Market Access Documentation Review Prepared for Company X

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US Market Access Landscape Assessment for Technology X™

Strictly confidential

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1.0 BACKGROUND

Company X commercialized the Technology X™ system in the US in 2009. Technology X is a personalized chemotherapy management service for patients receiving infusional 5-flourouracil (5-FU) chemotherapy regimens. Technology X measures the 5-FU in patient blood samples following injection, and then calculates an individualized area under the curve (AUC). This provides a dose-adjustment based algorithm to achieve blood levels in the commonly accepted therapeutic range for subsequent cycles of 5-FU administration.

Individual A, Director of Marketing for Company X, requested that tJun17 Life Sciences review current reimbursement support materials to develop and evaluate options to accelerate Technology X universal coverage at a desired payment level among US private payers. Stephen Amato of tJun17 Life Sciences has reviewed these materials in response and provides this report to document the evaluation.

Topics that were covered in this assignment included:

- Independent review and evaluation of materials prepared or utilized by Company X to support adoption of coverage policies for Technology X by both Medicare and private payers
- Preparation of an objective report on evaluation of the aforementioned materials to Company X' Management Team from tJun17 Life Science's perspective, which incorporates 20 years of experience in the global private payer and commercialization markets

Topics to be covered in next steps or in future projects may include:

- An updated literature review of treatment regimens for oncology disease states, including colorectal, pancreatic and other cancer types
- Clinical study development strategies, including protocol development and endpoint optimization
- Optimization of US and/or international private payer relations strategy through design and implementation of one or more of the following:
    1. Collection of comparative primary data from Medical Directors and other private payer personnel from organizations that do or do not provide coverage or satisfactory payment levels for Technology X
    2. Development of a cost impact model to demonstrate a positive long-term return on investment for Technology X usage and/or coverage
    3. Hosting of an advisory board with stakeholders from the private payer, clinician and patient advocacy communities
- Technology X pricing strategy and/or refinement
- OUS payer or pricing concerns

The output of these analyses will be a detailed report that provides actionable information to guide market access decisions, including regulatory, reimbursement, pricing value positioning, and/or messaging considerations.

2.0 tJun17 LIFE SCIENCES ADVISORS

tJun17 Life Sciences Advisors is a leading global consultancy, offering a range of services designed to support clients in achieving extraordinary growth across the product and technology value chain.

Our mission is to work with commercial organizations, government agencies and the investment community to ensure that:

- Life science organizations have the funding, structure and strategic focus to deliver high levels of innovation and financial return
- Patients have rapid and broad access to new innovative medicines, medical devices and product tools, particularly in areas of high unmet need.

tJun17 Life Sciences provides a powerful combination of strategic, scientific, medical, technical, commercial, economic, decision support, modeling and intellectual property skills and experience.

tJun17 Life Sciences is globally recognized and renowned for its expertise in:

- Market access
- Regulatory strategy
- Pricing and reimbursement strategy
- Technical and commercial evaluation
- Due diligence and Experts' Reports
- Forecasting and valuation

3.0 METHODOLOGY

3.1 Desk Research

tJun17 Life Sciences executed an iterative process of desk research utilizing in-house databases, specialist commercial sources and data provided from Company X. The desk research incorporated a review of existing US reimbursement and coverage policies related to oncology treatment strategies. The analysis also considered implications of policy related to this product area, and reviewed market access options, as well as reimbursement coverage policies for competitor products

3.2 Materials Reviewed

Specific coverage support materials reviewed included:

- Technology X™ Clinical Summary (4 page version)
- Technology X Clinical Summary (10 page version)
- **Abstract** – 5-FU dose monitoring and prevention of oxaliplatin-induced neurotoxicity in FOLFOX4 regimen: Results of a phase II study
- **Abstract** – Comparison of two patient cohorts treated in parallel for advanced colorectal cancer with a simplified FOLFOX 4 regimen with or without 5-FU therapeutic dose management

- **Abstract** – Comparing cost effectiveness of PK versus BSA dosing of infusional 5-FU in the US metastatic colorectal cancer population
- **Peer reviewed article** – Gamelin, E., Delva, R., Jacob, J., Merrouche, Y, Raoul, JL, Pezet, D, Dorval, E, Piot, G, Morel, A, Boisdron-C, M- Individual Flourouracil Dose Adjustment Based on Pharmacokinetic Follow-Up Compared With Conventional Dosage: Results of a Multicenter Randomized Trial of Patients With Metastatic Colorectal Cancer, *Journal of Clinical Oncology,* 2008; 26:2099-2105
- **Peer reviewed article** – Saif, MW, Choma, A, Salamone, SJ, Chu, E., Pharmacokinetically Guided Dose Adjustment of 5-Fluorouracil: A Rational Approach to Improving Therapeutic Outcomes *J Natl Cancer Inst* 2009; 101:1543-1552
- Coverage Support Letter from Dr. X, MD to Noridian Administrative Services dated July 17, 2009
- Coverage Support Letter from Dr. X, MD dated February 1, 2009
- Letter from X, Program Manager Payor Contracting Company X Laboratories to Dr. X, MD, JD dated January 7, 2010
- Sample Technology X™ Analysis Report (Infusion Start Time 10/06/2008 @ 11:45 AM)
- Sample Technology X Analysis Report (Infusion Start Time 07/05/2009 @ 2:00 PM)
- Company X Laboratories, Inc. CPT code and Fee request description sheet
- Technology X micro costing analysis (2010)
- Technology X Technical Specifications Sheet (dated July 2009)
- Technology X Marketing Brochure

4.0 EVALUATION & CONCLUSIONS

tJun17 Life Sciences reviewed the coverage support materials described in Section 3.0. General observations regarding these materials included the following:

- From a coverage perspective, payers want to know that Technology X testing will impact clinical behavioral or treatment patterns in a positive way. A compelling argument appears to have been developed regarding the use of Technology X for 5-FU characterization from a safety and efficacy perspective. In addition, there appears to be a plethora of technical data to demonstrate the validity of using AUC methodologies to achieve and maintain balanced and therapeutically active patient plasma concentrations of 5-FU. Moreover, the validity of using Technology X vs. other methods, including mass spectrometry and column chromatography, to calculate AUC measurements appears to have been established.

- Based on the material(s) reviewed, Company X seems to have made a systematic effort to communicate the aforementioned technical data to the private payer community. Clinician testimonials from several Key Opinion Leaders (KOLs) appear to have been utilized in direct communications with targeted payers in order to positively impact potential Technology X coverage policy(s).

- Testimonials from patients also appear to have been utilized in supporting market penetration of the Technology X platform through inclusion in the product marketing brochure.

Based on the review of the materials described in Section 3.0, there appear to be opportunities for continued development, implementation and perhaps refinement of the US payer relations strategy in the following areas:

1) Cost effectiveness data

The cost data provided appears to quantify the total cost(s) to Company X for commercialization of the Technology X™ product platform. This was completed perhaps to support an internal financial return on investment (ROI) analysis or to support pricing strategy. Private payer coverage decisions, unlike those made by Medicare, are driven not only by medical necessity and/or clinical utilization parameters, but also by short and long-term cost data. During an initial phone conversation between Company X and tJun17 Life Sciences, reference was made to the development of a cost effectiveness model referred to as 'Archimedes'. Other than this reference, none of the materials reviewed appears to illustrate the costs involved in utilizing Technology X or other methodologies for determining 5-FU dosing regimens. Moreover, demonstration of an overall cost savings to the payer, either in the short or long-term, if Technology X coverage is implemented at any payment level, is lacking.

A quantitative cost effectiveness model that clearly illustrates a financial incentive may increase the likelihood that private payers will adopt coverage for the Technology X platform at a desired payment level. This model would incorporate variables that quantify the up front costs associated with Technology X test usage, including the price for the test, shipping costs and other input variables. It may also include variables that quantify the short and/or longer term savings associated with usage of the test including reduction in side effects from 5-FU overdosing, complications resulting from either under or over usage of 5-FU therapy, and reduction in hospitalization rates.

Another strategy could involve conducting cost effectiveness study(s) at individual treatment facilities. This type of analysis could be designed in a comparative fashion, in which the costs of a particular disease state, such a colorectal cancer, are evaluated at an institution that utilizes Technology X for 5-FU characterization versus one that does not.

2) Primary data from private payers

A letter to Dr. X., MD, JD notes that as of January 2010, Company X had contracted with over 150 commercial payers, representing 70 million lives for Technology X testing. Presentation of a comprehensive review of Technology X payer policies to managed care organizations that do not provide adequate coverage for the product could positively impact their perspective(s). Collection and analysis of data from private payers in order to determine what variables or factors may be considered in future coverage and/or payment decisions for 5-FU testing may present an additional opportunity to provide support for this initiative. In addition, such an evaluation may reveal regional differences in coverage and/or payment determining factors within the US.

tJun17 Life Sciences has access to a database of several hundred US and international private payer personnel, including Medical Directors, which could be incorporated into a set of in depth interviews. Preparation of Discussion Guide to support the interview process could facilitate and standardize the process. As part of this analysis, tJun17 Life Sciences would provide Company X with a more comprehensive assessment of the current and future reimbursement landscape and strategy, built on the present body of work.

A market access advisory board could also be considered as a possible next step, to bring together key stakeholders to pressure test messaging as well as US and/or international reimbursement and pricing strategies.

Collection and analysis of stakeholder primary data could provide insights into the following questions as well:

a) Does site of care/diagnostic analysis impact payer coverage support?

Initial conversations with Individual X revealed that Company X markets Technology X™ internationally through distributors that sell the Technology X product directly to clinical sites. This implies that Technology X testing is conducted at these sites at the point of care. Such a model differs substantially from that utilized in the US, in which patient samples are prepared at the site of care then shipped to Company X for analysis. In these cases the final 5-FU analysis is conducted at Company X's CLIA certified laboratory. However, the customer, and by extension the payer may perceive that the cost of Technology X testing includes either direct or implied shipping and storage costs. Payers may deem such costs to be excessive and/or unnecessary. Primary data collection and evaluation may provide insights into this issue.

b) Does Company X's CLIA certified laboratory itself present an issue

The review of the documentation described in Section 3.0 revealed that little to no information is provided regarding Company X's CLIA certified laboratory testing facility. For example, when was the laboratory certified? How many tests per year does the laboratory conduct? Are there clinician testimonials that would provide support regarding the accuracy of patient data obtained from the facility?

c) Is continuity of care or maintenance of health records an issue?

Since Technology X testing in the US is conducted outside the treatment facility, payers may have a concern that the information flow and subsequently the patient's continuity of care may be negatively impacted. Payers may perceive that such potential disruptions of information flow may decrease efficiencies and increase the cost of care for patients under their management.

d) Are there regulatory concerns that should be addressed?

While the clinical data strongly supports the usage and validity of Technology X testing, the product is not currently FDA approved. Initial conversations with Company X revealed that several stakeholders, possibly including the FDA, would consider the Technology X testing platform to be pharmaceutically based were it to be distributed for point of care testing and analysis. Some payers may perceive the Technology X test to be a pharmaceutical product in any case and may want to see additional pharmaceutical related endpoints or outcome measures determined. A collection and analysis of primary stakeholder data may yield insights into this issue as well.

3) Patient advocacy group campaign

Private payers operate like other businesses in that the competitive landscape could have a substantial impact on strategic and/or tactical decisions. This means that clear communication of the number of private payers that cover usage of Technology X™ for 5-FU patient measurements may have a positive impact on coverage and/or payment decisions. In addition, clear presentation of the patient demand for Technology X testing could impact this paradigm as well.

Thus, development of a comprehensive patient advocacy campaign could yield substantial dividends in terms of demonstrating demand for the Technology X test. Groups in the US whose influence could have a positive impact include the following:

Disease State	Patient Advocacy Group	Website
Colon Cancer	C3: Colon Cancer Coalition	(http://fightcolorectalcancer.org/)
	Colorectal CareLine	(http://www.patientadvocate.org/)
	Colon Cancer Alliance	(http://www.ccalliance.org/)
Pancreatic Cancer	The Lustgarten Foundation for Pancreatic Cancer Research	(http://www.lustgarten.org/)
	The Pancreatic Cancer Action Network	(http://www.pancan.org/)
Head and Neck Cancer	Support for People with Oral, Head and Neck Cancer	(http://www.spohnc.org/)
	Oral Cancer Foundation	(http://www.oralcancerfoundation.org/)

These groups could also influence KOL behavior and as well as impact coverage decisions at the local level. Thus representatives from such groups could be included in a primary interview program or in an advisory board.

4) Data generated outside the US

The use of OUS data to support private payer adoption of Technology X in the US is not readily apparent, based on a review of the materials outlined in Section 3.0. It may be productive to conduct an analysis of which international payers provide coverage for the Technology X platform and at what payment level. This may yield additional insights regarding what US payers might consider important with regard to implementing coverage for Technology X in the US. These insights could include clinical endpoints or outcome measurements, site of care implications, competitive landscape and/or environmental factors.

5.0 NEXT STEPS

The strategic reimbursement assessment conducted within the scope of this project identified several key areas for further analysis, market access planning, or tactical execution. tJun17 Life Sciences will discuss implications of the work and next steps with the Company X team in order to best support the commercial process and maximize the opportunity for the Technology X™ product platform.

For example, additional tools can to be developed to clearly articulate the Technology X product's value to adoption decision-makers across care settings. Examples of such reimbursement support tools include:

- Cost-impact models
- Collection and presentation of primary private payer data
- Value dossiers
- Contracting support and templates
- Formulary inclusion kits

Detailed proposals for such work can be provided upon request.