Tourism in addition to medicine Value for their money 	
Market size drivers	<ul style="list-style-type: none"> Morbidity Quality of domestic healthcare 		<ul style="list-style-type: none"> Income General tourism 	
Key characteristics	<ul style="list-style-type: none"> Low price sensitivity Globally smaller flow; 75% of outbound from Russia Patients driven mainly by differential vs home country in: <ul style="list-style-type: none"> Quality of treatment Availability of technologies Capacity (waiting times) 		<ul style="list-style-type: none"> High price sensitivity Patients driven mainly by differential in: <ul style="list-style-type: none"> Cost Regulations Most treatments can be packed into clearly defined consumer “product” 	

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Within “local” macro-region of Armenia, we identified 5 addressable markets

✓ 3-hour flight distance from Armenia



Why 3 hours

- 3 hours is the approximate threshold for short/medium travel, which is strongly connected to both physical and psychological behavior of travelers
- This is also the distance of highest accessibility, as most of the flights globally are short-haul (less than 1500 miles)
- In addition, as shown above, medical tourism is predominantly a local phenomenon: ~70% of medical travel happens within 3-hour flight distance

✗ We exclude

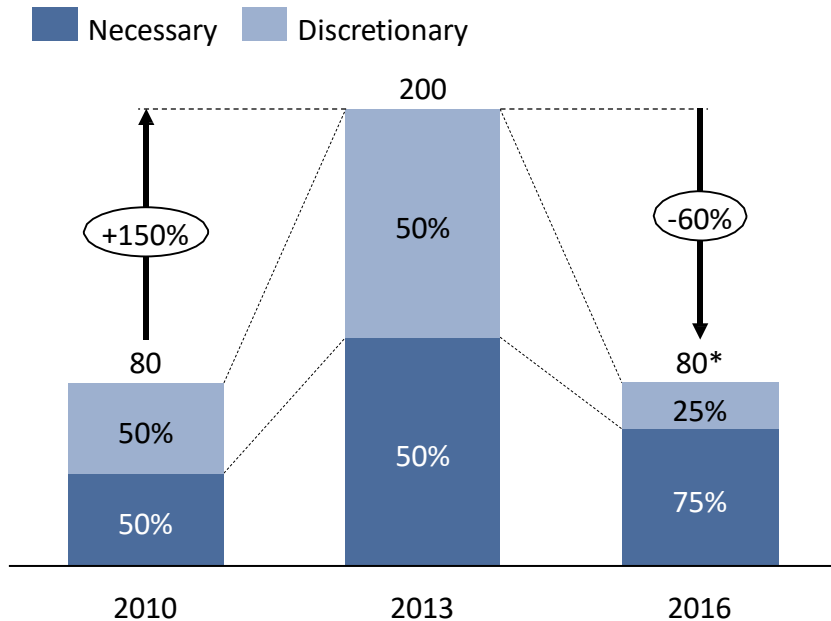
- **Kyrgyzstan, Tajikistan, Moldova:** Low population, income, outbound medical flows
- **Azerbaijan, Turkey, Saudi Arabia, Pakistan:** Poor diplomatic and cultural relations with Armenia
- **Afghanistan, Syria, Yemen, Libya, Egypt:** Ongoing political instability
- **Israel, Cyprus:** Extremely low (non-existent) outbound flows

Currently, these markets generate estimated 350k outbound medical tourists annually

	Countries	Outbound flows	Key destinations	Treatment areas sought by medical tourists
1	Russia, CIS, Georgia	~130k	Germany, Israel, Korea, Turkey	Oncology, check-ups, orthopedics, cardiology; ~75% necessary vs ~25% discretionary
2	GCC: UAE, Kuwait, Qatar, Oman	~130k	USA, UK, Switzerland, Germany, India	Oncology, cardiology, IVF, due lack of high quality facilities addressing these treatment areas in the region
3	Iraq	~50k	India, Iran, Jordan, Turkey	Primary care, infections, cardiology, oncology
4	SEE: Bulgaria, Romania, Greece, Serbia	~25k	UK, Hungary, Turkey, Austria, Germany, Israel	Pediatrics, traumatology, ophthalmology, oncology, dentistry
5	Iran	~15k	UK, India	No data
	Total	~350k		

Russia generates ~80k outbound flow, much less than in 2013; mainly due to drop in discretionary patients

Outbound patient flow from Russia, '000 people

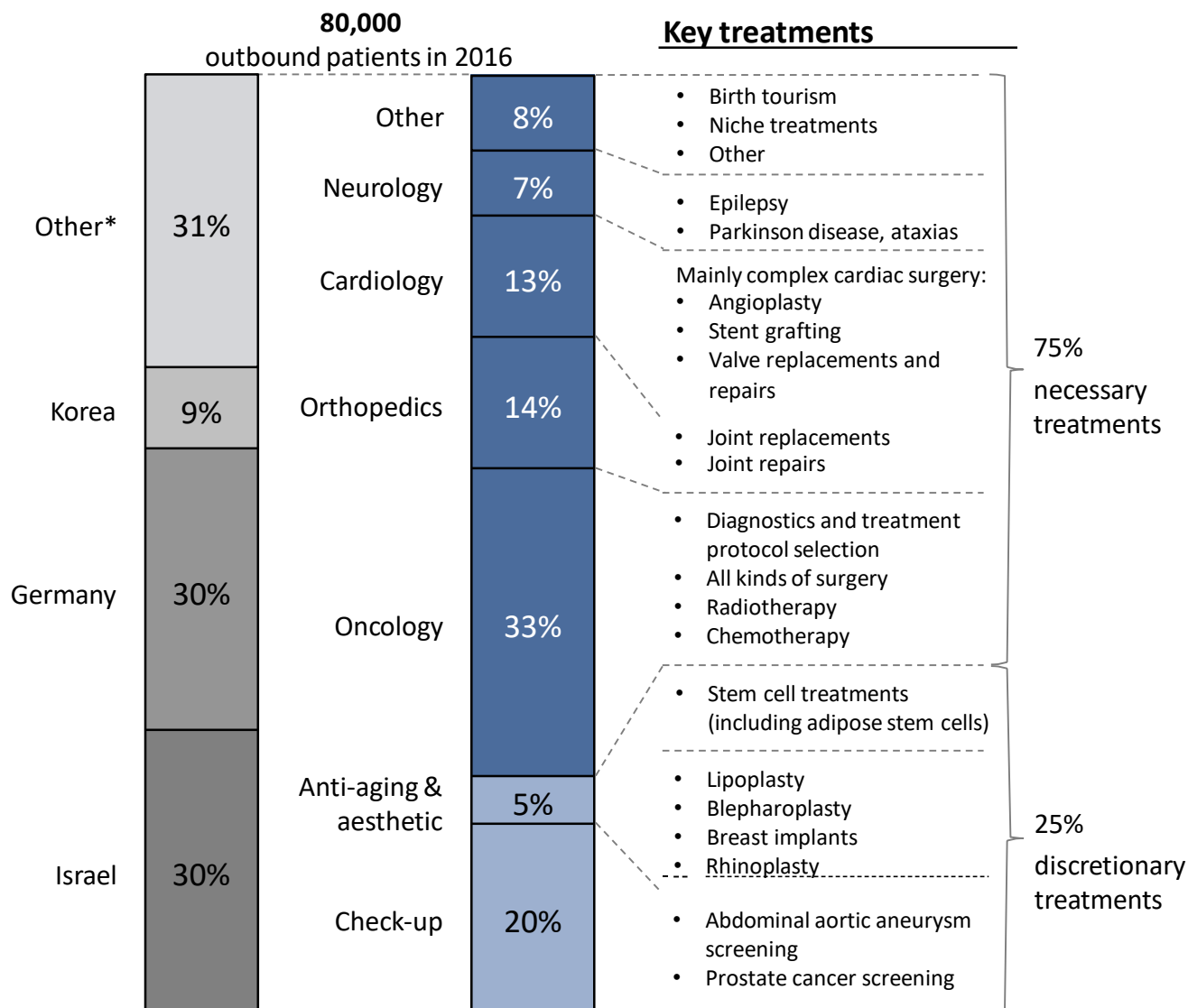


*Various sources (experts, Minzdrav, market reports) report outbound flow size in 2016 between 30k and 100k; most sources give estimates at ~80k

Comments

- There has always been sizeable demand for abroad treatment of **Necessary** conditions
 - Russia is relatively backward in terms of healthcare innovation: many existing novel treatment types and technologies are not available in Russia either due to bureaucratic delays, or lack of investment
 - Overall accessibility of quality healthcare in Russia is low, which means long waiting lines for some critical treatments
- In addition, during economic growth many affluent patients were travelling to other countries for **Discretionary** procedures. This is mainly driven by growing incomes and increased information availability
- Economic crisis in Russia and ban on international travel for certain categories in 2014-2016 strongly affected the outbound patient flows. Most pronounced effect – on discretionary treatments, while Necessary treatments show lower sensitivity to crisis
- Going forward, we expect growth to be within 5% annually in terms of patient numbers, driven by higher incidence due to diagnostics, and slowly growing disposable incomes (see below)

Majority of Russian medical tourists travel to Germany and Israel for necessary treatments



Comments

Treatments

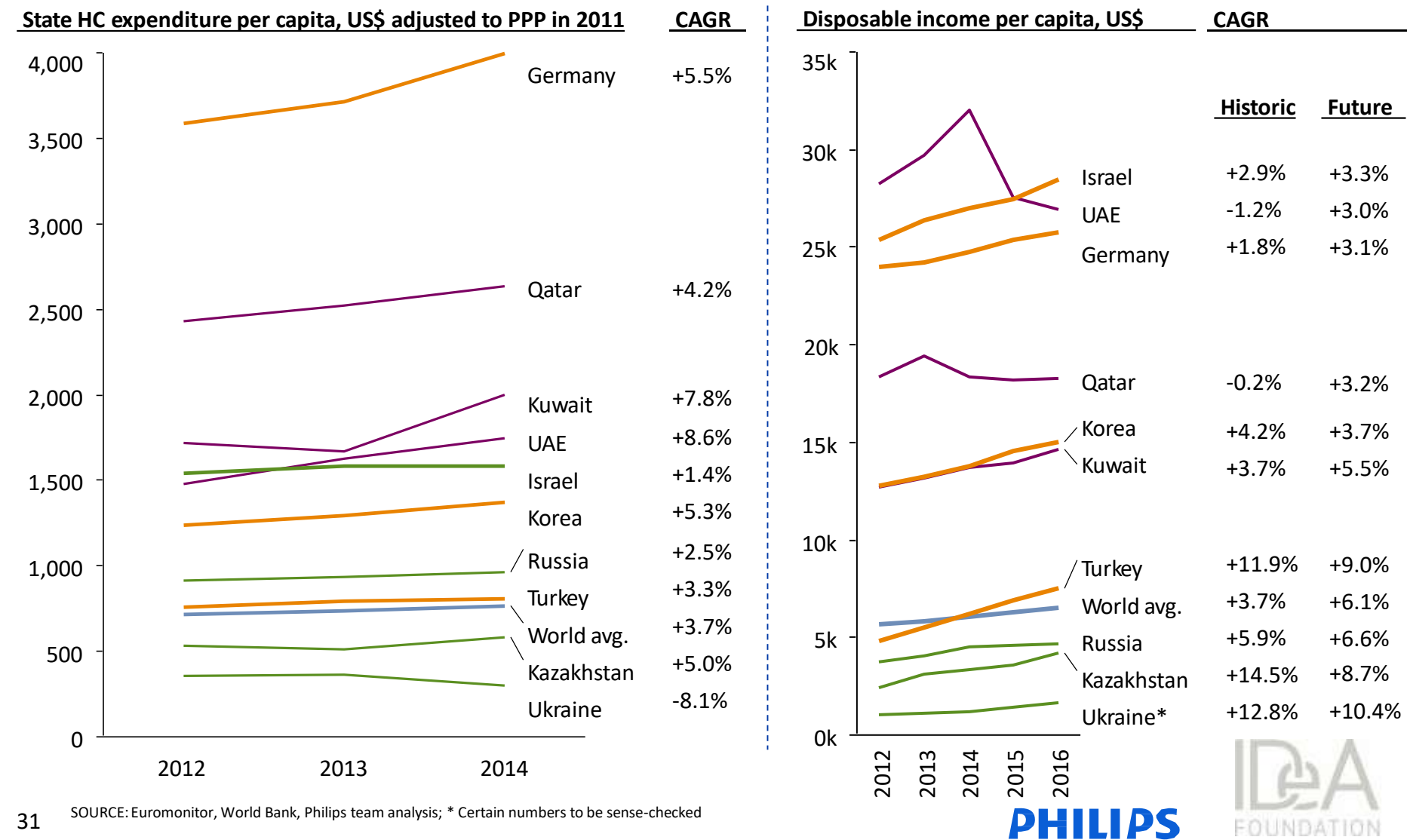
- At the moment, majority of patients from Russia seek medically necessary treatments, such as oncology, cardiology, etc.
- The split is stable and is driven by morbidity and overall satisfaction with local healthcare system
- This applies also to “discretionary” treatments: unlike developed countries, majority of Russians seek higher quality (albeit at higher cost), rather than cost-saving
- Going forward we expect a minor shift towards discretionary treatments as incomes slowly increase (e.g. 1% per annum in real terms)

Destination countries

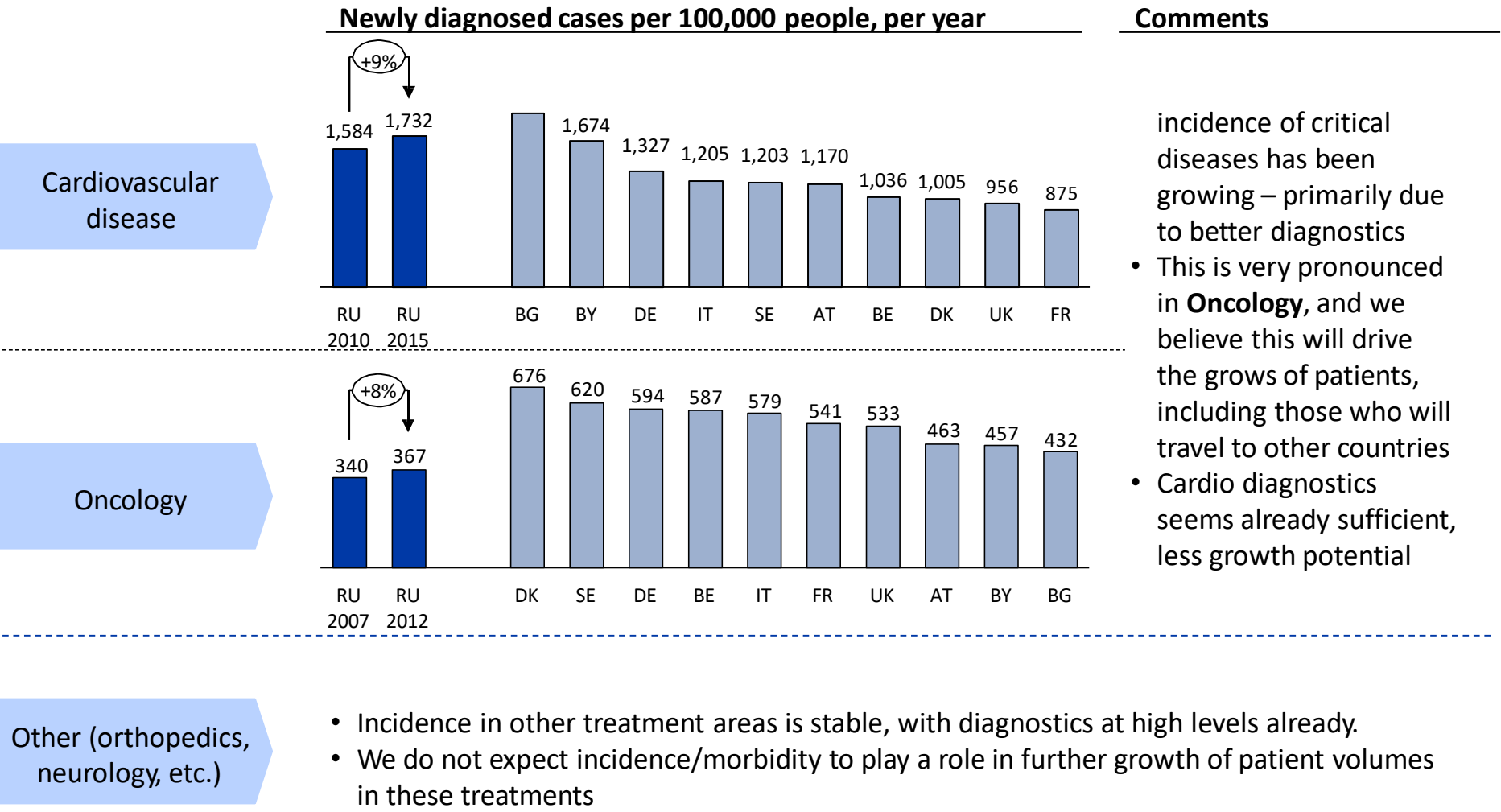
- Estimated 70% of Russians travel to Germany and Israel, which is driven by large Russian diasporas in these countries and consequently – lower language barrier and higher information availability (in addition to higher quality healthcare)
- Share of these countries is expected to decline, as loyalty appears low and they are increasingly challenged by newcomers such as Korea, Turkey and CEE/SEE

In developing countries incomes growth is more dynamic than healthcare investments, which drives outbound tourism

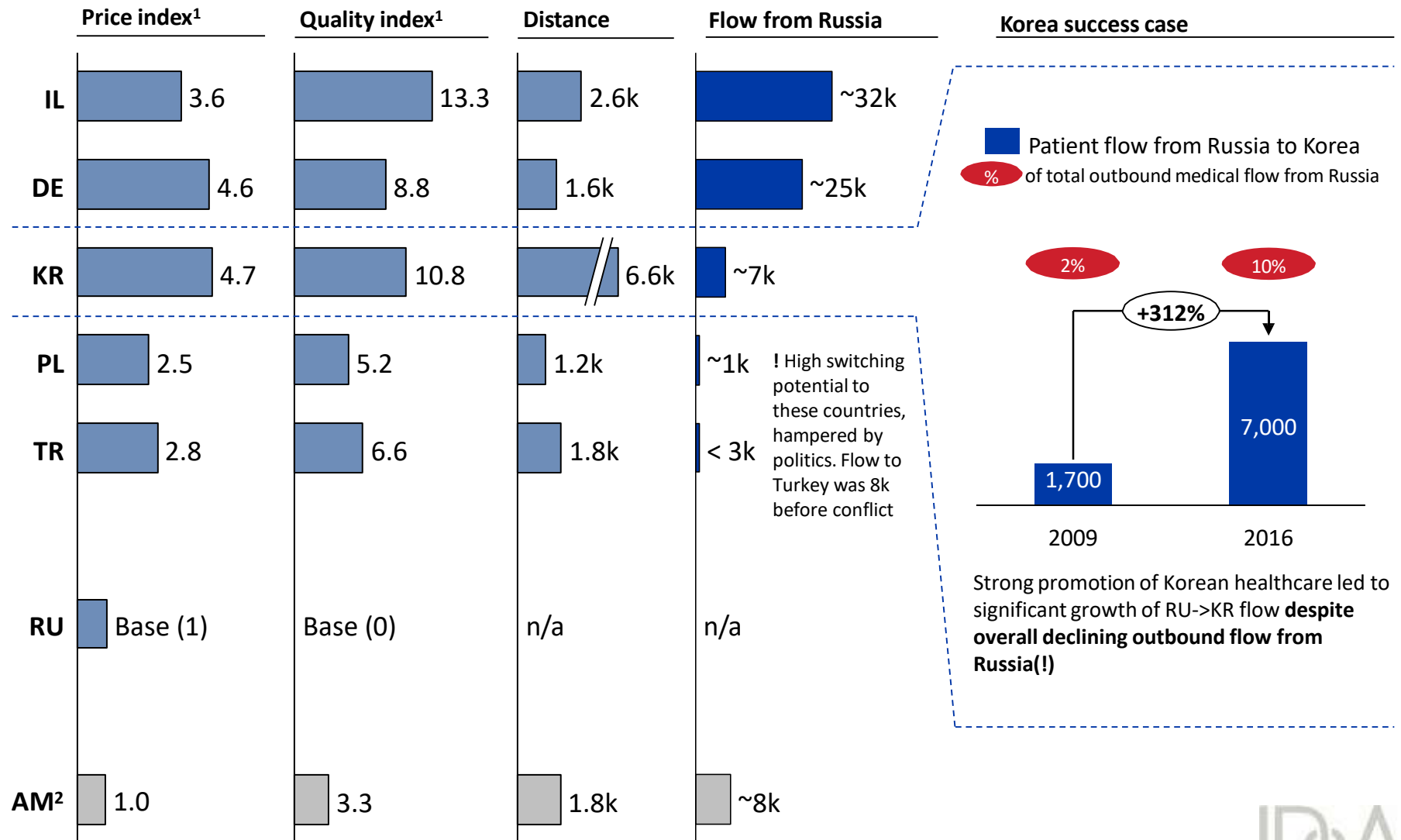
Ukraine is good example, while in Russia incomes grow barely above inflation



At the same time, better diagnostics in countries like Russia has potential to increase numbers of patients, incl. outbound



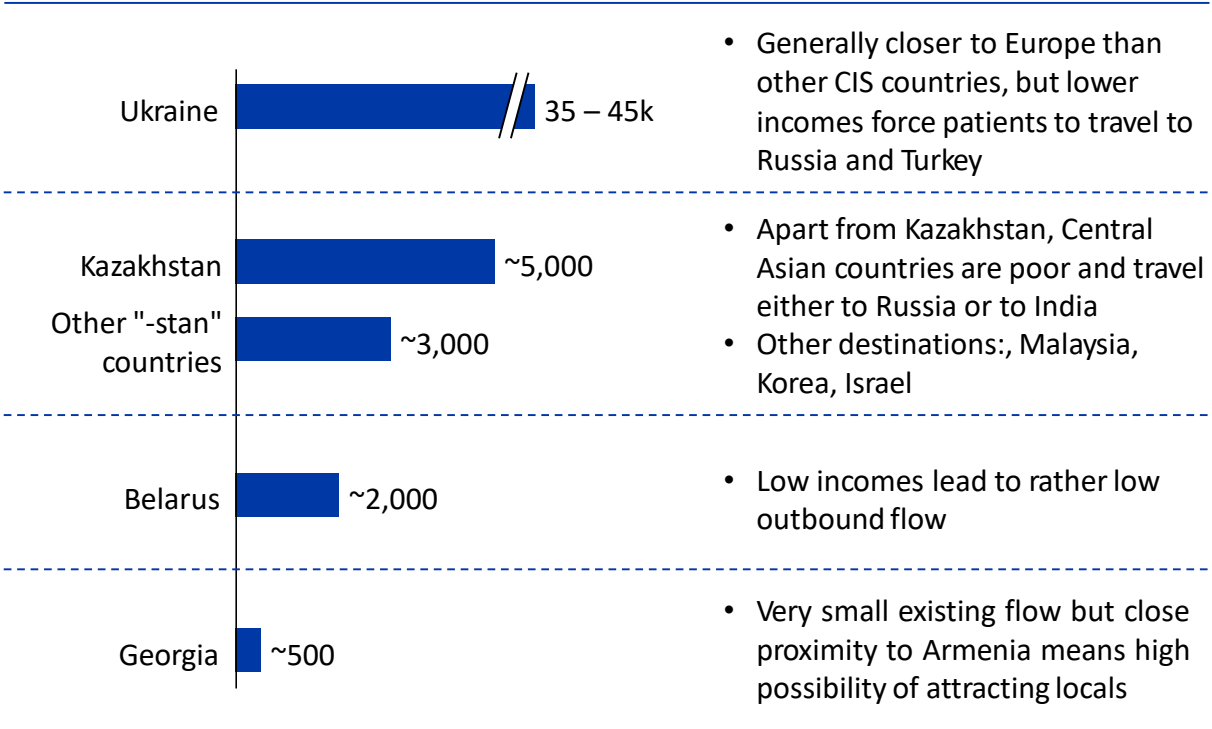
Case of South Korea shows relatively high switching potential among Russian patients, which means share of DE/IL could be challenged



Current CIS outbound flow is comparable in size to Russia, largest parts are from UA & KZ, travel specifics are similar to Russia



Current CIS



Total: 45 – 55k

Comments

- Armenia has advantages of no visa barrier as a CIS country
- Large part of Central Asia population have difficulties with foreign languages, especially the elder population, which puts Russian speaking Armenia in advantage
- Niche treatment and high-tech treatment is a large possibility. Even Kazakhstan being the most developed in the region lacks most of the innovative technologies. For specialist treatment patients in the region have to leave outside
- Kazakhstan large potential related to information improvement may be limited with developed of high quality medicine inside the country
- Apart from Kazakhstan, market potential of Central Asian countries seems limited due to low income levels

Income and satisfaction analysis of Russian patients suggests that there is “latent” demand upside potential of ~103 k

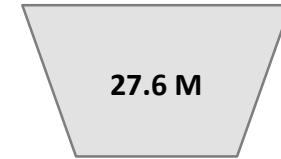
Key assumptions

Sizing



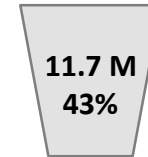
People in high income households

- We assume 19.6% of households in Russia have income of \$1,500/month or above
- Average household size in Russia is 2.5 people



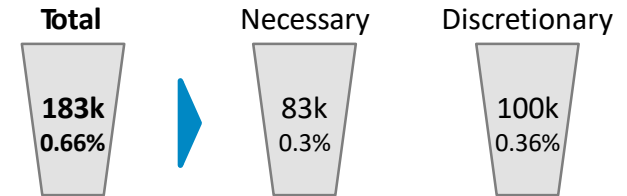
People unsatisfied with Russian healthcare

- According to Levada, 18% of people in Russia are unsatisfied with domestic inpatient treatments, and 49% are somewhat satisfied (33% satisfied)
- We consider unsatisfied and 50% of somewhat satisfied people potential medical tourists (43% total)



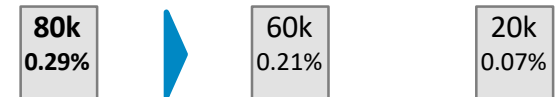
Full medical travel potential

- Oncology: 0.38% prevalence
 - Cardio surgeries: 0.09% prevalence
 - Other N* treatments: 1/3 of flow
- 2/3 of N* } Total N*: ~83k
- For discretionary treatments, we consider full potential at level before 2014 devaluation = 100k



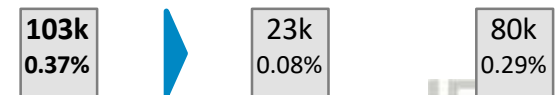
Currently active medical tourists

- Various sources (experts, Minzdrav, market reports) report outbound flow size between 30k and 100k; most sources give estimates at 70 to 80k
- All sources agree that outbound flow is 75% N vs 25% D



Latent demand in medical tourism

- Difference between full potential and current flows is latent demand



The same analysis in CIS gives additional ~38k, mostly in Kazakhstan

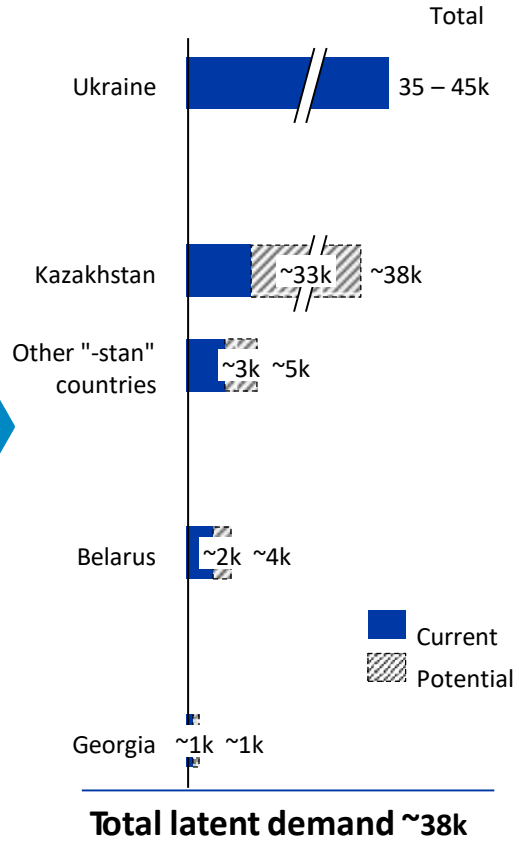
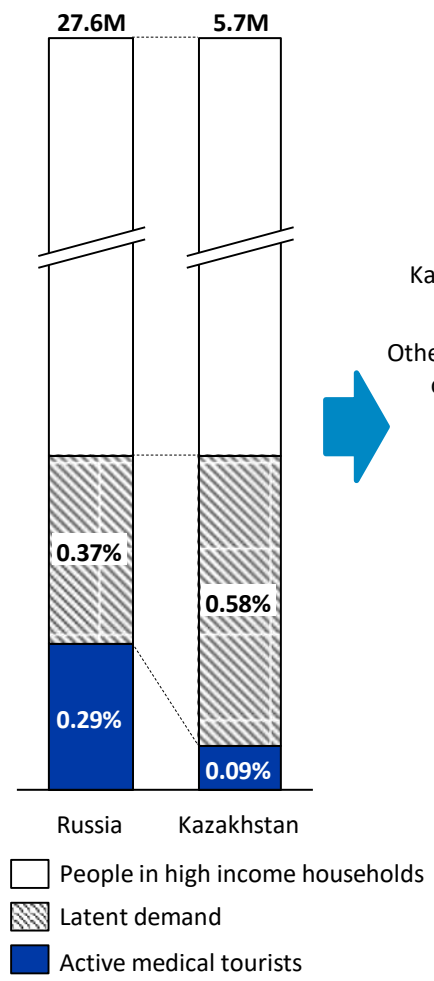


How we estimated: example calculation for KZ

Latent demand in other countries

Comments

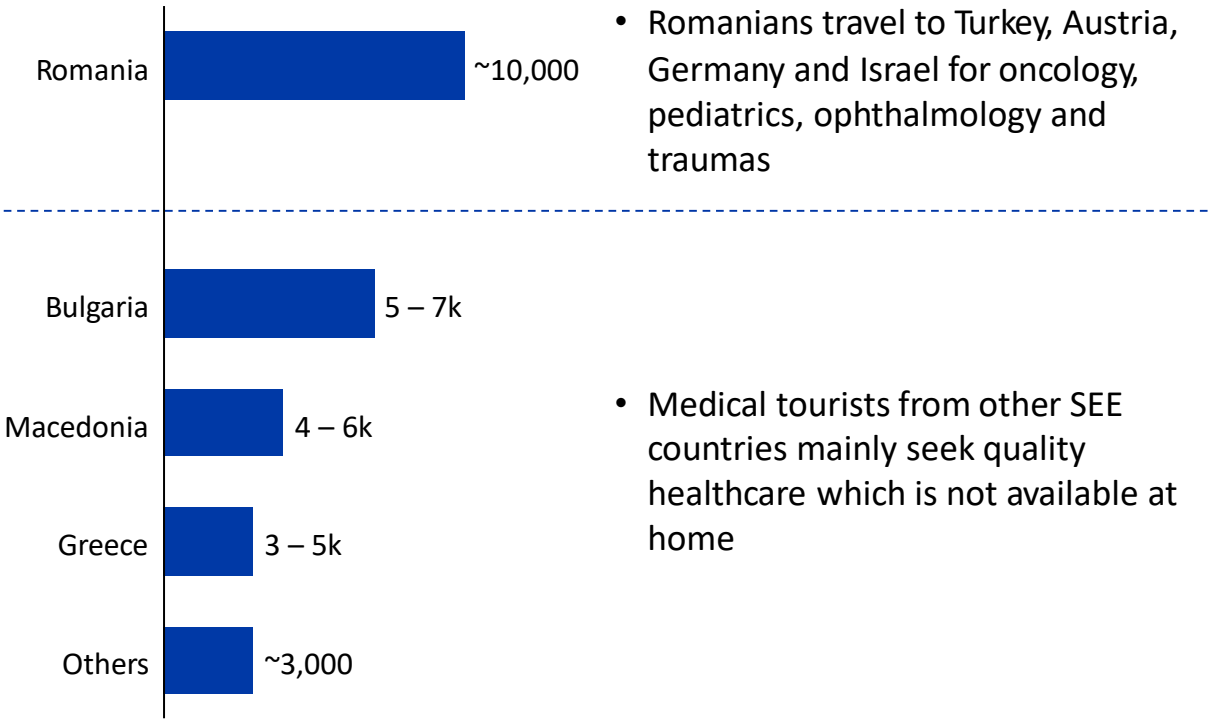
- Kazakhstan: considering overall situation to be similar to Russia, full potential can be estimated as similar share of potential medical tourists among high income people as in Russia (5.7M of high income people in KZ, 27.6 in RU); differential in these ratios between Russia (0.66%) and Kazakhstan (0.09%) gives latent demand
- Ukraine already has very high outbound medical tourism for its population and income levels, potential limited
- BY, GE, other “-stan” countries: no more than ~5k total due to low population and income levels, even at same potential travel rates as Russia



- Out of all CIS countries and Georgia, only Kazakhstan has significant latent demand due to low incomes in other countries: other countries are small, poor, or both
- High unrealized medical travel potential in Kazakhstan might be related to lack of available info about treatments abroad

Current SEE outbound flow is small, mostly originating from Romania, Bulgaria, and Macedonia

Current SEE outbound flows

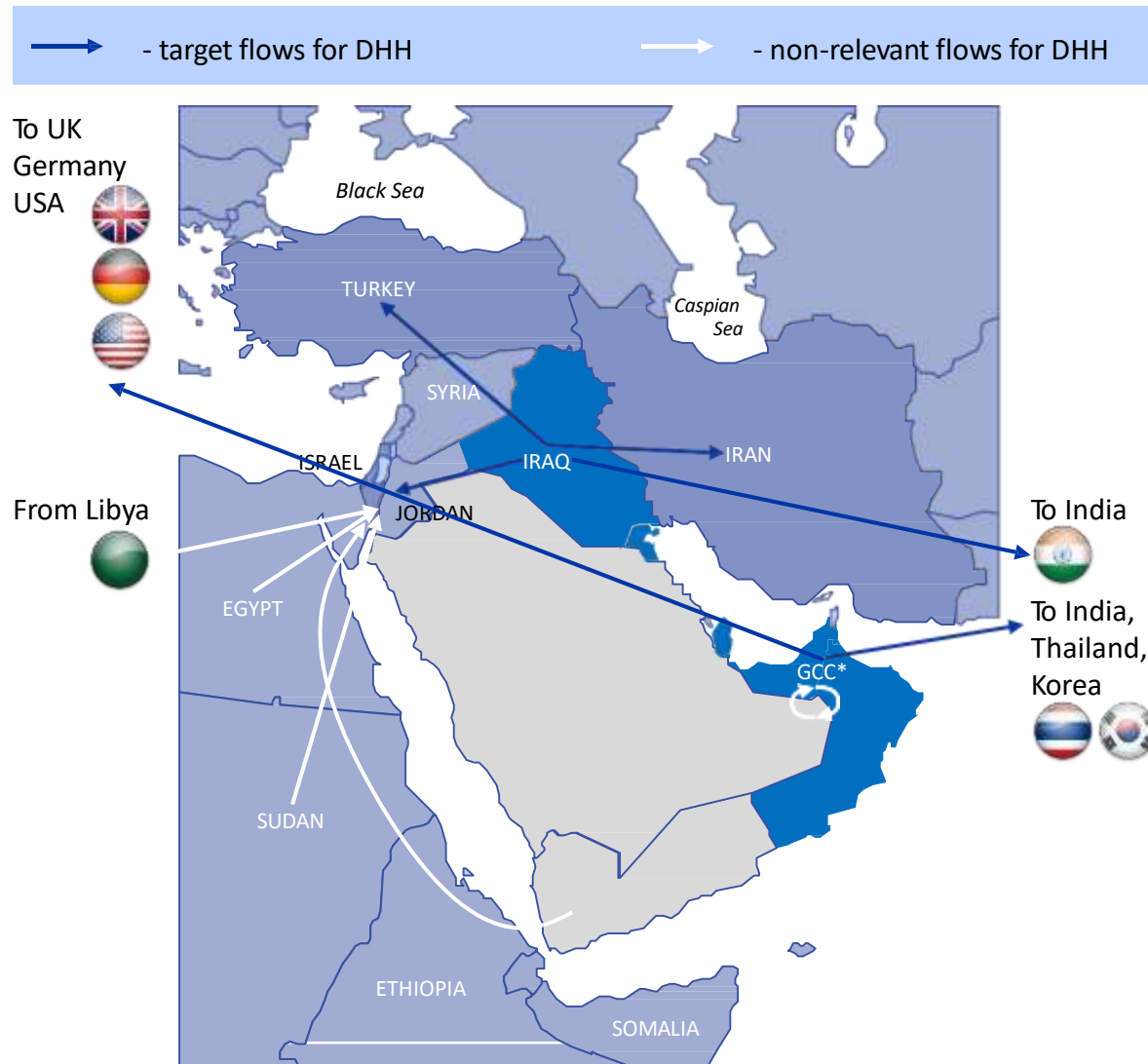


Total: ~25k

Comments

- Compared to Western Europe, healthcare systems in SEE are underdeveloped
- Most popular destination among relatively high income countries is Turkey (~50% of Bulgarians and Romanians)
- Poorer SEE countries (Albania, Serbia, Montenegro) travel to better developed SEE countries (Slovenia, Bulgaria)
- Lots of effort and resources are put into development of Spa & Wellness segment due to overall touristic attractiveness
- Discretionary medicine, e.g. dental, is available in high quality in the region and generally priced lower than Eastern Europe (e.g. Hungary)

The largest addressable outbound medical flows in the ME are from Iraq and GCC

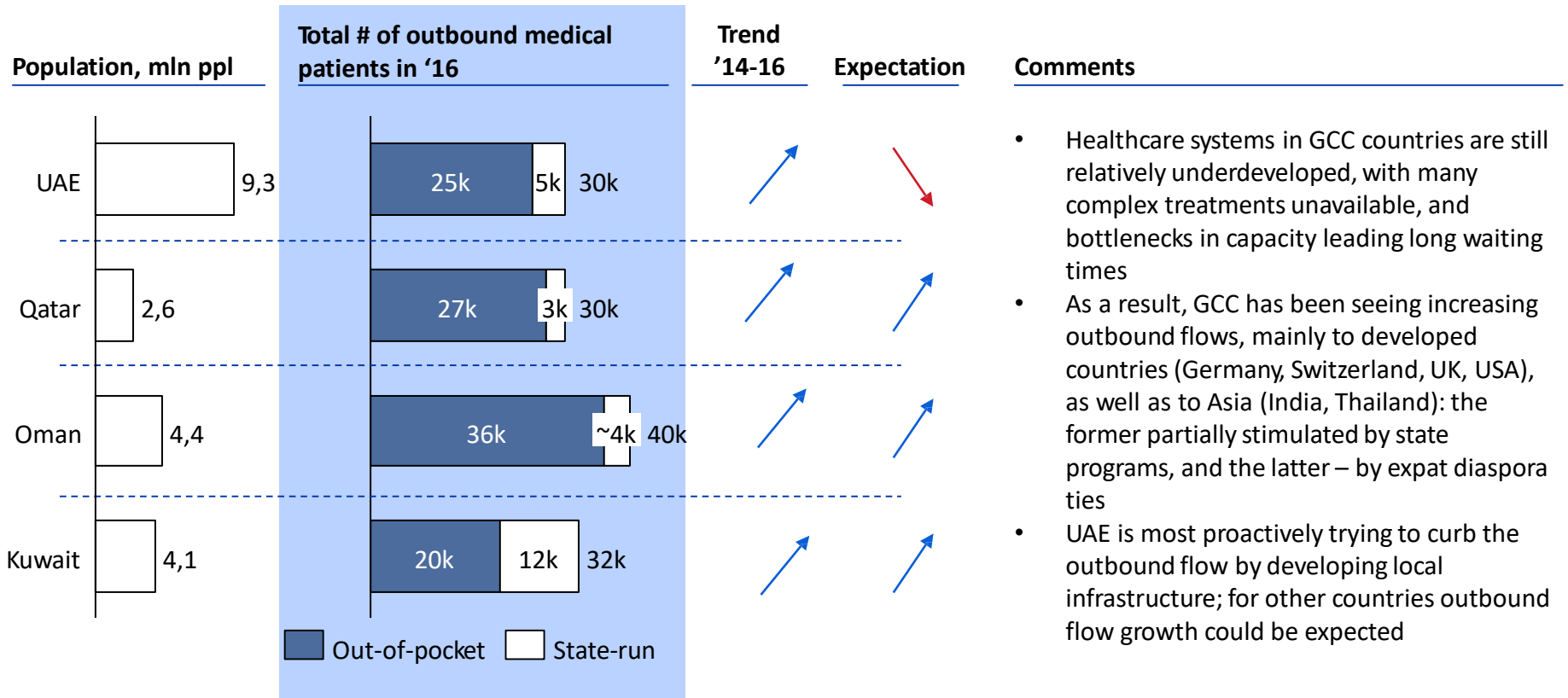


Main flows

- GCC – UK, Germany, India, Thailand, Korea
- Inside GCC (to Dubai)
- Levant, Yemen, N. Africa – to Jordan
- From Iraq to Turkey, Iran, India
- No significant outbound flows from Turkey and Iran
- Outbound streams within ME from the poorest unstable countries like Yemen and Libya are not relevant to DHH

GCC countries generate approx. 130k medical travelers annually, most of which pay out-of-pocket

Treatment abroad is a common phenomenon: 5-15 times higher penetration than in Russia



Total: ~130k

At the same time, state programs are an important source of high-income travelers, also generating “spillover” effects

Governments officially contract with key clinics in Germany, US and UK

Total funding of state programs in 2016, USD	Per patient	Program description and outlook
<div> <div></div> <div>UAE</div> <div>\$1B</div> </div>	<div> <div></div> <div>\$100k</div> </div>	<ul style="list-style-type: none"> Lack of specialized treatments for areas such as IVF, oncology and cardiac care
<div> <div></div> <div>Qatar</div> <div>\$3B</div> </div>	<div> <div></div> <div>\$200k</div> </div>	<ul style="list-style-type: none"> Lack of local facilities, no plans by private sector to expand into those services Extremely relaxed eligibility rules for Qatari citizens; often whole families trips are sponsored
<div> <div></div> <div>Oman</div> <div>No data</div> </div>	<div> <div></div> <div>Estimated <\$50k</div> </div>	<ul style="list-style-type: none"> Government sponsors treatments to low cost private hospitals and countries, but with plans for a big medical city this is projected to change – in the coming 10 years
<div> <div></div> <div>Kuwait</div> <div>\$1.3B</div> </div>	<div> <div></div> <div>\$100k</div> </div>	<ul style="list-style-type: none"> Government plans to curb treatment abroad cases by up to 75% due to availability of local private hospital treatments

In addition to information proliferation building awareness, state programs require out-of-pocket payments for any follow-ups abroad – thus creating a spillover effect

GCC outbound patients are seeking both high quality healthcare and luxurious lifestyle

Current trend is combining treatment plans with vacations

- Most GCC citizens travel to USA, UK, Western Europe (specifically Switzerland)
- Many European destination are adapting to increasing number of visitors from Middle east: Halal food, Arabic speaking staff, prayer mats, and Middle Eastern focused concierge facilities
- Numbers of out-of-pocket tourists expected to keep rising driven by high and growing government salaries (offered exclusively to local citizens)

State-run programs mainly sponsor oncology, orthopedics, and fertility

- Low availability of specialized treatments in oncology, fertility, and orthopedics drives the growth of state-sponsored outbound patient flow
- There are plans of curbing this outbound flow via pushing for availability of medical specialties through the private sector. Until that is achieved, state-sponsored patient flows are projected to increase.
- State-run programs are spending significant sums on individual patients. This has created a 'preferred provider list' where governments are signing contracts with healthcare providers abroad to streamline treatments and simplify logistics

State-run programs to decrease in future, out-of-pocket patients to grow

- GCC countries plan to curb outbound flows by reducing state-run program funding and making medical services available via the private sector
- However, out-of-pocket travelers will continue to rise; to capture this market DHH will have to offer a mix of top tier medical expertise with convenience: Halal food, luxury accommodation options and Arabic speaking staff

Iraq generates 50k outbound flow due to damaged healthcare infrastructure; most of flow is to low cost destinations

Demand in Iraq originates from lack of required healthcare infrastructure

- Main treatments sought by medical tourists from Iraq: kidney failure, organ transplants, oncology, cardiac surgeries, and spinal deviations
- Key driver for outbound medical tourism is heavy damage to healthcare infrastructure due to ongoing civil conflicts
- State-sponsored treatment abroad programs are generating even more demand; they are currently exposed to strong corruption in approval process

Medical tourism from Iraq is mainly focused on low-cost destinations

- Most upper-middle to elite class Iraqis have left Iraq and cannot be considered a part of the Iraq outbound medical tourism
- As a result, focus is on low-cost countries for treatment abroad
- India is key destination for Iraqis due to availability of specialized care at economical cost as compared to the West
- Some Indian hospitals get between 25% and 35% of their medical tourists from Iraq, as they seek cardiology, spinal injuries and oncology
- Other destinations are Jordan, Iran, Turkey, and Eastern Europe

Iran appears to be a destination, rather than source of medical tourism

If US sanctions lift, Iran is likely to attract much of medical tourism within Middle East

Outbound medical tourism from Iran is low

- Total outbound flow from Iran is ~15k
- Weak exchange rate of the Iranian currency vs. other currencies drives outbound tourism down
- Advanced medical facilities are available locally at reasonable costs

Iran has highly developed healthcare and touristic infrastructure

- Iran is favorably located close to other Middle East countries
- Iran is highly attractive for medical, spa, and wellness tourism:
 - Hot and cold mineral springs in various parts of the country
 - Low-cost and high quality health services in fertility, stem cell, dialysis, cardiac surgery, aesthetic surgery, eye surgery and others

Iran is already attracting many medical tourists, which makes it competition to DHH

- Inbound flow to Iran is ~30k medical tourists and ~200k health & wellness tourists
- Majority of visitors to Iran are from Islamic Countries in Middle East and Africa
- To compete with Iran and attract current inbound visitors, DHH will need to directly compete with Iran, and to offer comfortable environment for Islamic medical tourists that provides specialized medical treatments at competitive pricing

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Armenian diaspora flow potential

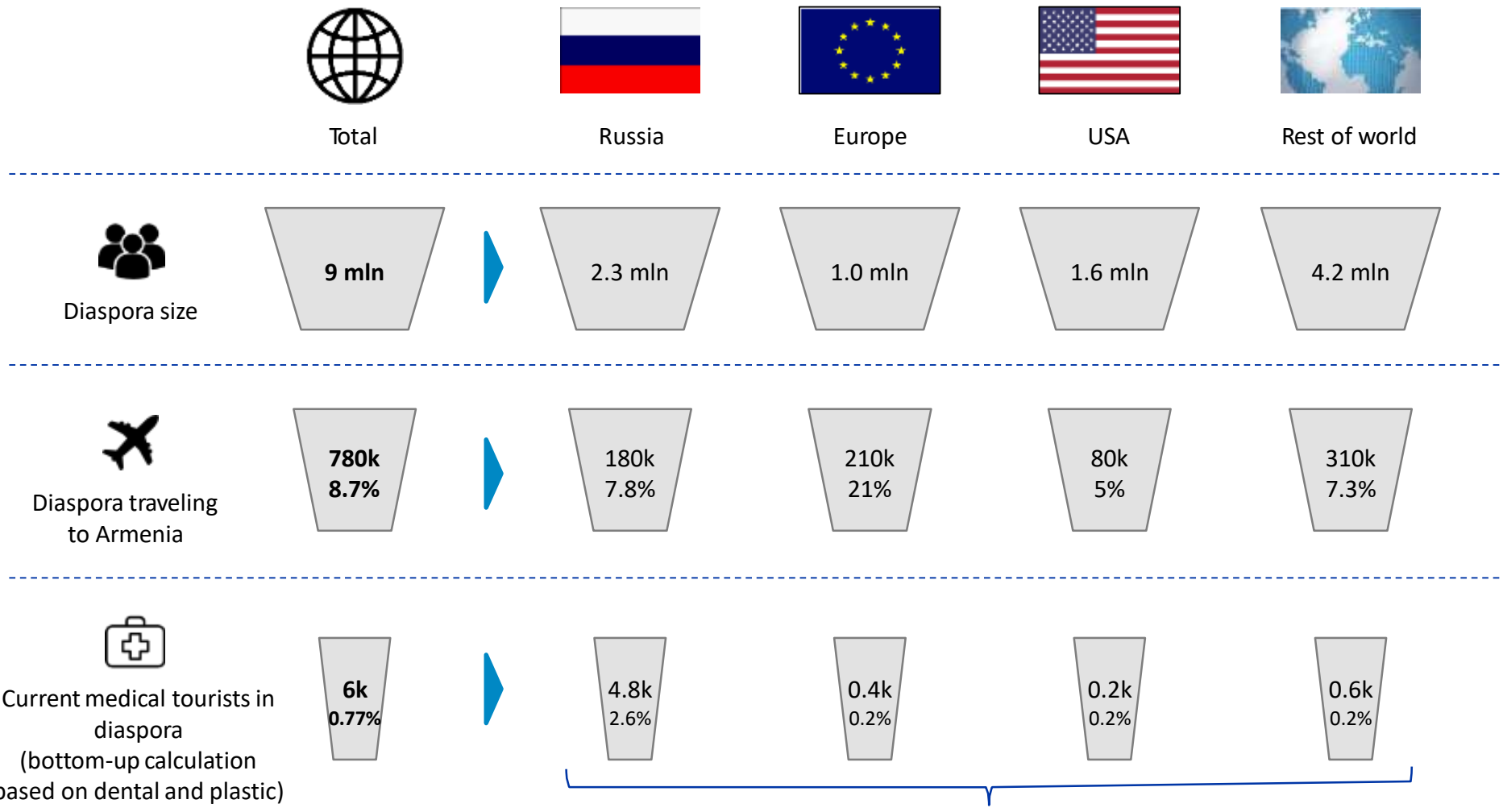
Competitive landscape in the region

Feasible treatment areas analysis

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Appendix – international case studies

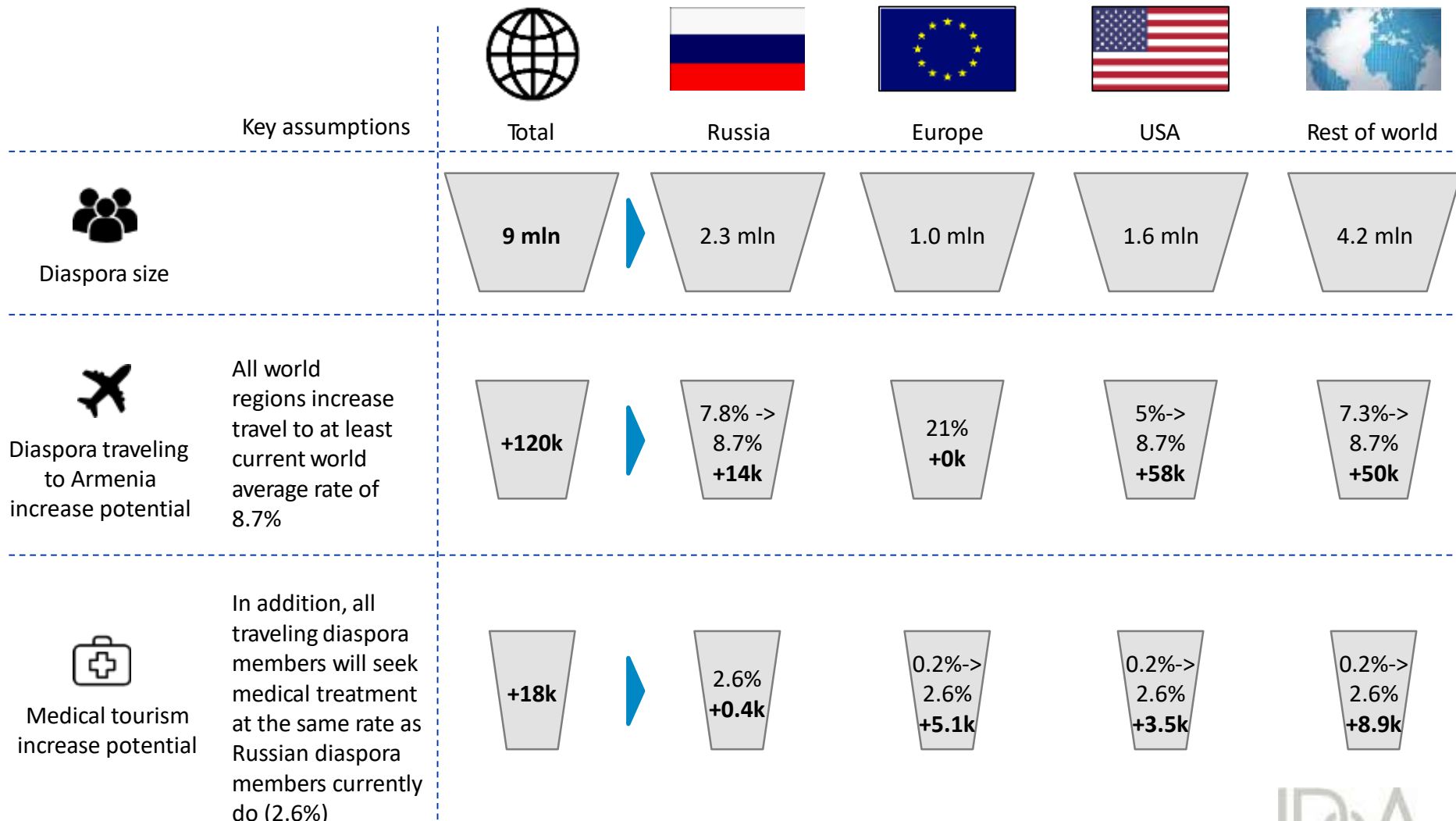
Currently, 780k diaspora members travel to Armenia every year; we estimate 6k of these are receiving some medical treatments



Split based on doctor interviews in Yerevan



We believe overall diaspora tourism travel can potentially grow by 120k, which could drive additional 18k of medical tourists



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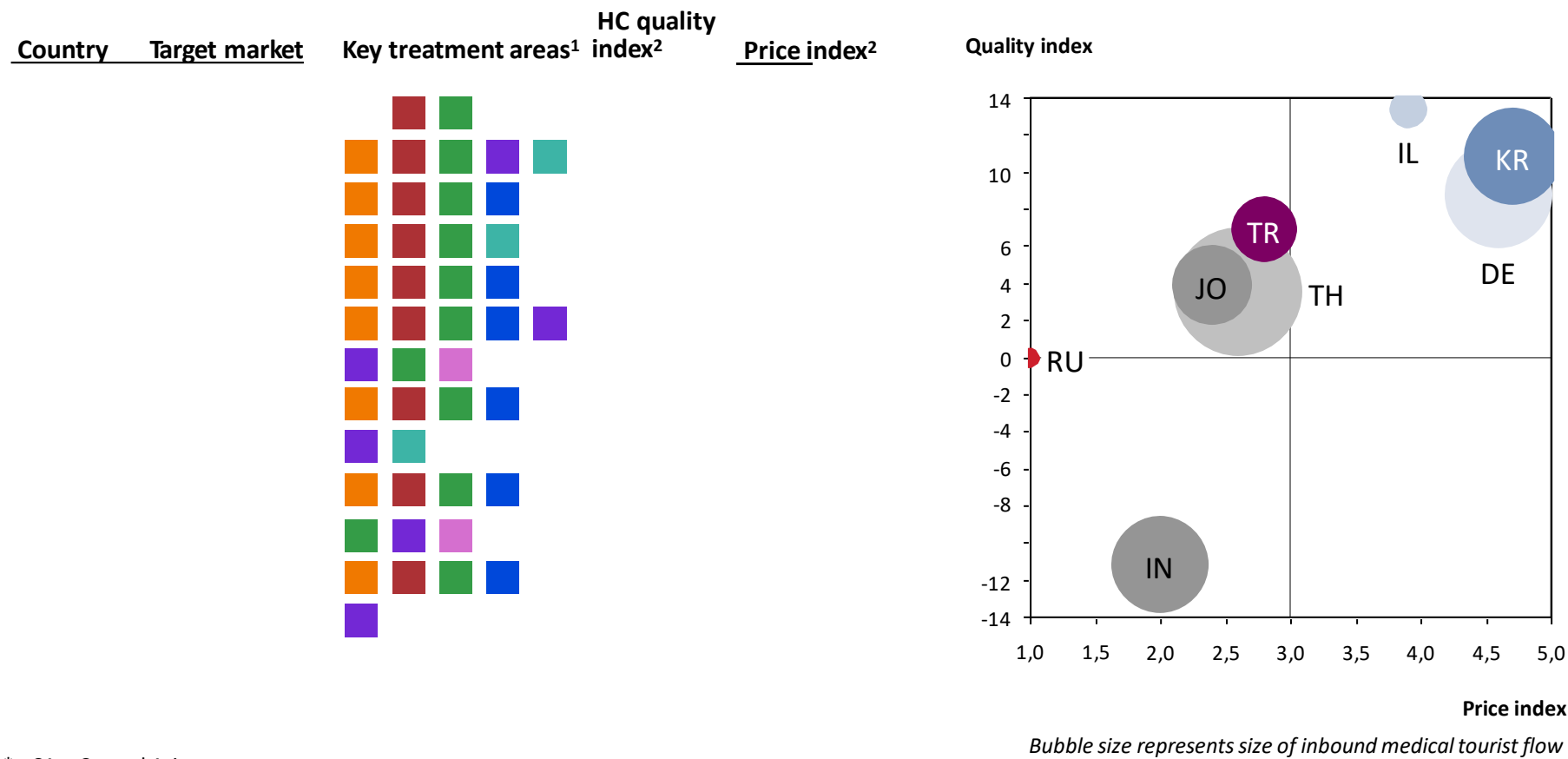
Competitive landscape in the region

Feasible treatment areas analysis

International patient behaviors

Appendix – international case studies

Turkey appears to be the major competitor, competing for all addressable flows with good price/quality index



Color codes:

- oncology

- cardiology

- orthopedics

- neurology

- aesthetic

- fertility

- check up

Germany, Thailand, India, South Korea, Israel and Turkey are key competitors to DHH. Key treatment areas within these countries are mostly necessary oriented.

1.

Medical tourism facts and figures 2016, Ian Youngman; Information from open sources; Key treatment areas relevant to target market countries



2.

Philips analysis based on key socio-economic indicators and healthcare systems performance

3.

Medical tourism facts and figures 2016, Ian Youngman

Competitor landscape in key countries appears to be consolidated, which allows to identify specific competitor clinics

Country	Inbound patients	Examples of largest clinics	Foreign patients ¹	Estimated share of top 5	
Turkey	100 000	1) Acibadem	23 000	>30-40%	
		2) Anadolu	5 000		
		3) Este – Trip	2 000		
India	200 000	1) Apollo Hospitals	50 000	> 30%	
		2) Fortis Healthcare	n/a		
		3) Max Healthcare	n/a		
		4) Aditya Birla	n/a		
Thailand	350 000	1) Bumrungrad	> 200 000	> 60%	
		2) Bangkok Dusit	n/a		
		3) Samitivej Hospital	n/a		
Israel	35 000	1) Sourasky Medical Center	n/a	> 30%	
		2) Herzliya Medical Center	8 000		
		3) Haddasah Medical Center	> 5000		
		4) Sheba Medical Center	n/a		
S. Korea	200 000	1) SNUH	30 000	> 20%	
		2) Cha Health Systems	9 000		
		3) YUHS Severance Hospital	n/a		
Germany	250 000	1) Heidelberg Hospital	> 3 000	< 10% ²	
		2) Medical Center UKE	n/a		
		3) Klinikum Stuttgart	n/a		

Consolidated market

Key competition: Leading hospital chains and centers

Fragmented market

Key competition: In addition to large universities - many small and medium clinics

We assessed the supply-demand balance by looking at availability of affordable options for medical tourists at key destinations

Establishing price option gaps

STEP 1: Price benchmarking among key destination markets for a list of popular medical tourism treatments:

Cardiology (3 treatment types), Plastic Surgery (8), Dentistry (1), Oncology (3), Orthopedics (3)

Illustration

	All in US\$					
Medical procedure	Colombia	India	Germany	Russia	Armenia	Jordan
Heart Bypass	14 800	7 900	17 500	5 571	5 000	14 400
Angioplasty	7 100	5 700	6 900	2 112		5 000
Heart Valve Replacement	10 450	9 500	38 000	5 851		14 400
Dental Implant	1 200	900	1 200	718	400	900

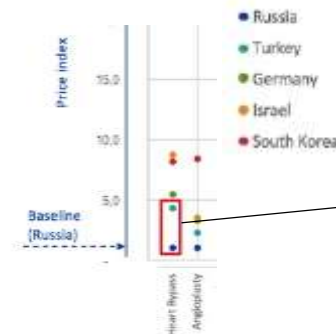
STEP 2: Defining baseline:

- **Russia** as base for **Russia/CIS**: the lowest average cost of selected treatment types comparing to all popular destinations
- **Turkey** as base for **GCC/IRAQ**: the closest and most popular destination and 2nd lowest average cost of selected treatment types

Russia/CIS	GCC/IRAQ	
<i>Russia</i>	<i>UAE</i>	Source market
Turkey	USA	Baseline
Germany	Germany	Destination countries
South Korea	UK	
Israel		

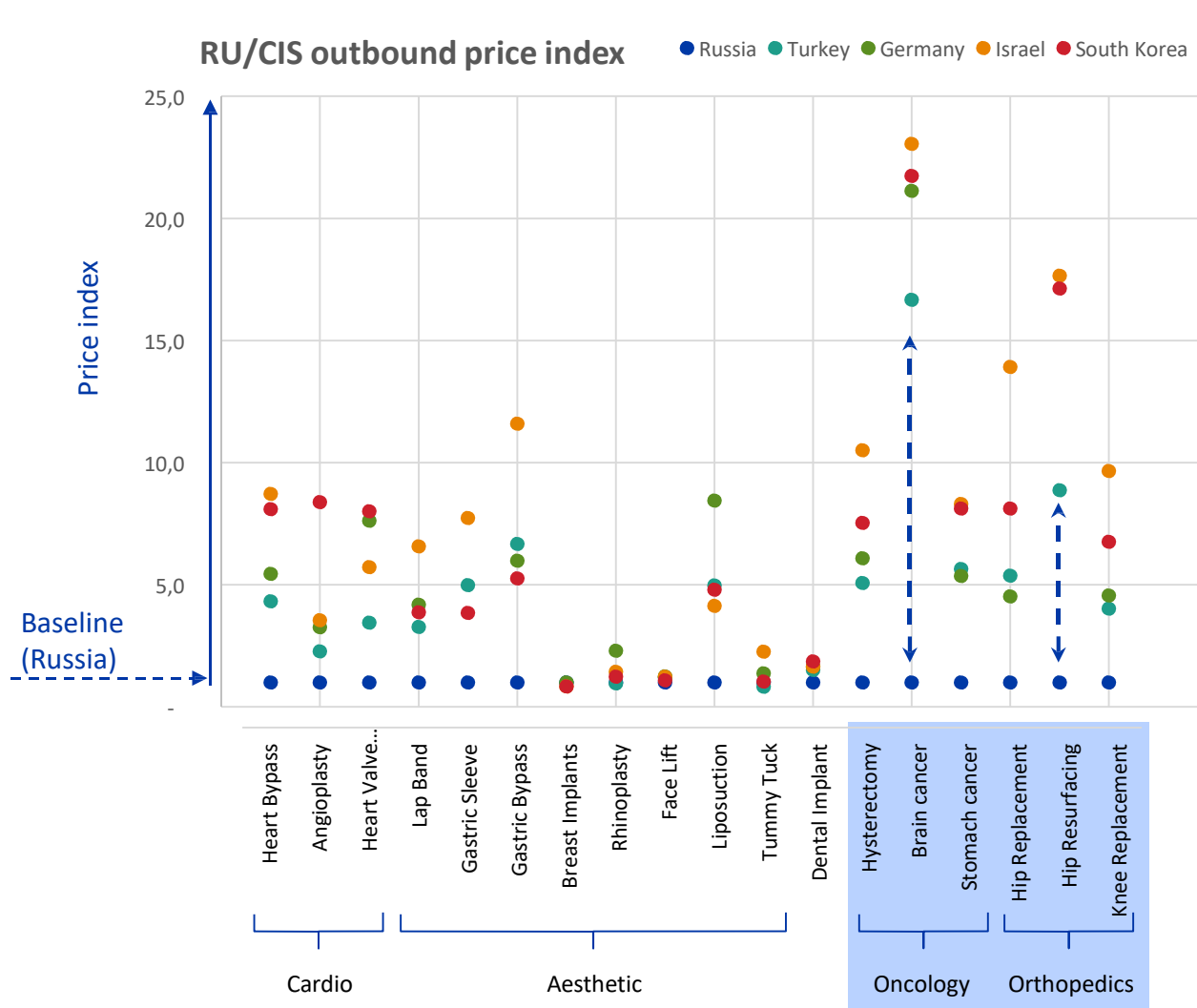
STEP 3: Comparing price gaps

- Small or no price gap compared to baseline indicates that many affordable options are available, lots of supply, tough competition
- Large price gap – lack of affordable option, less intense competition



Large gap for heart bypass – lack of affordable supply

Largest gaps in affordable capacity are in oncology and orthopedics, meaning less intense competition and entry potential

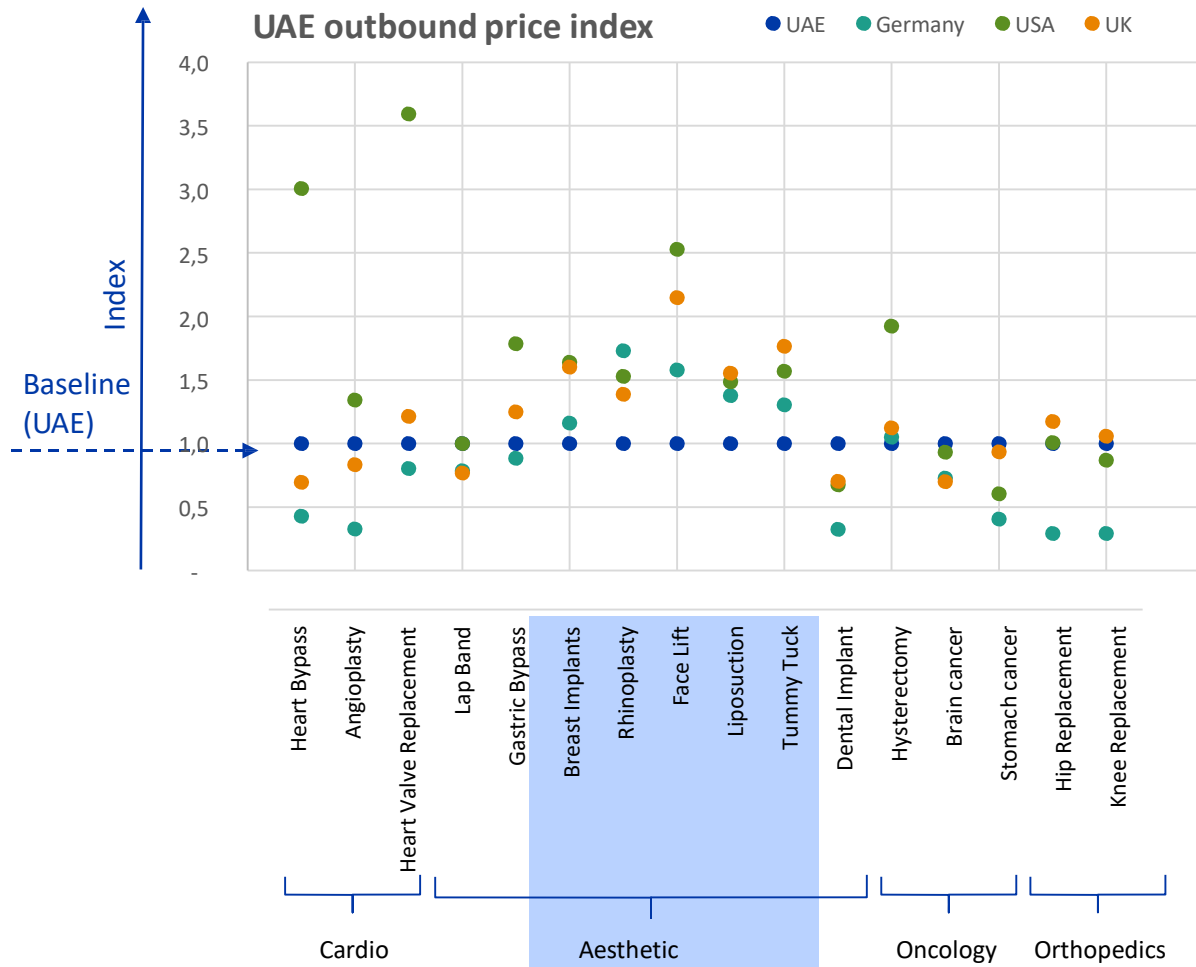


Price option gaps

Comments

- Treatment areas with "price option gaps" present an opportunity for DHH to create an attractive alternative option
- The most notable gaps are registered in Oncology, and Orthopedics: at least 4-5x price difference between the treatment cost in Russia and the next option







UAE outbound medical tourists enjoy ample affordable options, which suggests more intense competition



Comments

- For most of the treatments, UAE/GCC outbound medical tourists have less expensive options than domestically. This indicates that ample affordable supply of services is available – hence, intense competition for ME tourists
- For plastic surgery international options are more expensive; however, this likely indicates significant domestic supply of such services in UAE, and again – more intense competition

In addition, several new high-profile facilities are coming online, which could play a role as competition

	Name	TA*	Size // Capacity	Status	Target market	Value proposition	Key implication on DHH
	Skolkovo Medical Hub / <i>Russia - Moscow</i>	Multi-specialty	Cluster // >500 beds	1 st phase – 1Q 2018	RU (out of pocket + OMI)	New legislation allows to use equipment and medicine on a territory of Medical Hub that are not registered in Russia.	Decrease of outbound medical tourism flow from Russia
	Medical Cluster / <i>Russia – Karachay-Cherkessia</i>	Multi-specialty	Cluster // >500 beds	1 st phase – 1H 2020	RU (OMI + out of pocket)	Affordable high-tech medical care for patients from North-Caucasus.	Medical cluster will compete with DHH for local population from North-Caucasus and for population of Caucasus countries as well
	Armenian Center of Excellence in Oncology / <i>Armenia</i>	Oncology	Niche center // 500 – 1000 patients a year	1 st phase – 1H 2019	AM (OMI + out of pocket)	Affordable high-tech medical care for local population.	Competitor in oncology treatment for local population
	Gustave Roussy Institute / <i>Armenia</i>	Oncology	Niche center // n/a	Under construction	AM	New oncology center in Yerevan. Collaboration with National Oncology Center Armenia	Competitor in oncology treatment for local population
	Chenot / <i>Azerbaijan</i>	Wellness	72 hotel rooms	4Q 2016	CIS (out of pocket)	Luxury spa-hotel for CIS population	
	Acibadem / <i>Kazakhstan</i>	Multi-specialty	General hospital // n/a	2Q 2017	KZ	Network of out-patient consultation facilities, connecting KZ patients with Acibadem's medical centers in Turkey	Competition in Kazakhstan, risk of further expansion in other countries

* - Treatment area

Major projects in key source countries will have some impact on outbound flows; however, most are public – affecting lower incomes

Country/Region	Treatment areas	Selected projects in development	Origin
Russia	<ul style="list-style-type: none"> • Oncology • Cardiology • Neurology 	• Federal center of medical radiology, Dimitrovgrad, Russia (312 beds)	• State
		• Multidisciplinary Clinic of Military Medical Academy, Saint-Petersburg (630 beds)	• State
		• Multifunctional Medical Complex, Gelendzhik, Krasnodar region	• State
		• SIS Hospital, Rostov (230 beds)	• Private
CIS	<ul style="list-style-type: none"> • Oncology • Cardiology • Neurology • Pediatrics 	• President Clinic, Zhdanovichi, Belarus (100 beds)	• State
		• Eurofinsa multidisciplinary clinic, Almaty, Kazakhstan (300 beds)	• PPP
		• Multidisciplinary Clinic, Rukhi, Georgia (220 beds)	• State
		• Multidisciplinary children's hospital, Tashkent, Uzbekistan (280 beds)	• State
GCC	<ul style="list-style-type: none"> • Wellness, check-up • Plastic surgery • Oncology • Cardiology • Neurology 	• Burjeel Medical City, Abu Dhabi (300 beds)	• State
		• Gulf Medical University Hospital, Ajman (300 beds)	• State
		• Mediclinic Parview Hospital, Dubai (150 beds)	• PPP
		• King's College Hospital, Dubai (200 beds)	• PPP
		• MAG Creek Wellbeing Resort, Dubai	• Private



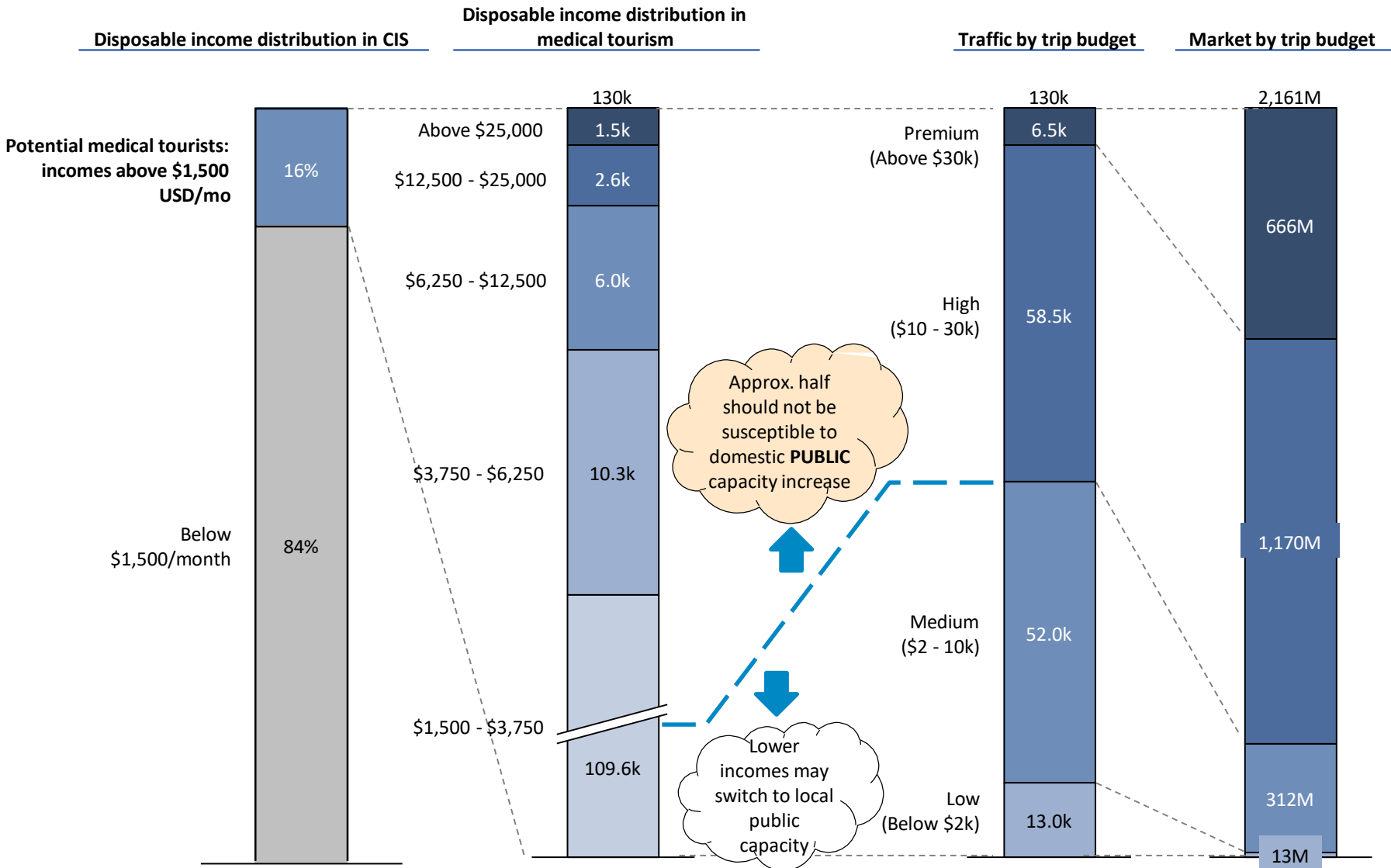
MAJOR VISIBLE PROJECTS, MAY NOT BE EXHAUSTIVE

Key developments in competing countries are also large public projects

MAJOR VISIBLE PROJECTS, MAY NOT BE EXHAUSTIVE

Country/Region	Treatment areas	Selected projects in development	Origin
Turkey	<ul style="list-style-type: none"> • Oncology • Cardiology • Neurology 	<ul style="list-style-type: none"> • Istanbul's İkitelli City Hospital (2700 beds) • Gaziantep Integrated Health Campus (1875 beds) • Ankara Etlik Integrated Healthcare Campus (3566 beds) • Ankara Bilkent Healthcare Campus (3804 beds) 	<ul style="list-style-type: none"> • PPP • PPP • PPP • PPP
Baltic states	<ul style="list-style-type: none"> • Oncology • Cardiology • Neurology 	<ul style="list-style-type: none"> • LS Medical Property, Riga, Latvia 	<ul style="list-style-type: none"> • Private
Iran	<ul style="list-style-type: none"> • Oncology • Cardiology • Neurology 	<ul style="list-style-type: none"> • Pessina Constructions Hospitals – 3 hospitals in Tehran (1000 beds each) • Isfahan Healthcare City, Isfahan (400 beds) • VAMED Hospital, Shiraz (300 beds) 	<ul style="list-style-type: none"> • State • State • PPP

Although most part of medical tourists are not very high-income people, they are paying high average check



Global medical tourism market overview

Addressable market analysis

Feasible treatment areas analysis

International patient behaviors

Appendix – international case studies

We included 11 treatment areas (TA's) into consideration of addressable market for DHH

What we consider



N*	Oncology	• All types of cancer treatment
	Cardiology	• Cardio surgeries
	Orthopedics	• All types of orthopedic treatments
	Neurology	• All types of neurological treatments
	Pediatrics	• All of included treatment areas in children
	Rehabilitation	• Several types of rehab (see further)
	Ophthalmology	• Ophthalmological diseases and laser sight corrections
D*	Fertility	• IVF, surrogate motherhood
	Check-up	• Various types of health screening
	Aesthetic	• Plastic and cosmetic surgery
	Anti-aging	• Non-surgical cosmetic treatments, e.g. stem cells therapy

What we exclude

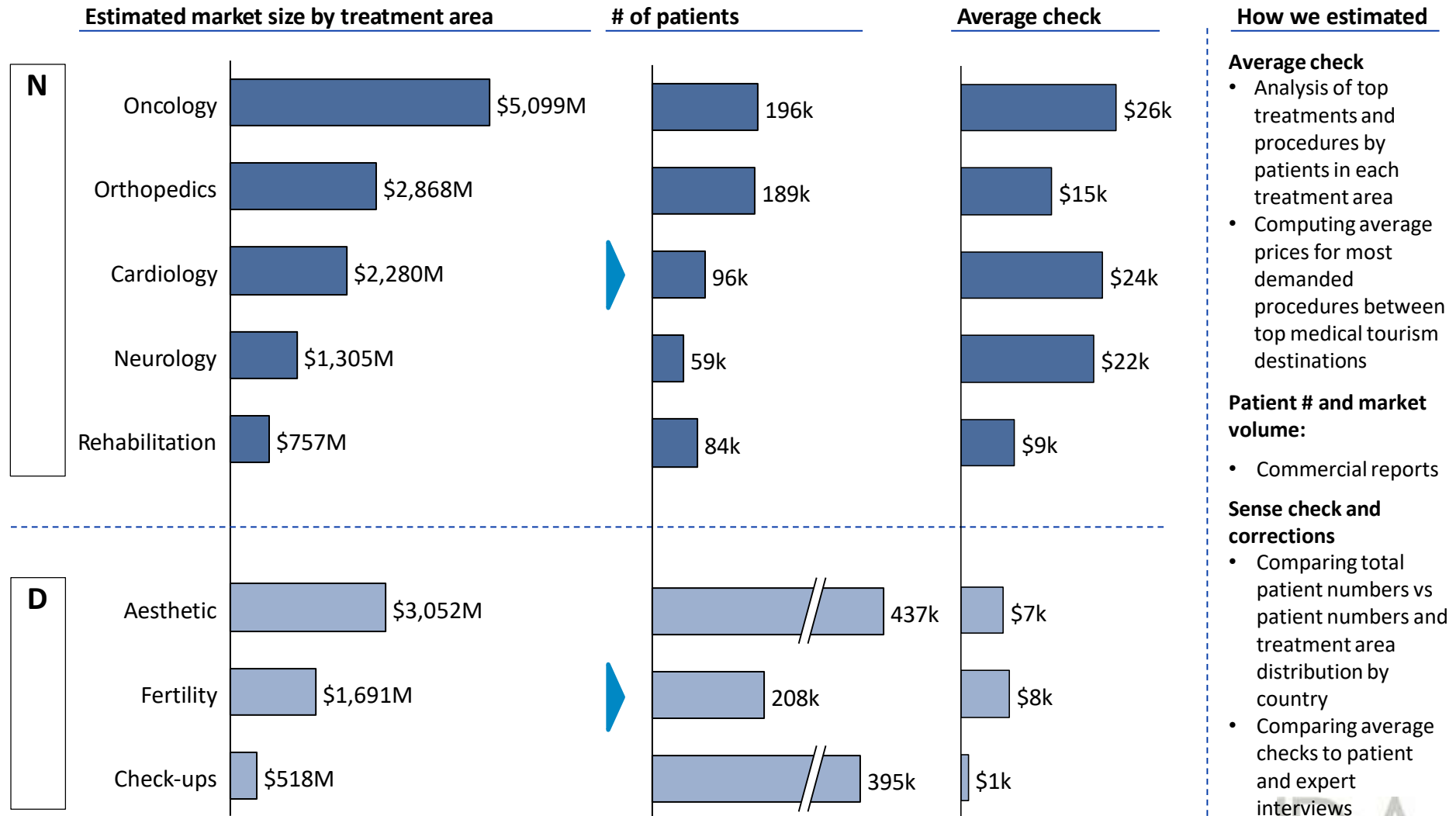


Psychiatry & psychotherapy	• Language barrier is an insurmountable obstacle in psych; doctor needs to be native speaker of patient's language
Chronic conditions	• Medical travel is not economically feasible for chronic conditions, except for very high income people
Urgent traumatology	• Urgent care excludes travel
Spa & wellness (excl. medicinal procedures)	• Not an area of medicine
Dentistry	• Not enough scale • High competition in Armenia

People travel to other countries mostly for specific diagnostics and treatment procedures

Treatment areas		Prevention	Diagnostics	Treatment	Rehab	Comments
N	Oncology		Typical scope of medical trip			Proper diagnostics and treatment protocol are key to successful outcome
	Cardiology					Diagnostics and rehab are only needed in complicated cases
	Orthopedics					Diagnostics are usually done at home; post-treatment rehab is prevalent
	Neurology					Diagnostics are needed in complicated cases, rehab is prevalent
	Pediatrics					Most patients seek treatment only, rehab is done domestically
	Ophthalmology					Most patients seek treatment only
	Rehabilitation					Self-explanatory
D	Aesthetic					Treatments in aesthetic medicine are usually presented as consumer “products”
	Check-up					Check-ups are usually meant for prevention, sometimes for diagnostics
	Anti-aging					Anti-aging involves aging prevention and light treatments, e.g. stem cell

Global market is mainly about necessary treatments*, which have fewer patients but higher average check

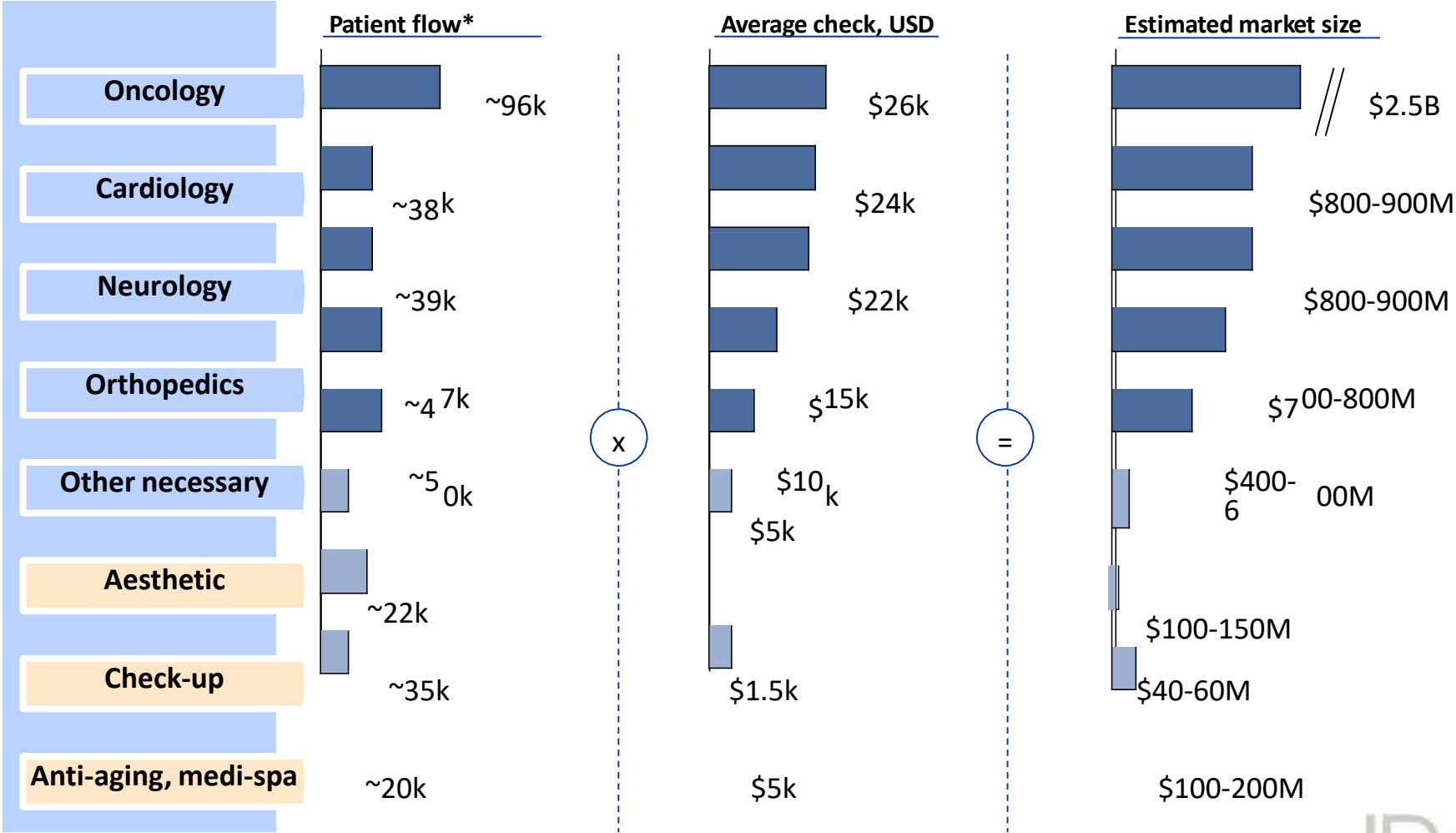


*Excluding dentistry, which is a large market globally, but very commoditized and w/o scalable business models

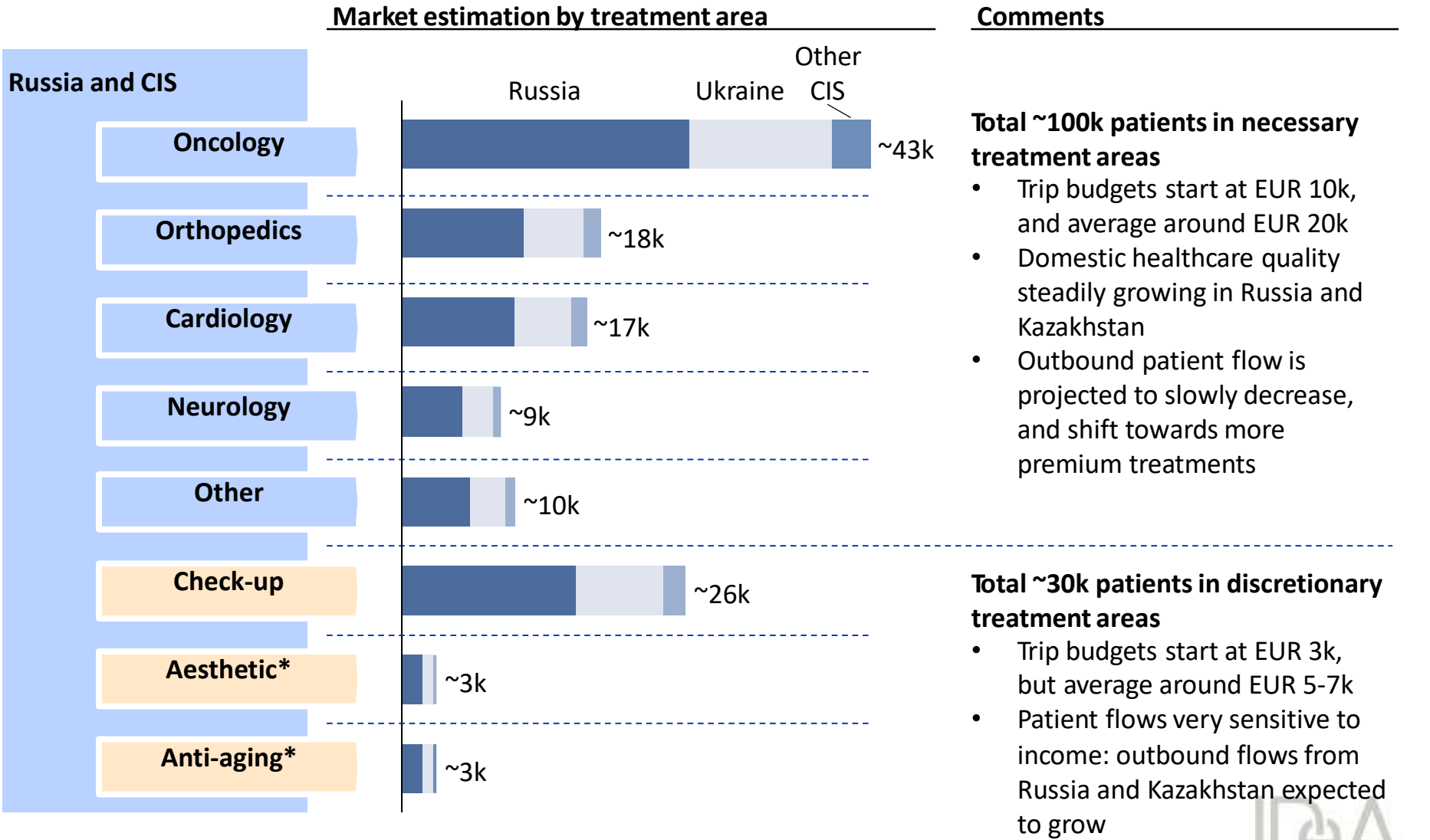
SOURCE: Accruray, Medical Tourism Facts and Figures 2016, patient and expert interviews, Patients Beyond Borders, Bookimed, PlacidPhilips analysis

Market potential

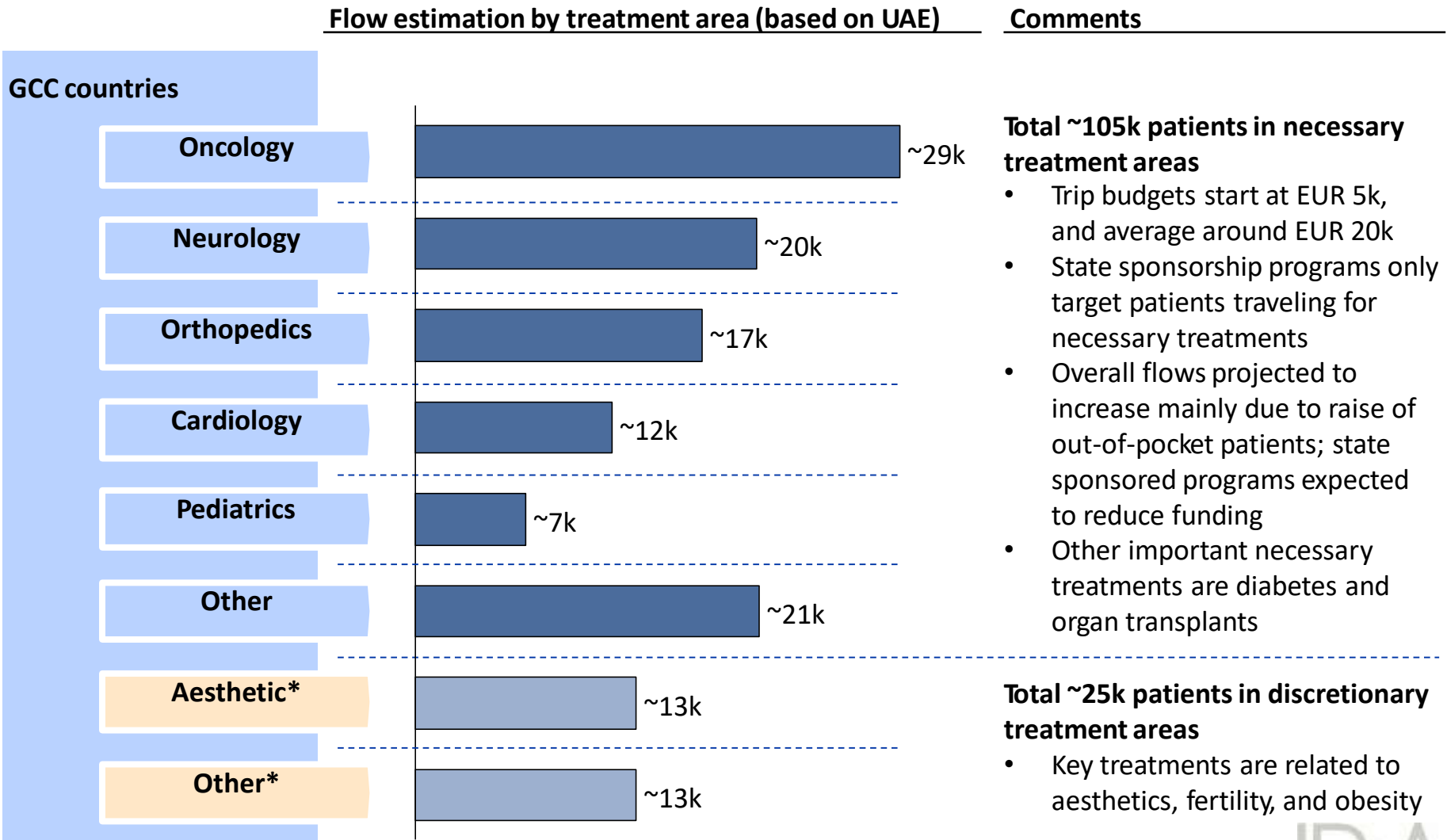
Treatment areas which dominate the RU, CIS, and GCC outbound medical tourism



Russia and CIS outbound flows are predominantly seeking necessary treatments: oncology, orthopedics, and cardiology

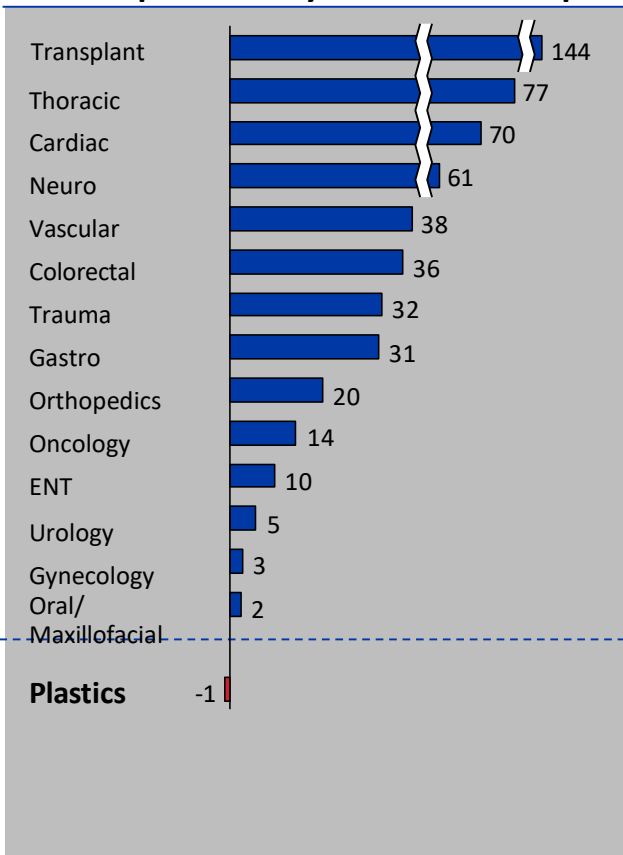


Outbound medical tourism from GCC countries is mainly targeting necessary treatment areas, similarly to Russia

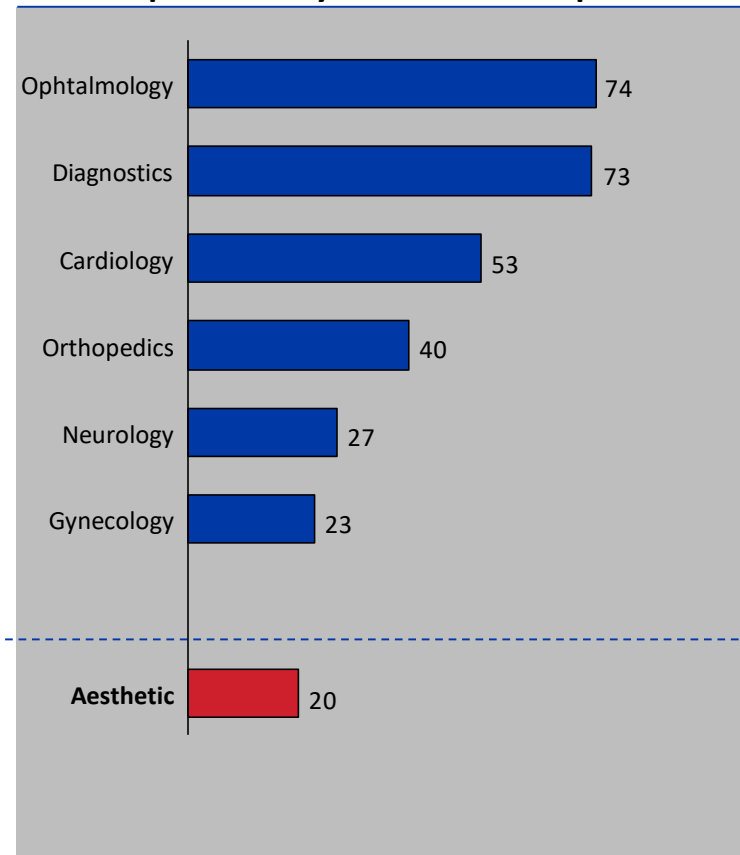


Large-scale discretionary business shows lower relative profitability than necessary, as scale does not add value for patient

Relative profitability index: US example¹



Relative profitability index: RU example²



1. Relative hospital margin per case was calculated based on operative cases performed at the Hospital of the University of Pennsylvania in 2004 fiscal year, relative to transplantation surgeries

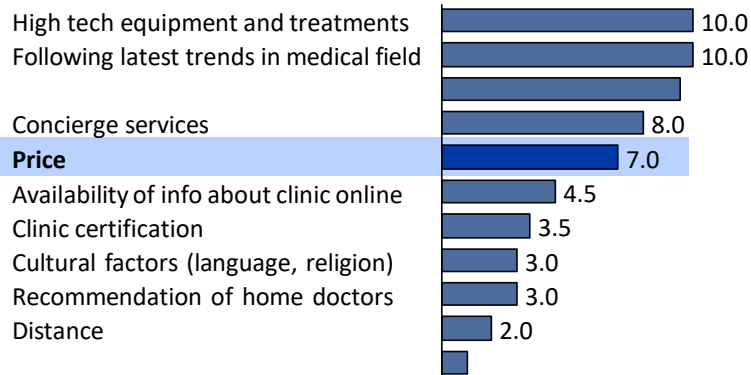
2. Index based on EBITDA

SOURCE: Open internet sources, Survey of US hospital operational efficiency, Philips analysis

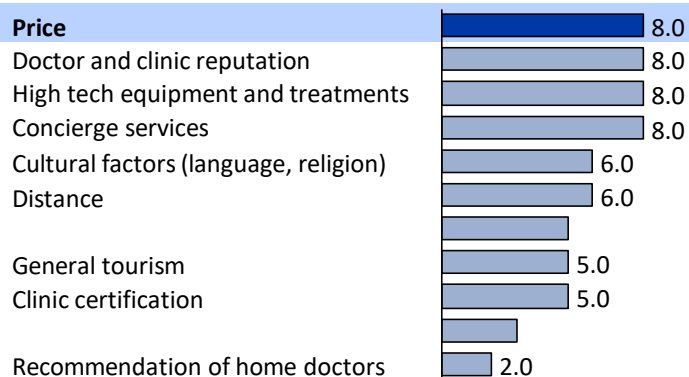
Necessary TA's also allow for more differentiation, as opposed to "consumerism" in discretionary TA's

Necessary is more driven by innovation, and less by distance, tourism, cultural factors, and price

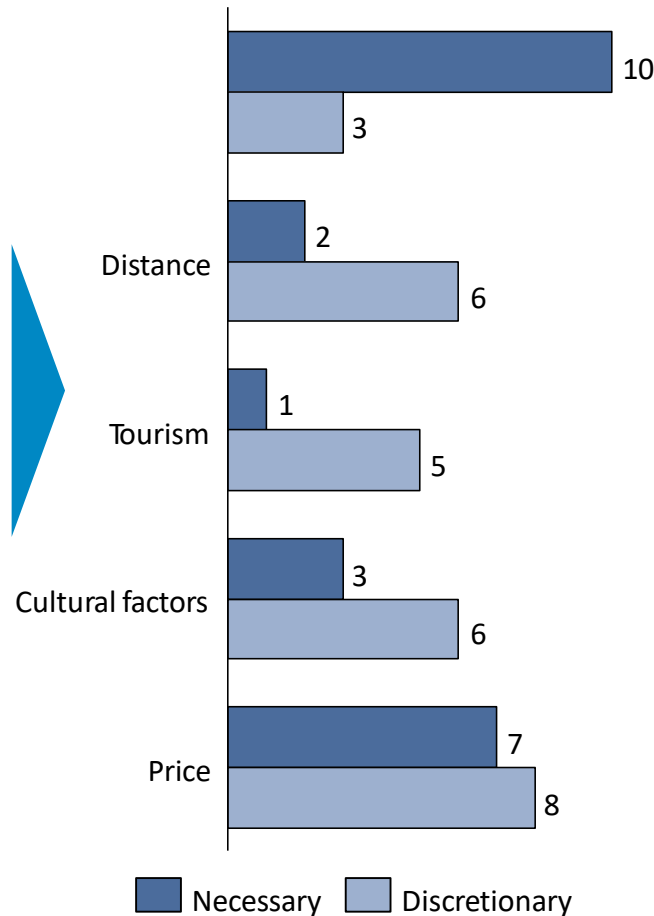
Median choice factor importance among patients seeking necessary treatments¹



...among patients seeking discretionary treatments¹



Key differences between choice factor importance indexes in N vs D

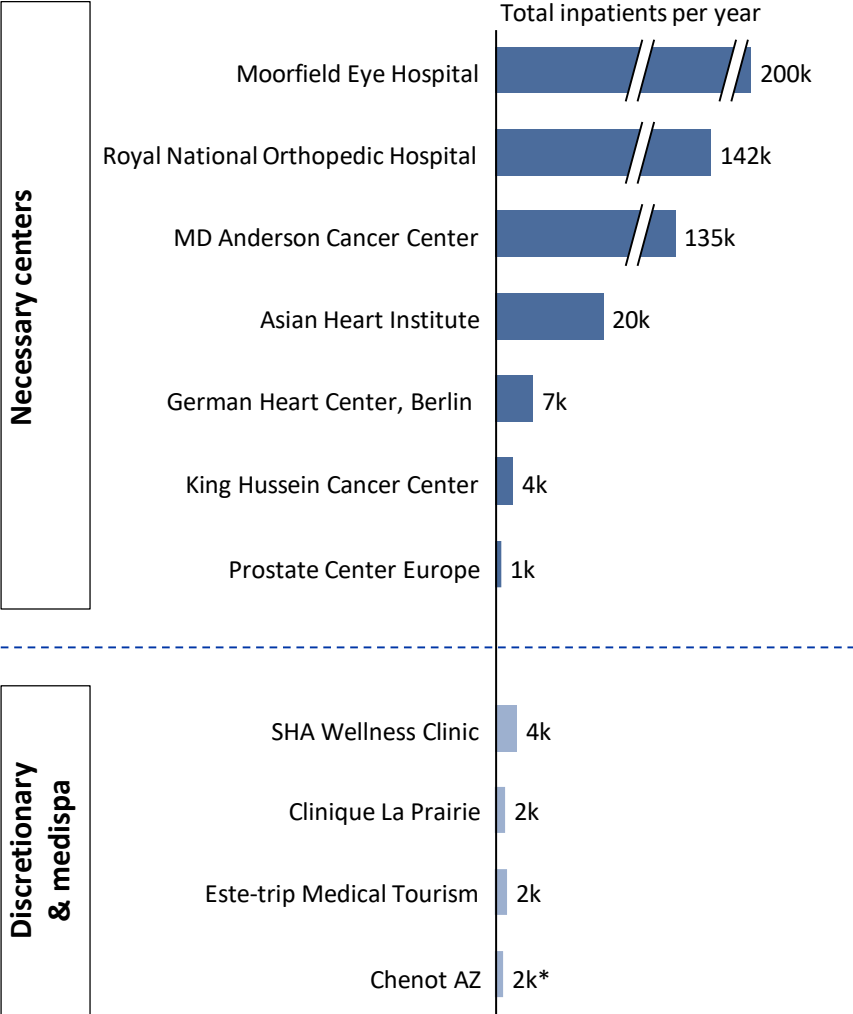


Comments

- Most of discretionary services are "commoditizing": being presented as clearly packaged consumer products
- Patients seeking discretionary treatments prioritize lifestyle: short travel distance, general tourism, cultural factors, etc.
- Patients seeking necessary treatments are mainly interested in successful outcome, do not prioritize lifestyle, and are less sensitive to price

Achieving large scale appears possible only with necessary treatment areas

Scalability potential assessment based on our case study clinics



Comments

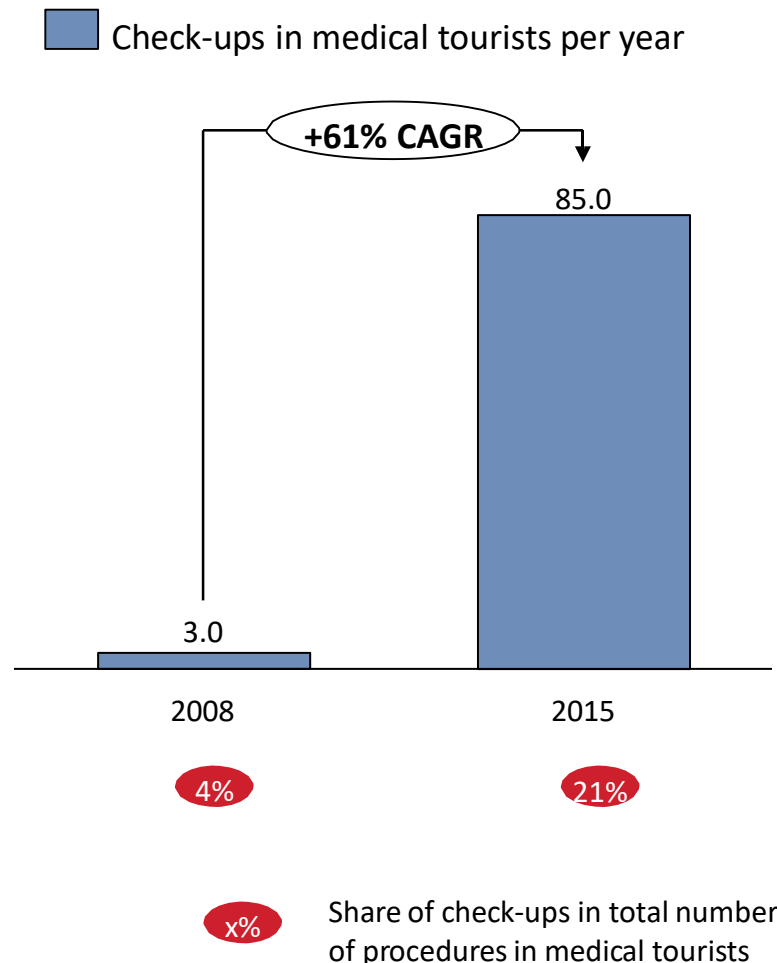
- Scalability appears only possible within key “necessary” health spaces
- Discretionary clinics appear to be significantly smaller on average; at the same time, many of these clinic (in contrast to necessary centers) can rely almost exclusively on medical tourists

Health Check up seems to be a “must” for any medical tourism destination, but it is a recent phenomenon



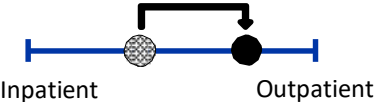







Reasons for necessity in medical tourism

- Check-ups constitute 20% of outbound medical tourism flow from Russia & CIS
- Unlike other treatments, check-ups have high upselling potential in addition to general tourism (e.g. ~10% of Russian tourists in Israel do check-ups)
- Check-ups can be packaged as user product and do not require high doctor expertise
- High potential of involving local population in state insurance paid check-up programs
- Check-ups lead to upsell of treatments in case if necessity is required, but only if medical center has capability and expertise to follow up on it

Example: Taiwan



Rehab is increasingly moving to outpatient setting; potential for medical travel appears mainly neuro, or in combination with treatment

Rehab type	What it is	Inpatient vs outpatient	Feasibility of travel	Comment
Neurological injury or disease	<ul style="list-style-type: none"> Learning to live after partial or full paralysis or stroke 			<ul style="list-style-type: none"> Very long recovery times with unpredictable outcome
Locomotor	<ul style="list-style-type: none"> Regaining highest possible functional level of walking and motion Including post joint-replacement surgery 			<ul style="list-style-type: none"> Lots of surgery travel makes rehab travel feasible Improvement in surgical quality moves this rehab type into outpatient area
Cerebral palsy	<ul style="list-style-type: none"> Treatment for children with congenital CP 			<ul style="list-style-type: none"> Travel is feasible for high quality rehab
Oncological	<ul style="list-style-type: none"> Improving quality of life in cancer survivors 			<ul style="list-style-type: none"> Predominantly outpatient (if not tied to ongoing therapy)
Cardiological	<ul style="list-style-type: none"> Recovering after cardiac surgeries and episodes 			<ul style="list-style-type: none"> Only when tied to cardiac surgery

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Appendix – international case studies

As part of the interview program we spoke with both medical tourism market experts and actual patients who were treated abroad

Specific goals for interviews:

Experts

- Market sizing, patient flows, demanded procedures in each treatment area, success factors

Patients

- Choice factors for selecting medical tourism destinations, considered countries, awareness about medicine in Armenia/CIS, willingness to consider Armenia/CIS as medical tourism destination

This section is focused on patient interviews

Questionnaire topics:

- What **countries** are destinations for medical treatment?
- How does one **select** the destination country, clinic and doctor?
- Which **alternatives** are typically considered?
- **Key factors** which influence patients' choice of destination for medical tourism
- Consideration of **CIS countries** as viable alternative?

We have conducted 60 interviews with patients in various countries

Region	# of patients	Demographics	Treatment areas	Trip budgets	Origins
Armenia	17	<ul style="list-style-type: none"> • Mostly diaspora • Ages 1-45 • All income brackets 	<ul style="list-style-type: none"> • Aesthetics • Orthopedics 	<ul style="list-style-type: none"> • 1k to 30k EUR 	<ul style="list-style-type: none"> • RU, US, TW, RS
Russia	18	<ul style="list-style-type: none"> • All income brackets, higher income more prevalent • Ages 30-75 	<ul style="list-style-type: none"> • Orthopedics, oncology, rheumatology, check-ups, aesthetics, gynecology, wellness 	<ul style="list-style-type: none"> • 2k to 30k EUR • ~200k EUR for high income patients 	<ul style="list-style-type: none"> • DE, CH, IL, IT, KR
CIS	10	<ul style="list-style-type: none"> • All income brackets • Ages 40-75 	<ul style="list-style-type: none"> • Check-ups, orthopedics, ophthalmology, neurology 	<ul style="list-style-type: none"> • 1k to 20k EUR 	<ul style="list-style-type: none"> • DE, KR, IT, IN
EU	10	<ul style="list-style-type: none"> • Low and average income • Ages 25-75 • Western Europe 	<ul style="list-style-type: none"> • Aesthetics, orthopedics, chronic disease treatment, wellness 	<ul style="list-style-type: none"> • Below 2k EUR 	<ul style="list-style-type: none"> • TR, DE, BE,
Middle East	5	<ul style="list-style-type: none"> • Average and high income • Locals and Indian immigrants • Ages 30-70 	<ul style="list-style-type: none"> • Podiatry, cardiology, orthopedics, diabetes, fertility 	<ul style="list-style-type: none"> • 1k to 10k EUR 	<ul style="list-style-type: none"> • USA, DE, UK, IN, TH, SG

Destinations

Recruitment: healthcare expert network of Philips and IDeA, personal connections, medical facilitation agencies/brokers

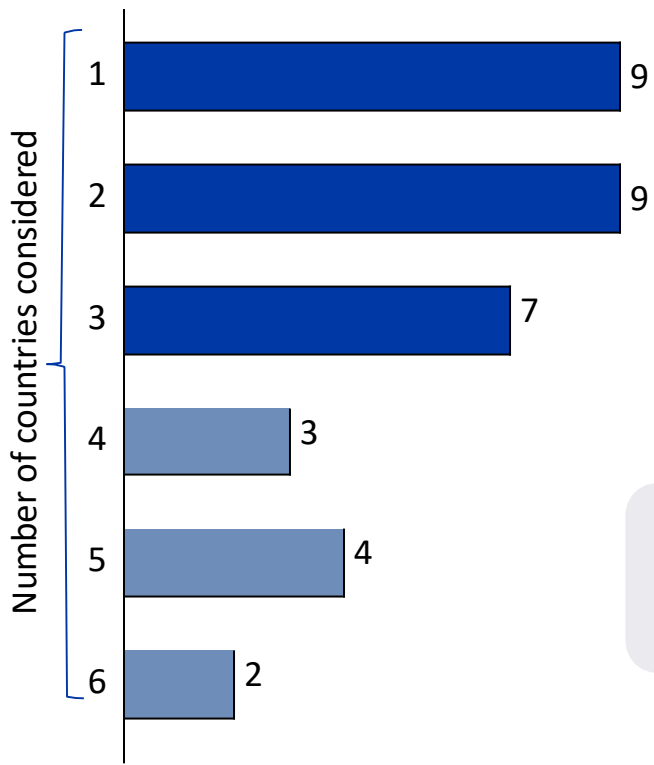
Patient choice factors and major selected destinations differ depending on region of origin; key differences are in discretionary

	Russia and CIS	Middle East	Europe
Key choice factors, necessary treatments	<ul style="list-style-type: none"> Information availability Expected quality of outcomes (reputation, technology) 	<ul style="list-style-type: none"> Expected quality of outcomes (reputation, technology) Price 	<ul style="list-style-type: none"> N/A: no significant travel for medical necessity
Key choice factors, discretionary treatments	<ul style="list-style-type: none"> Expected quality of outcomes (reputation, technology) 	<ul style="list-style-type: none"> Price 	<ul style="list-style-type: none"> Price
Major destination countries	<ol style="list-style-type: none"> Advanced healthcare destinations with strong diaspora: DE, IL Premium discretionary destinations: CH, KR 	<ol style="list-style-type: none"> Top rated global health systems: USA, DE, UK, SG Affordable Asian countries: IN, TH 	<ol style="list-style-type: none"> Affordable destinations within EU: PL, CZ, HU Turkey

Although all patients do some research before making their choice, their initial lists of options are normally very limited

Typically, patients only consider 1 to 3 countries before making their choice

Patient count by how many alternatives between destination countries they considered¹



"I always only considered countries known for their medicine, such as Germany, Israel and France"
Patient from Yuzhno-Sakhalinsk

"I ever only consider two countries: Germany and Switzerland. I think they have the best medicine"
Patient from Moscow

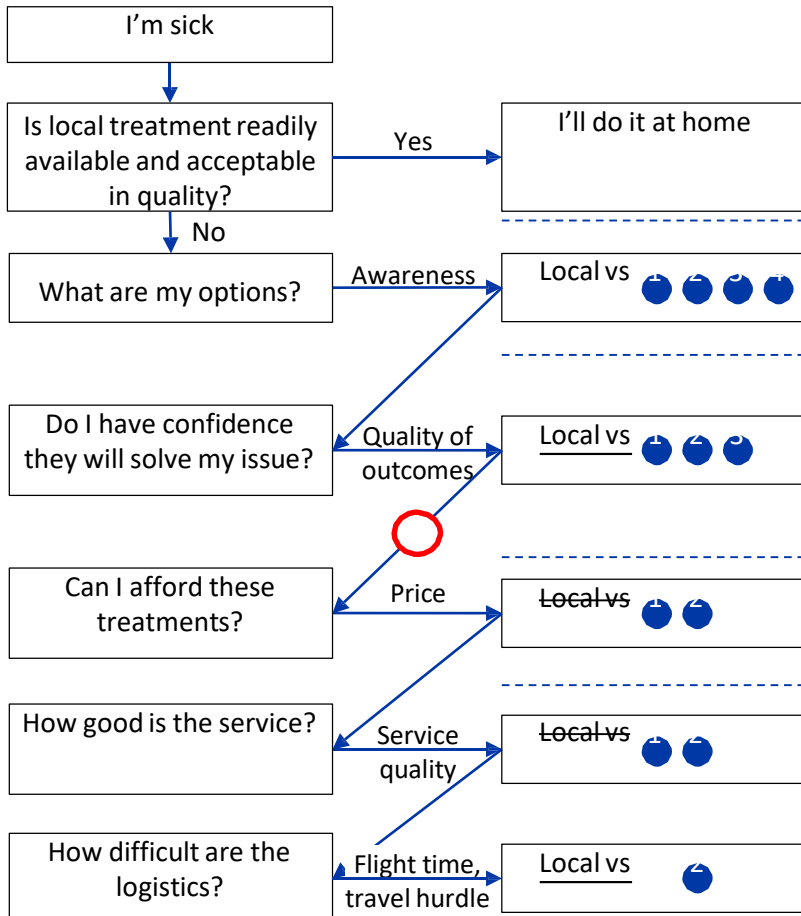
"We only considered India, because other countries would not give us a visa."
Patient from Tashkent

"I never considered alternative countries. Thailand fully satisfies me in terms of price and quality."
Patient from Moscow

Availability of information at initial stage is most important success factor for any destination

Trust in the quality of outcomes is paramount in the patients' decision tree for necessary treatments

Decision tree



Options for treatment abroad

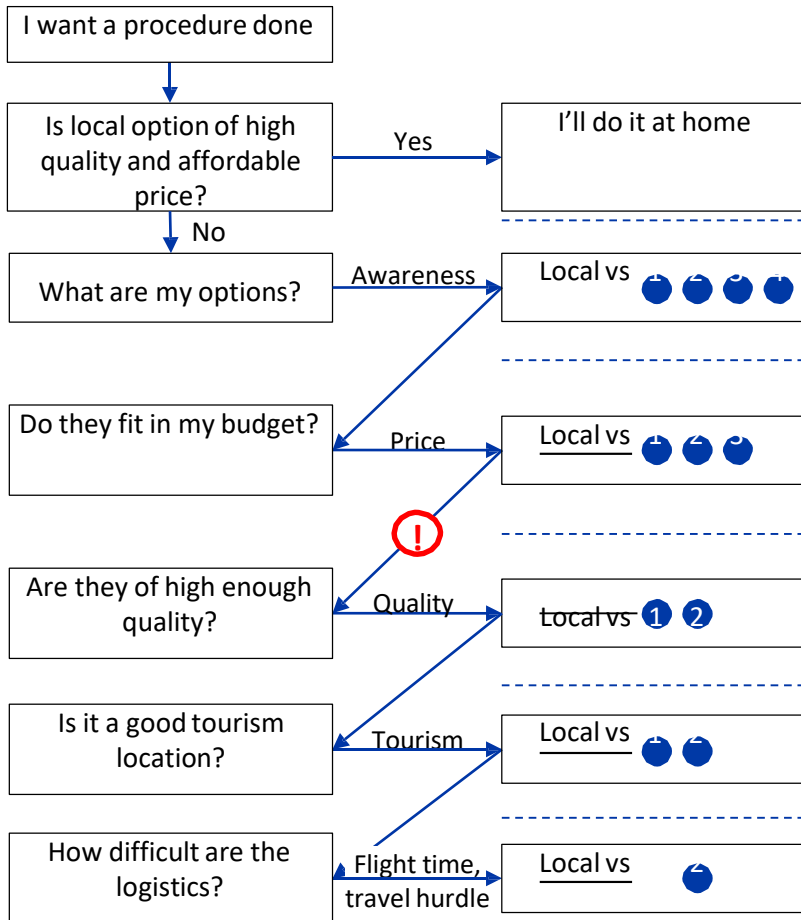
Choice mechanisms explained

- If domestic medicine has good quality and availability (e.g. no wait times), then patients are likely to get treated domestically
- Being aware of different options is first stage of decision tree
- Out of known options, patients select for highest quality of medicine
- Patients want confidence that they will receive best treatment available
- However, the treatment needs to be affordable
- After that, service and logistics act as final selection factors, secondary to quality and price

! Note key difference “necessary” vs “discretionary”

For discretionary treatments price is key

Decision tree



Choice mechanisms explained

- If the procedure is available domestically with reasonable price and good quality, patients do it at home
- Being aware of different options is first stage of decision tree
- Out of known options, patients look first at what fits into their budget, including non-medical costs
- However, the treatment needs to be of high enough quality
- Touristic attraction is also a very important factor when selecting destination
- Flight distance and handling logistic questions act as final selection factors, secondary to quality and price

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Appendix – international case studies

Dubai Healthcare City (DHCC), Dubai, UAE

Business model: Healthcare cluster providing infrastructure as a service

Overview

- Founded in 2002
- Healthcare focused freezone authority aiming to become a 'one-stop-shop' solution for healthcare providers and educators aiming to setup business in Dubai
- Provides licenses for medical practice and education that is only valid within DHCC
- Size: 150 medical facilities (clinics and hospitals) and 1 university
- ~1.2M total patients/yr

Medical tourism

- ~200k medical tourists/year
- Tourist origins: GCC (37%), Middle East (25%), Europe (20%), Asia (18%)
- Cosmetic and aesthetic clinics provide concierge services
- 5 star hotels now available onsite
- Certification: JCI, ISO



Treatment areas

- Multi-specialty offerings
- Fertility
- Dental
- Aesthetic
- Check-ups
- Wellness

Clinical areas

- Diagnostics ☒
- Treatment ☒
- Wellness ☒
- Education & Research ☒
- Medical Simulation ☒

Value proposition

- Economic Freezone in Dubai focused on Healthcare (lenient regulatory framework)
- Developing the worlds largest 'Wellness Village'
- Easy setup of healthcare business/ clinical practice
- Easy to obtain clinical license for medical practice (but applicable only within DHCC)
- JCI accreditation of mostly all operating medical facilities – DHCC provides support towards obtaining JCI accreditation for operating facilities
- Partnerships with onsite Hotels for cost-effective medical and wellness treatment packages

<https://www.oxfordbusinessgroup.com/analysis/healthy-returns-medical-tourism-segment-takes>

<https://www.oxfordbusinessgroup.com/analysis/map-medical-tourism-spec%C5%9Fialising-niche-areas-has-become-new-focus-emirate-0>

<https://www.thenational.ae/business/staff-and-facilities-growing-fast-at-dubai-healthcare-city-1.201359>

<https://www.thenational.ae/uae/health/ivf-tops-list-for-medical-tourists-in-dubai-1.472692>

<https://www.dhcc.ae/Portal/en/media-center/news/26/1/2015/dhcc-receives-record-12-million-patient-visits-in-2014.aspx>

Success case

Business model: Healthcare IT cluster

Overview

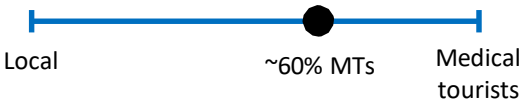
- Founded in 2014 as a part of Tallinn Science Park Technopol
- Brown field (Existing science park territory plus collaboration with external medical organizations)
- 70+ members
- Size of hospitals: 1676 beds total of 2 Hospitals
- ~43.5k inpatient, ~112.5K outpatients, ~16K emergency assistances/year
- Certification: Bronze Label of the European Cluster Excellence Initiative
- Hospitals located around Estonia

Core companies

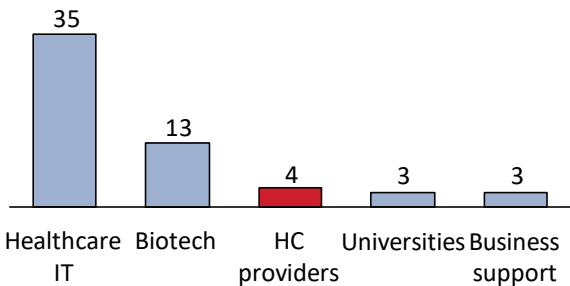
- Biotech
- Health-IT
- Pharma
- Healthcare providers
- Universities
- Business support
- Start-ups

Medical tourism

- ~22K international cases in oncology department*
- Tourist origins: Baltic countries, Russia



Number of companies



Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☒

Key success factors

- Cluster facilitates contacts between country health ecosystem and innovative health technologies that allows to provide best solutions to solve healthcare challenges
- Digitalization of society and services in Estonia provides wide range of opportunities at junction of Healthcare and IT
- Estonia offers e-residency for foreigners which allows access to Estonian services such as Taxing, company formation, banking, etc. that allow to attract “brains” to country and particularly to cluster

Business model: Healthcare IT cluster

Overview

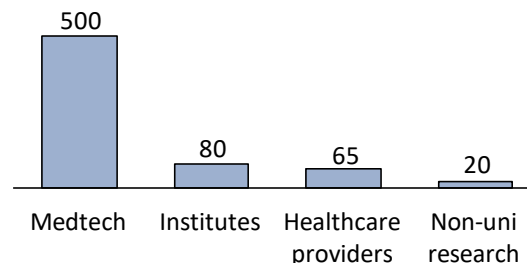
- Founded in 2007 as association of healthcare providers and different industries
- Brown field (Existing facilities united under umbrella organization)
- 190+ members spread all over Bavaria (mostly concentrated near Nurnberg, Erlangen, Lauf)
- Size of hospitals: 4226 beds total in 3 largest Hospitals
- ~164k inpatient, ~125K outpatients/year (as of 2 hospitals)
- ~850k inpatients each year total

Medical tourism

- ~700 patients were treated in Nuremberg clinic in 2010* .
- Tourist origins: GCC, UK, CN, RU



Number of companies



Core companies

- Health-IT
- Pharma
- Biotech
- Healthcare providers
- Universities

Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☒

Key success factors

- Cluster's management company positions itself as "One-Stop-Shop" for members and candidates – conducts marketing, coordination and development activities
- Key cluster members (Siemens, Forchheim, etc.) create high demand on innovative R&D that make cluster attractive for Health-IT and biotech SME companies
- Various set of programs directed on collaboration between cluster/cluster members and community on creating, e.g., systems to support longevity and life-long retention of older people
- Process of application for tech small and medium enterprises is simplified

Business model: Networked chain

Overview

- Founded in 2002 around one of the largest Swiss hospitals, Genolier
- Brown field (existing hospitals united into network)
- Size: 988 beds total in 16 clinics
- ~53k surgeries/year
- ~2.5k obstetrics/year
- ~29k consultations/year
- Total of 16 clinics, average expansion rate at 1 clinic/year
- Certification: ISO, Domestic certificates

Treatment areas

- Oncology
- Ophthalmology
- Cardiology
- Orthopedics
- Check-ups
- Rehabilitation

Medical tourism

- ~1k medical tourists/year
- Tourist origins: China, Middle East, Europe, Russia



Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☐

Success case

Key success factors

- Built by acquiring already successful clinics
- Each member of network individually provides high quality services, network strengthens them in terms of cost-saving and client service
- Main asset of Aevis Victoria, investment company, specializing on healthcare and hospital services
- Genolier being one of few clinics in Switzerland which provide business services for people who wants to keep in touch with work while undergoing treatment

Dubai Health Experience (DXH)

Business model: Creating an internationally recognizable brand that will help attract international patients to Dubai

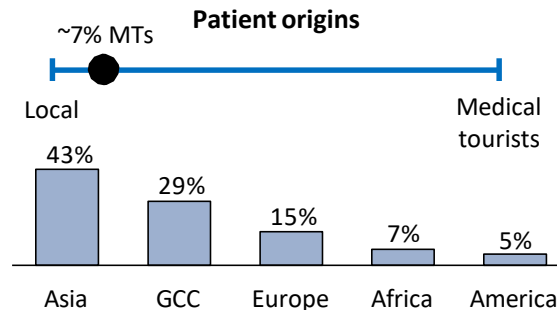
Success case

Overview

- Founded in 2014 by the Government of Dubai
- Consortium of hospitals and clinics that treat international patients in Dubai under 1 brand
- 25 healthcare providers
- ~640k patients/year
- Certification: JCI, ISO

Medical tourism

- ~47k international patients/year
- DXH provides patient protection services via specialized insurance
- Most tourists seek treatment for osteoporosis, fertility, dermatology and plastic surgery.



Clinical areas

- Diagnostics ☒
- Treatment ☒
- Healthy living ☒
- Rehabilitation ☒
- Pain management ☒

Value proposition

- “Creating an internationally recognizable brand for Dubai’s Healthcare System”
- Providing free international marketing to all partners of the program
- Providing international patients with specialized medical insurance and patient protection plans via partnership with the Government
- Providing cost-effective, mixed treatment & tourism packages via partnership with hotels and airlines

Treatment areas

- Multispecialty offerings

<http://gulfnews.com/news/uae/health/dubai-launches-world-s-first-medical-tourism-portal-1.1707862>

Business model: Networked chain

Overview

- Opened in 1980 with 200-bed facility
- Green field, ~\$4,5M investment
- One-stop medical center with small facilities around the country and abroad
- Size: 580 licensed beds, including ICUs and ward beds (69.6% weighted capacity utilization)
- Outpatient capacity - 5500 persons/day (53.7% WCU)
- ~1.1M patients/year
- Publicly owned by major group of shareholders with 69.5% of shares
- Certification: JCI (first in Asia)

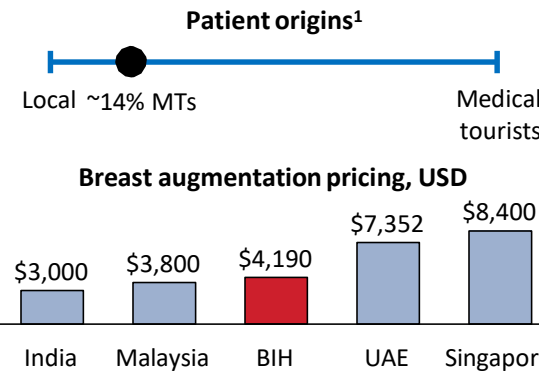
Treatment areas



- Neurology

Medical tourism

- **Vast majority of international patients get treated in main hospital**
- **~160k medical tourists/year¹**
- Tourist origins: Middle East, SE Asia, Europe, North America



Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☐

Success case

Key success factors

- **One of the best Digestive Disease, Heart and Comprehensive Cancer centers in region**
- First Asian hospital to receive JCI disease specific accreditation for stroke and heart programs
- First Asian hospital to operate Automated Drug Management System Swisslog
- Around 20% of doctors have certificates of US boards
- 35 independent referral offices in 20 countries
- Maintenance over 1000 corporate and insurance contracts as an additional way to attract patients to the hospital

Business model: Networked chain

Overview

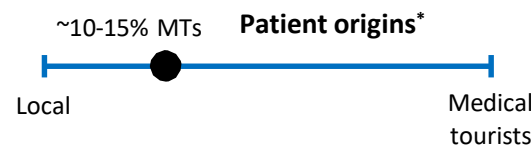
- Established in 2013 as an association of health and wellness providers
- Established around existing facilities
- 8 members, including single hospitals, spa, dental and cosmetic surgery centers located all over Lithuania
- Mostly outpatient treatment and diagnostics, SPA and wellness centers have their own accommodation beds
- Over 100K patients/year
- Certification: JCI, Excellence in Medical tourism

Treatment areas

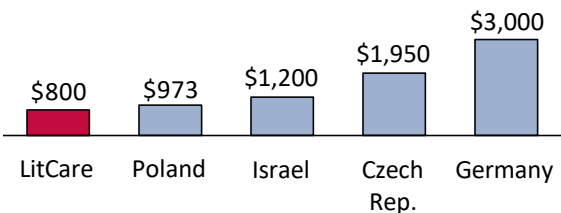
- Spa & Wellness
- Aesthetic surgery
- Dentistry
- Check-ups
- Orthopedics

Medical tourism

- ~3k medical tourists/year in one of hospitals
- Tourist origins: Scandinavia, UK, Germany, Russia, Baltic countries



Dental implantation (per 1 implant), USD



Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☐

Success case

Key success factors

- Built on top of existing healthcare facilities as a marketing mechanism
- Targeted at large mature medical tourism market: Europeans traveling to Eastern Europe for cheaper discretionary treatments
- Lower prices than competition (e.g. Poland and Czech Republic)

Business model: Networked chain

Overview

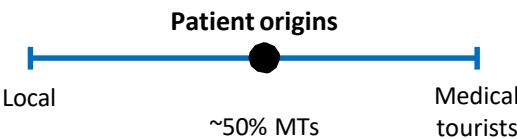
- Owned by Parkway Puntai which wholly owned by IHH-Healthcare (Asia’s largest healthcare group; incl. Acibadem HC group, Apollo Hospitals, etc.)
- Existing hospitals united into network
- Parkway East Hospital (est. 1942): 106 private beds; JCI
- Gleneagles Hospital (est. 1957): 258 beds; JCI
- Mount Elizabeth Hospital (est. 1979): 345 beds; JCI
- Mount Elizabeth Novena Hospital (est. 2012): 333 beds; JCI
- 60 000 patients treated in 2014

Treatment areas

- Neurology
- Orthopedics
- Oncology
- Pediatrics
- Otorhinolaryngology
- Ophthalmology
- Cardiovascular
- Other Specialties

Medical tourism

- About half of the patients come from overseas
- Tourist origins: Greater China, Indonesia, Malaysia, Vietnam, India, US, Canada, UK
- Concierge services provided by hospital chain



Clinical areas

- Preventive medicine ☐
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☐
- Research & development ☐

Success case

Key success factors

- High clinical quality standards with aim to exceed globally recognized clinical outcomes and benchmarks
- Latest medical techniques and equipment, the most up-to-date treatment options
- All of the Parkway doctors are senior physicians and are from public hospitals, and over 70% of them have been trained at top institutions and hospitals in the world
- Parkway has patient assistance centers in more than 20 cities worldwide

Business model: Networked chain

Overview

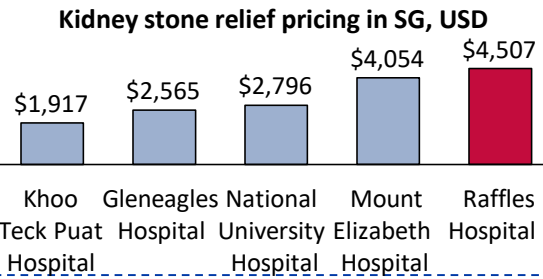
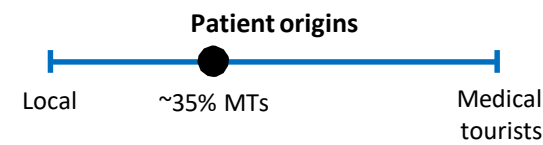
- Founded in 1999 by Raffles Medical Group, which operated in Singapore since 1976
- Brown field (existing commercial building converted into hospital)
- Size: 380 beds, 24 specialist centres
- ~13k inpatients/year
- Part of Raffles Medical Group, which is public
- Certification: JCI, ISO
- Member of the Mayo Clinic Care Network

Treatment areas

- Cardiology
- Oncology
- Orthopedics
- Check-ups
- Rehabilitation

Medical tourism

- ~4.6k medical tourists/year
- Tourist origins: Indonesia, China, Malaysia, Taiwan, Vietnam, USA, Europe, Middle East and Africa



Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☒

Success case

Key success factors

- Built on top of pre-existing successful local medical network
- High population neighboring countries with low quality healthcare: Malaysia, Indonesia, China
- Mayo Clinic Care Network participation: Real time input from Mayo clinic medical specialists in addition to knowledge sharing
- Large safety net of clinics in neighboring countries: China, Malaysia, Taiwan leads to independence from performance of individual hospitals



Business model: Networked chain

Overview

- Founded in 1991
- 22 hospitals, 20 outpatient clinics
- Publicly owned since 2000
- Closely cooperating with multiple insurance companies
- Certification: ISO, JCI (for some hospitals)
- Medical partnership: Partners Harvard Medical International; exchange in expertise, treatment protocols, etc.

Treatment areas

- Cardiology
- Oncology
- Orthopedics
- Check-ups
- Rehabilitation

Medical tourism

- ~23k international patients/year
- Dedicated international patients' office
- Expanding internationally: KZ, NL – outpatient clinics also meant to relay medical tourists to group hospitals

Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☒

Success case

Key success factors

- Strong international promotion
- Turkey is known as a destination for medical tourism from Europe
- International branches attracting patients to clinics in Turkey, generating awareness



Business model: Single hospital, non-profit foundation

Overview

- In 2002, Anadolu Group made an agreement with Johns Hopkins to create high class non-profit hospital
- Started operation in 2005
- 209 beds, no expansions in history
- Ongoing partnership with Johns Hopkins: patient referrals (e.g. JH will refer patients from Eastern Europe to Anadolu), treatment outcomes benchmarking, referrals for immediate cases
- Focus on oncology related to higher average patient spending than other treatment areas, and lack of quality onco treatments in neighboring countries

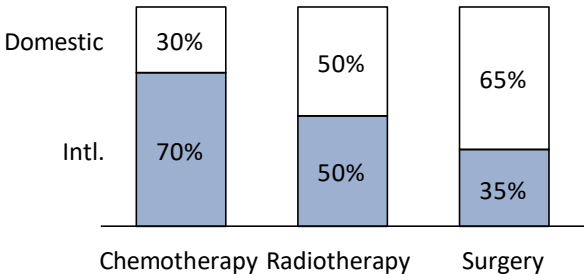
Treatment areas

- Oncology
- Oncological surgery
- Radiation oncology
- Cardiology
- Neurology
- Pediatrics

Medical tourism

- ~5k medical tourists/year
- 99% originate from countries within 3-hr direct flight
- Medical tourists generate more revenue than domestic patients

Share of international patients



Clinical areas

- Preventive medicine ☐
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☐
- Research & development ☐

Success case

Key success factors

- Created with medical tourism in mind
- Full design by Johns Hopkins: architecture, business processes, treatment protocols, etc.
- Lack of quality oncological healthcare in neighboring countries
- Lower pricing than Germany or Israel: mainly aimed at middle and upper-middle class patients
- Large international services department: ~70 employees speaking native languages of 64 countries
- Favorable visa regulations and flight arrangements: 99% of medical tourists come from countries with direct flights to Turkey

Business model: Single hospital

Overview

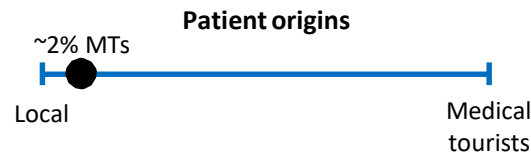
- Founded in 2015 in a partnership agreement between Mubadala Development and Cleveland Clinic
- 13 floor, 364 beds
- 80% of staff trained in US, 20% in Western Europe and Asia
- ~340k patients in 2016
- Partnership with Cleveland Clinic: brand, treatment coordination between facilities, medical expertise exchange
- Certification: JCI, ISO

Treatment areas

- Multispecialty offerings

Medical tourism

- ~7k medical tourists/year
- Aims at capturing Middle East patient populations that travel abroad
- Facilitate follow-up consultations and treatments at other Cleveland Clinic facilities, globally.
- Provide end-to-end patient services, from appointment booking, banking support, travel liaison to treatment follow-ups back home



Clinical areas

- Diagnostics ☒
- Treatment ☒
- Wellness ☒
- Education & Research ☒
- Medical Simulation ☒

Value proposition

- “Bring US level healthcare to the Middle East”
- Luxury hospital in the UAE that follows a US hospital model
- Clinical outcomes of treatments published on public domains
- Dedicated team consisting of medical professionals for international patient management

Business model: Single hospital

Overview

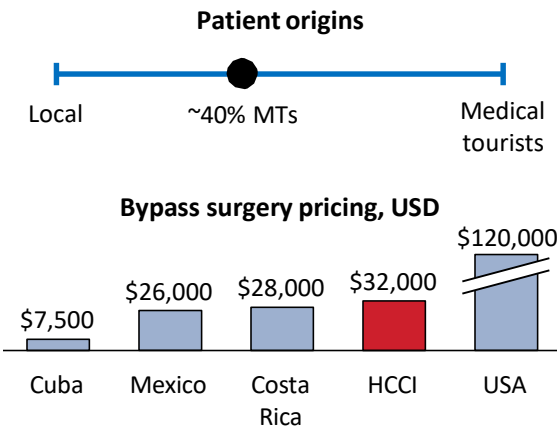
- Founded in 2014
- Green field, 6-phase investment plan amounting to \$2B; only phase 1 built
- Size: 104 beds, incl. 17 ICU beds
- ~7k outpatients/year
- ~650 inpatients/year
- ~500 surgeries/year
- Owned by Narayana Health and Ascension
- Certification: JCI
- Initial plan: 17,000 medical tourists/year; actual figure: below 1,000 medical tourists/year
- Marketed mainly as cardiology and orthopedics for US patients

Treatment areas

- Cardiology
- Endocrinology
- Oncology
- Orthopaedics
- Paediatrics
- Physiotherapy
- Pulmonology
- Neurology

Medical tourism

- **Below 1k medical tourists/year**
- Tourist origins: Caribbean, Mexico, USA
- Concierge services provided by hospital



Clinical areas

- Preventive medicine ☐
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☐

Non-success case

Reasons for lack of success

- **Weak value proposition: while targeting US patients looking to save, HCCI offers highest prices in Mexico and Caribbean region**
- While having addressable market of ~600k patients per year, HCCI managed to attract less than 1,000
- Medical tourists make ~0.05% of total touristic flow in Cayman Islands (~0.25% if not counting cruise ship visits) vs average of 0.92% in top 30 medical tourism destinations, which means the country needs very strong marketing as medical tourism destination

Business model: Niche center in Oncology

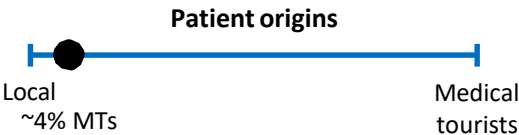
Success case

Overview

- Founded in 1941
- Size: 665 beds
- The largest cancer center in USA and one of the foremost cancer centers in the world
- 135 000 patients treated in 2016
- In 2016, MD Anderson invested more than \$787.3 million in research
- Certification: accredited by The Joint Commission since 1951

Medical tourism

- Hundreds of patients come to MD Anderson from abroad every year
- Concierge services provided by center



Key success factors

- MD Anderson treats lots of rare cancers
- Strong research work
- Long-term cooperative relationships with a large number of cancer institutions worldwide
- More nurses per patient than many hospitals in the country

Treatment areas

- All types of cancer incl. lots of difficult cases
- Rehabilitation
- Check-ups

Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☒

Business model: Focused necessary

Overview

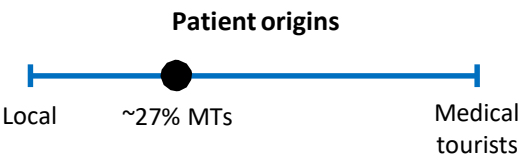
- Founded in 1997 by King Hussein Cancer Foundation
- 173 beds, 8 ORs, 18 ICUs
- ~3.5k inpatients/year
- ~110k outpatient visits/year
- 100 bone marrow transplants/year
- Expansion underway expected to be completed soon, boosting capacity to 352 beds, 12 ORs, 36 ICUs, 7k inpatients, 250k outpatients
- Multiple medical partnership with hospitals and universities in US, EU, UK, Canada, Israel, and Egypt
- Certification: JCI, JCI DSC, HACCP, CAP

Treatment areas

- Oncology
- Pediatric oncology
- Bone marrow transplants
- Cancer type specializations
- Radiation oncology
- Cell therapy

Medical tourism

- ~1k medical tourists/year
- Tourist origins: Middle East, North Africa (~20 countries)
- Only cancer center outside US to receive JCI Disease Specific Certification



Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☒

Success case

Key success factors

- **Only world class specialized cancer center in the Arabic world**
- Strong government support of medical tourism which results in Jordan's good reputation as medical tourism destination
- Own research and clinical studies
- Multiple medical partnerships leading to top tier expertise of KHCC doctors

Business model: Niche center in Oncology (Prostate cancer)

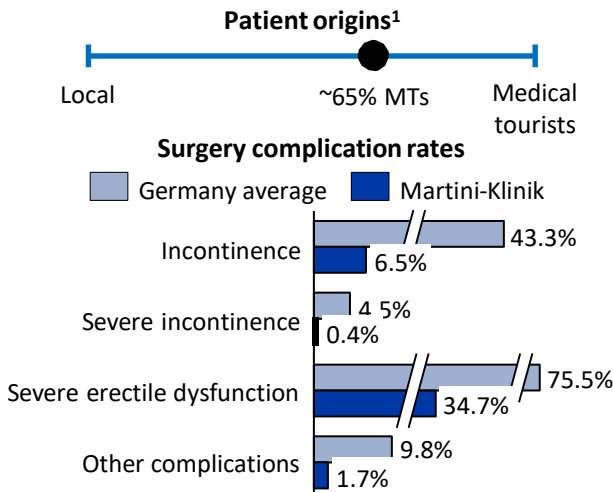
Success case

Overview

- Founded in 2004 as private addition to University Medical Center Hamburg-Eppendorf
- Size: 58 beds
- ~5k outpatients/year
- ~2.2k surgeries/year
- Number of surgeries per year grown from ~800 in 2005 to ~2,200 in 2012 and stabilized since
- Largest prostate cancer center in the world (more surgeries than any other single clinic; 10% of total amount of prostatectomies in Germany)

Medical tourism

- ~1.5k medical tourists/year¹
- Logistics managed by parent (UMC-HE)



Key success factors

- Top rates of favorable outcomes
- Extremely narrow specialization
- Low post-surgery complication rates
- Quality control: post-op survey in patients up to 10 years later
- Own research and clinical trials
- Built on top of existing advanced healthcare facility (UMC-HE)

Treatment specialization

- Open surgery
- Robot assisted surgery
- Brachytherapy
- External radiation
- Hormonal therapy

Clinical areas

- Preventive medicine ☐
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☐
- Research & development ☒

Business model: Niche center in Cardiology

Overview

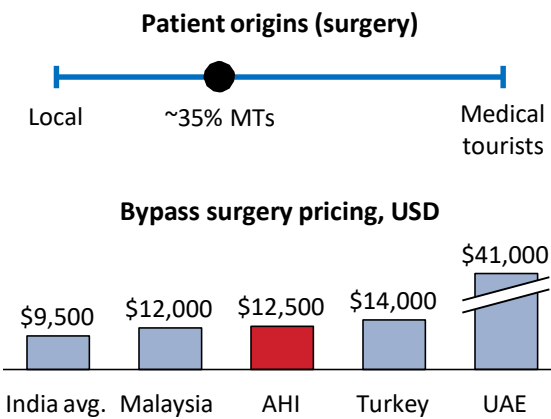
- Founded in 2002 by team of cardiologists
- Green field, ~\$30M investment
- Size: 250 beds, incl. 80 ICUs
- ~25k patients/year
- ~2.5k surgeries/year
- Privately owned by core doctor team (70%) and minority investors
- Certification: JCI, ISO, NIAHO

Treatment areas

- Check-ups
- Rehabilitation

Medical tourism

- ~1k medical tourists/year
- Tourist origins: SE Asia, Middle East
- Concierge services provided by hospital



Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☒

Success case

Key success factors

- **The only world class niche cardiological center in the region**
- **Lower prices and better expertise than Middle East**
- Founded by team of top cardiologists with Western training and experience
- Initially managed by Dr. Ramakant Panda, top Indian cardiologist
- Mumbai's first robotic facility for surgery
- Multiple breakthroughs: valve and blood vessel repairs in complicated cases as opposed to replacements
- High surgery success rates (99.83% in bypass surgeries and overall 99.4% in cardiac surgeries vs 98% and 97% worldwide)



Success case

Business model: Niche center in Orthopedics

Overview

- Very new center for orthopedics
- The Calot Institute has just acquired an operating table which is unique in Europe, specifically for orthopaedic surgical procedures (bones, joints, nerves, muscles and tendons) on the lower limbs in particular.
- 12.000 + surgeries each year of which 75% is national and 25% is international
- Focus particularly on orthopedics to acquire an better position for this field.

Medical tourism

- Tourists mainly come from surrounding countries such as UK, Netherlands, Belgium, Germany, Switzerland Luxemburg, but some come from UK, Russia and Middle-East.
- 25% of intl. patients are coming from Belgium, Switzerland and USA.

Key success factors

- The location is (close to) Calais, from where the ferry to England departs. Calais is also (relatively) close to Paris and the airport.
- This enables the organization to attract tourists from the Netherlands, Belgium, UK but also from other countries such as USA, Middle-East and Russia.

Treatment areas



- Neurology
- Amputations and prostheses

Clinical areas

- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☒
- Research & development ☒

Business model: Niche center in orthopedic rehabilitation

Overview

- Founded in 2003
- Prevention of chronic, painful and degenerative diseases of the musculoskeletal system (spinal column in particular)
- 60 beds in rehabilitation center
- Outpatient clinic in addition to rehabilitation center (Castle Malvazinky)
- 120k patients/year (inpatients + outpatients, incl. clinic)
- Owned by VAMED
- SAK (Czech Joint Accreditation Committee) accreditation

Treatment areas

- Orthopedic rehab
- Neurological rehab
- Sports medicine
- Check-ups
- Orthopedics

Medical tourism

- Tourist origins: Russia, Baltic States, USA, Europe
- Dedicated international patients' office
- Telemedicine (Skype consults) available for international patients

Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Healthy living ☒
- Rehabilitation ☒

Success case

Key success factors

- One of few rehabilitation clinics in its location highly specialized in orthopedics
- Strong international marketing: website in multiple languages, incl. Russian
- Owned and managed by successful European healthcare group VAMED

Business model: Focused discretionary

Overview

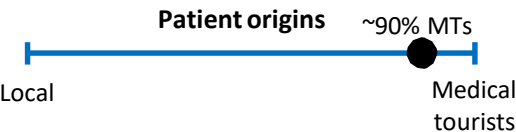
- Founded in 2015
- Focus on selling “health tours”: medical procedures packaged with tourism
- No own medical facilities
- 4 partnering clinics where procedures are performed
- Exclusively focused on medical tourism: websites in multiple languages

Treatment areas

- Anti-aging and rejuvenation therapy
- Non-surgical aesthetic treatments
- Plastic surgery
- Ophthalmology (mostly LASIK)
- Dentistry
- Check-ups

Medical tourism

- 90% of clients are medical tourists
- Tourist origins: Australia, Germany, Netherlands, Azerbaijan, Russia, Iran, Iraq, Saudi Arabia, UAE



Treatment pricing, USD

Liposuction	€1,600
General check-up	€950
Dental crown	€350

Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☐
- Research & development ☐

Expected success

Key success factors

- **Unique value proposition: treatments including accommodation and tours for an affordable price**
- Medical tourists seeking discretionary treatments place high importance on pricing and general tourism; Tripaesthetic takes advantage of both with its proposition

Business model: Medi-spa

Success case

Overview

- Founded in 1931
- Size: 59 rooms
- Began as a clinic/hospital and recently added a full spa facility
- > 2000 patients a year
- 60% of Clinique La Prairie’s annual guests are returning clients, with some having visited the clinic for more than 30 years.
- Patient-list at the medical center of around 50 000 wealthy private clients
- Related brand: Laboratoires La Prairie (Beiersdorf)

Treatment areas

- Spa & wellness
- Medical services including cardiology, orthopedics, general surgery
- Check-ups

Medical tourism

- The Clinique has an international reputation but there are not exact figures regarding number of international guests
- Wellness travel awards winner 2016: Best for Beauty & Anti-Aging, Best for Medical Services, Best Weight Loss Program

Clinical areas

- Healthy living ☒
- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☐
- Research & development ☐

Key success factors

- Pioneering medical retreat that combined the innovative science of cell therapy and holistic wellness, with the traditions of luxury Swiss hospitality.
- World leader in medical wellbeing, offering a unique and exclusive experience to generations of international guests.
- CLP has more doctors on-site than any other medi-spa on the planet.
- Unique location: clinic situated on the shores of Lake Geneva, with views of the Alps



Business model: Spa-hotel

Overview

- Founded in 1906
- Size: 100 rooms
- Five stars spa-hotel with unique location
- 28% guests from CIS
- Began as a luxury hotel it has been reconstructed into the spa-hotel in 1972
- After total renovation in 1990s and construction of wellness center in 2000 Palace Merano became internationally known as one of the most prestigious and effective wellness centers in the world

Treatment areas

- Treatment programs
- Cosmetic treatments

Medical tourism

- Palace Merano has an international reputation but there are not exact figures regarding number of international guests
- Share of international guests is above 30%
- Condé Nast Traveller award: the Best Destination Spa in Europe for 2015

Clinical areas

- Healthy living ☒
- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☐
- Rehabilitation ☐
- Research & development ☐

Success case

Key success factors

- Pioneering in spa and wellness concept
- Unique therapeutic approach by Henri Chenot which combines traditional Chinese healing with the latest scientific advantages in health sciences
- Unique location



Business model: Spa-hotel

Success case

Overview

- Founded in 2016
- Size: 75 rooms
- Wide range of treatment (wellness) programs
- The second extensive Espace Cure Chenot after the flagship Palace Merano hotel in Italy
- According to available booking dates, the occupancy rate is low
- Located in Gabala – developed resort in Azerbaijan. 10 bln \$ investments in Gabala region in 2016. About 30-40% of them from UAE.

Medical tourism

- Chenot Palace is internationally oriented and targeting guests from Russia but there are not exact figures regarding number of international guests
- Chenot spa-hotels are well known in the former soviet republics and Russia, for instance, 28% of patients in Chenot Merano in Italy are from CIS countries

Key success factors

- Qualified European team of medical professionals
- Affiliated facility of internationally known Palace Merano as one of the most prestigious and effective wellness center in the world
- Unique location



Treatment areas

- Treatment programs
- Cosmetic treatments

Clinical areas

- Healthy living ☒
- Preventive medicine ☒
- Diagnostics ☐
- Treatment ☐
- Rehabilitation ☐
- Research & development ☐

Business model: Focused discretionary

Overview

- Established in 2010
- Research and planning since 2000
- ~30k outpatients/year
- Owned by CHA Group
- Premium segment marketing (aimed at high net worth individuals)
- Extreme focus on complete privacy – capacity restrictions due to that (up to 13 patients can be checked up simultaneously)
- Accommodation in top-tier hotels, own luxury hotel currently considered to be added
- Paid off in 4 years

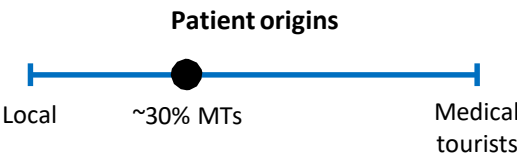
Treatment areas

- Check-ups
- Anti-aging
- Spa & wellness
- Genetic testing

- Endocrinology
- Gynecology
- Cardiology
- Specialized care

Medical tourism

- ~9k medical tourists/year
- Tourist origins: China (mainly), SE Asia, Russia
- Websites in English, Korean, Chinese, and Russian



Clinical areas

- Preventive medicine ☒
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☐
- Research & development ☐

Success case

Key success factors

- **Super-premium segment, luxurious service aimed at high net worth individuals (over \$1M in investable assets)**
- **Very strong focus on patient privacy**
- Part of CHA Group, an international healthcare, biotech, and pharma holding, meaning that Chaum gets access to latest tech developed by other corporations in CHA Group

Business model: Focused discretionary

Overview

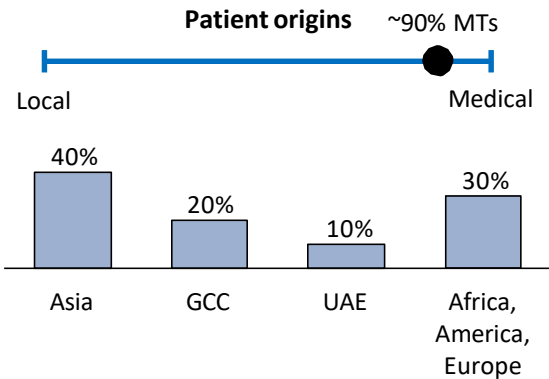
- Founded in 2016 by Aster DM Healthcare, large international HC conglomerate
- Average patient check \$25k (50% lower than USA, comparable to other high end clinics in the region)
- ~1.3k patients/year
- Male infertility is most demanded
- Most international patients tried treatments previously in UK

Treatment areas

- Fertility (male & female)
- IVF
- Egg storage

Medical tourism

- ~1.2k medical tourists/year
- India and Pakistan are key sources of medical tourism
- Clinic considers price to be most important attraction factor



Clinical areas

- Preventive medicine ☐
- Diagnostics ☒
- Treatment ☒
- Rehabilitation ☐
- Research & development ☐

Success case

Key success factors

- High demand for fertility treatments in the region combined with lack of specialized centers
- High success rate (90% of all accepted patients)
- Premium segment targeted

international group with high expertise in healthcare