



## MSL Role and Key Performance Indicators (KPIs): From Traditional to the Future

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### Objectives and methods

Medical Scientific Liaisons (MSLs) are essential assets for the pharma company. MSLs are scientific experts in a therapeutic area, and their role is to link industry and doctors to disseminate scientific information and gather insights on unmet medical needs. Their role is quite different from others in the industry because based on quality more than quantity; therefore, there still needs to be an evaluation method able to capture in full the potential of the role. This results in MSLs needing to feel more valued and the industry needing to demonstrate the value that MSLs bring to the company.

This work aimed to collect all the information available in the literature on metrics and Key Performance Indicators (KPIs) currently used for MSL's evaluation. To achieve that, I collected data from trusted and specialized papers, using PubMed as the central database. An interesting factor is the scarcity of published material on the issue, even if the topic is considered central for both industry and MSLs.

I also had some interviews with experts in the field. Their contributions were precious because they helped me fill the literature's lack of data.

Collecting all the information available helped me better understand the role of the MSL and clearly showed that the current metric system can be improved.

### MSL ROLE

#### History and Evolution:

The Medical affairs division is believed to represent the third pillar of the pharmaceutical industry. During the 1960s in the United States, the pharma industry underwent significant transformation thanks to new legislation, important developments in the healthcare system, and a growing public sensibility. Public health became a public affair, so more integrity and transparency were in high demand. As a result, in 1967, Upjohn Company established, still within the marketing branch, a new sales representative position more technically prepared and able to answer specific clinical and therapeutic-related

questions (1). They were called Medical Science Liaisons (MSLs). However, the role was purely commercial. The majority of MSLs were top sales representatives. The first product to benefit from this new role was Orinase (Tolbutamide), an oral diabetic drug. At the time, using an oral drug for diabetes constituted a new approach, and physicians needed assistance and education. In particular, Orinase could be used to prevent diabetes, and the Upjohn company founded research to find a new test to detect glucose in urine. The pre-diabetic condition was not well known or established at the time. For this reason, before the product launch, MSLs started to engage students in medical school, providing them with information, monographs, etc. The company became best known in six years, so the competitors started employing similar programs. It was only in 1988 that MSL became what we know today. Jan Leschly, the president of E.R. Squibb, David Best, an MD/MBA from the advertising industry, and Dr. Stann Bernard, MD, created a team of twelve doctors, almost only physicians, with the intent of distinguishing them from the current MSLs on the field. They even use another term, Medical Service Manager (MSM), to refer to the new position to underline the difference in the team's medical background in contrast with the MSLs of the time. The team started to build relationships with doctors as peers, and they started to take upon new tasks like speaker and sales representative training, identification and placement of phase III and IV clinical trials, etc<sup>(4)</sup>. With time the role evolved, and it became independent. Nowadays, Medical affairs is an independent division within the industry, and its representative retained the name of Medical Scientific Liaison but with no sales purpose. Now the name itself represents the idea behind the words. "Liaison" means: the contact kept in place by communication between parts of a group to maintain cooperation. "The group," nowadays, is the "medical group" because Medical Liaisons are highly specialized experts,

peers to the doctors, and "cooperation" stands for the relationship they ought to build with the health care professionals to achieve better treatment for patients. With the profiling of the KOLs, the therapeutic area mapping, and the insights gathering, the MSL supports the best place in the therapy of new drugs. Communication is one of the keys, and it needs to be unbiased and not promotional by a peer-to-peer scientific exchange and by unsolicited medical information<sup>(2)</sup>.

### **Definition of the role**

There still needs to be a clear definition of the MSL's role due to the complexity and the various aspect of the role. The MSL Society, a non-profit organization in the U.S., adopted a definition that provides at least a general understanding: "*The Medical Science Liaison (MSL) is a specific role within the pharmaceutical, biotechnology, medical device, CRO and other healthcare industries. They concentrate on the specific therapeutic area (e.g., Oncology, Cardiology, CNS, Hematology, Women's Health Care) and disease states (e.g., Rheumatoid Arthritis, Cardiovascular Disease, Diabetes). MSLs have advanced scientific training and academic credentials generally consisting of a doctorate (Ph.D., PharmD or M.D.) in the life sciences.*" To this definition, it may be added that the role of MSL is field based role. The "field" component is important because it is central even in the evaluation of performances, where for example the numbers of KOLs encountered in a monthly bases is one of the indicators that are always taken in consideration.

There are several names for the same job, and in different industries, MSLs are called in different ways, such as medical advisor, etc., a fact that underlies the lack of a definition. The first consideration to be drawn is that this variety of names often mirrors various activities that an MSL can do. They act in different therapeutic areas but also in different moments of drug development, and the related activities vary

accordingly. For example, if an MSL is involved in launching a new drug, its role could be more about informing.

MSLs' role evolved with time. Today, they act as a bridge to the stakeholders and disseminate information internally, training the other branches of the pharma industry.

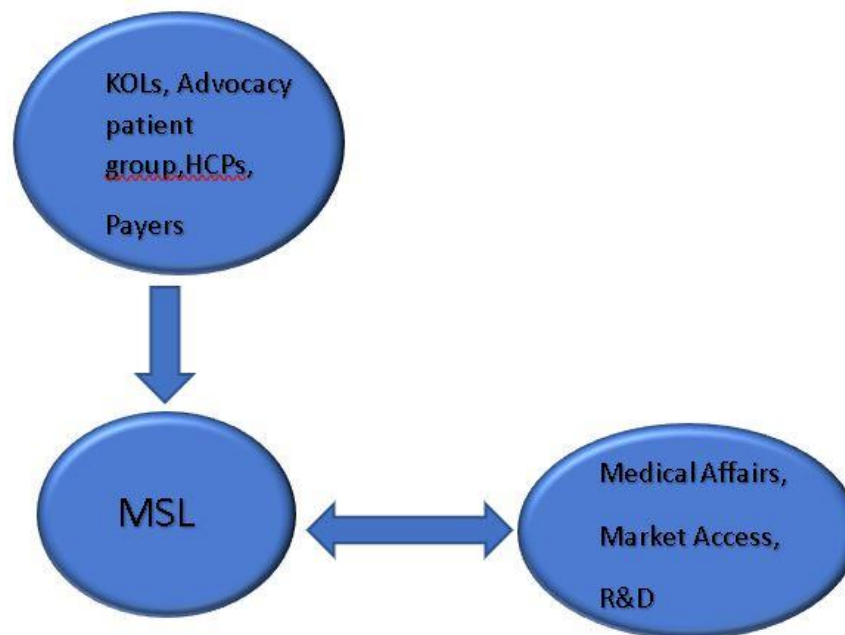
The complexity of the landscape and the products arose during recent years, and MSLs are becoming more and more vital for the entire cycle of a drug-development thanks to their communication skills and the particular position they fill that gives them the ability to gather insights and shape the medical strategy.

To better understand the role, it is essential to define the interlocutors of MSL and then their tasks.

As we have seen, the role of MSLs was born to engage prescribers and healthcare providers to drive evidence-based decisions in their patient care. MSLs, to maximize their insights, today are trying to build a deep relationship with Key Opinion Leaders (KOLs) in a particular therapeutic area. KOLs are usually experts in a therapeutic area, and they can be specialists, hospital directors, patient advocates, researchers, etc., not necessarily prescribers because the main focus is education and research. KOLs are both needed by the pharma industry to gather information on state of the art on a particular disease and identify unmet medical needs. They need the industry to be up to date on the availability of a new molecule or the adverse

effects of a drug already on the market. Medicine is progressing towards precision, and there is an incentive to develop more niche drugs requiring more profound knowledge. For these reasons, the relationship between an MSL and a KOL must be trusted, mutual, and unbiased. An encounter with a KOL is always arranged in response to a particular need for scientific knowledge, and evidence must be presented for the meeting to take place.<sup>(3) (4) (5)</sup> Today, not only are KOLs demanding more information and scientific evidence, but even Payers (Health care system) have more demand. Since the population's average age is higher, healthcare systems are facing rising costs and need to adjust spending and invest in efficiency. There is an increased focus on outcomes, comparative effectiveness research, and safety.<sup>(6) (7)</sup> The role of MSL is to gather this information and help understand the product's value. An MSL has a role in the initial setting of a clinical trial. Therefore its role is vital because it assures that trials and evidence comply with the regulatory requirements. Moreover, MSLs need to engage with patients, especially in recent years, since their involvement is becoming more profound, and they demand more information in a landscape with more therapeutic options. In Italy, this relationship cannot be direct. An intermediate role, like the patient advocacy manager, filters communication.

MSL position can be viewed as one of service to the KOLs, but generally to the Science Opinion Leader (SOLs) and the industry itself.



**Figure 1:** The diagram shows how the MSL act as a connector within the industry

This diagram illustrates how the flux of information moves from the external to the internal interlocutors and how the internal interlocutors can benefit from the role of the MSL because they are the ones passing along the knowledge that they gather in the field. MSL is part of Medical affairs, but in this diagram, the critical notion is the role of connectors that MSL deploys in the field.

MSL's role is primarily reactive but also proactive in some cases. In the U.S., there is more flexibility on the proactivity of the role, with MSL being able to connect with KOL even in an unsolicited manner. In Italy, there are strict rules of engagement, but proactivity is necessary for certain aspects of the job, such as finding new clinical research sites, etc.

#### **MSL's activities:**

The role of MSL is complex, but since it is a field-based role, starting from what is done in the field, it is possible to pinpoint two main activities of an MSL: the research activity and the educational one. Usually, the first activity to be listed is the KOL engagement. KOL's engagement is obtained proactively or reactively. In Italy, the proactivity

is restricted to specific occasions, and here I am referring more to U.S. standards of activities, as listed in the MSL guide of The MSL society published online. MSLs lead the profiling of KOLs, meaning that they identify the doctors that represent excellency in a therapeutic area. KOLs are not identified based on their potential to prescribe but their scientific merits. This is part of a medical strategy and is meant to support the medical plan of the industry. The final goal is to educate KOLs, and the interactions with KOLs are in response to questions on the scientific data on a drug. The most crucial factor in establishing KOL's relationship is to be up-to-date.

Where does an MSL find its information?

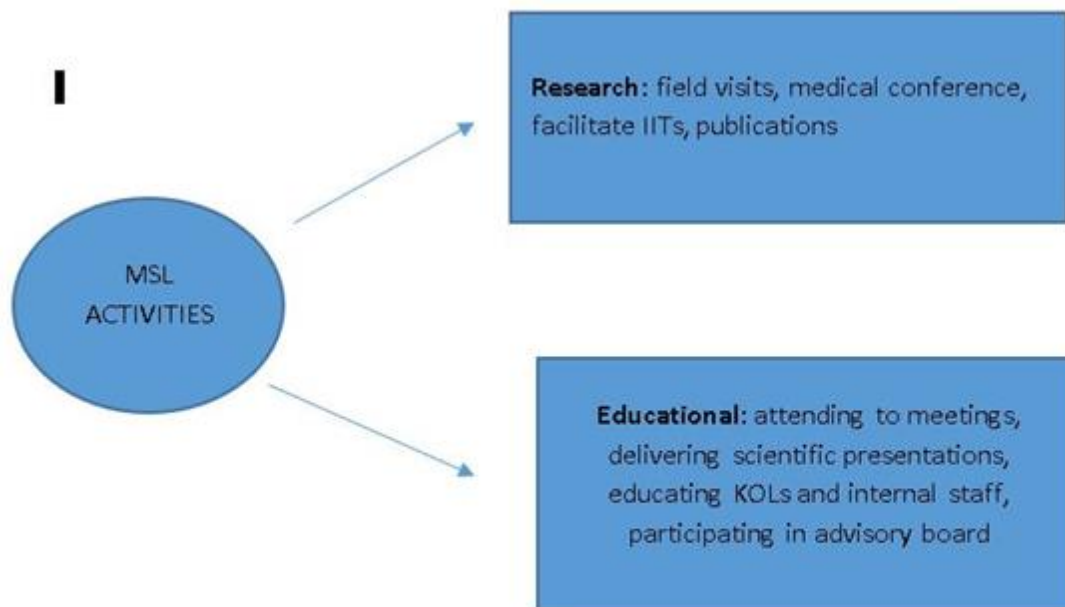
First, one of the activities of the MSL consists of "mapping," which means collecting information on doctors, treatment options, diagnosis protocol, and visiting doctors.

The most important and known database used is Pubmed/MedLine. The problem is that the database is getting bigger and bigger, and to perfect its use is essential to know how to limit the search strategies. Sometimes it is possible to use a more specific database since Pubmed is not focused only on pharmaceuticals; an example can

be the International pharmaceutical Abstract (IPA). In combination with Pubmed, EMBASE can be used as a second source of information. Its problematics rely more on the costs than on the overlap with Pubmed. Governative sites such as EMA, FDA, or AIFA websites are often trusted sources of information as professional medical organization websites. Journal watch can be an example of an exciting tool that an MSL can use because it provides short summaries of new updates on new studies.

It is essential not to be overloaded with information and to focus on two or three sources of information. Stay up-to-date is necessary to manage the relationship with KOLs, and organization and consistency are the key. Another way of staying informed is to participate in medical congresses. Participation in congress is a research component of the job because it allows for gathering insights. The validity of the scientific information is essential to an MSL job, not only for their relationship with KOLs but also

because they usually participate in educational programs internally. MSLs participate in the preparation of informative materials. MSL's job is not only disseminating information tough but helping to generate new data. Companies often promote new studies, and an MSL can help them identify strategic studies sites, help to recruit investigators, and also internally deliver educational materials on a study protocol. MSL can be a connector and an enabler when the study is initiated by KOLs, such as in Investigator Initiated trials (IITs). MSL can be presentable in Health Economic and Outcome Research (HEOR). The scientific evidence on the drug is then used to help payers to understand if a molecule can be used in a healthcare plan. MSL can participate in Medical Advisory boards held to understand the KOL's perspective and deepen their understanding of the medical field. All these activities are always compliant with the company regulations, and a scientific purpose drives them.



**Drug Life-cycle and Therapeutic Areas**

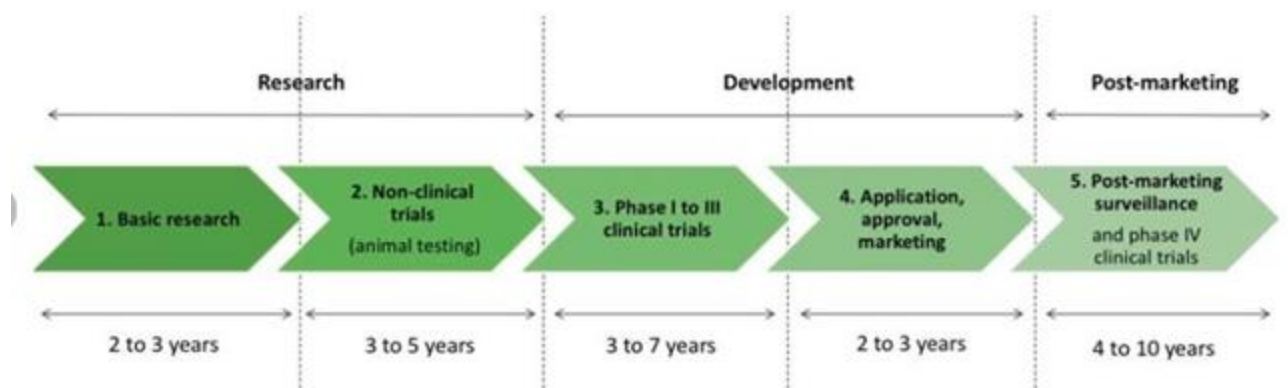
MSL activities are not isolated, they are part of the Medical Strategy and they are tied to the drug’s development.

The path a new molecule covers to become a registered drug takes an average of twelve years. The cycle is classically divided into four steps, even though, lately, new pathways are emerging



to speed up the process. Canonically, the process can be divided into a pre-clinical phase and a clinical one. The pre-clinical phase is meant to test the safety of the drug. In vivo and in vitro tests are done to measure the toxicity and the safe dose. Pharmacokinetics and pharmacodynamics are studied as the mechanism of action. Briefly, it can be set that this phase is meant to establish if a molecule is safer enough for human use. After this phase, if the benefit-risk profile is favorable, the clinical phase can begin. Phase I study is where the molecule is administered to human health volunteers for the first time, and they are meant to better establish the safest dose and the mechanism of action. Efficacy is still not tested. If the phase I study is successful, then it is possible to have a Phase II study where patients are involved for the first time. In this phase, the number of people in the study is still not large, and even if efficacy

started to be considered, safety is still the most crucial parameter. If the data are consistent and the primary endpoint is met, it is possible to expand the number of patients and start with a phase III study. Phase III studies are meant to confirm the efficacy, and they are conducted on a larger scale. After this phase, if the drug is approved, another phase starts, the Phase IV study, commonly known as pharmacovigilance. Even though the phase II and the Phase III study are conducted on a large scale, patients in clinical trials are not representative of real-world conditions.<sup>(23)</sup> New kinds of clinical trials, with innovative pathways, are emerging in response to the time problem related to this setting. This summary is not meant to be exhaustive but to understand the general process to better understand MSL's role.



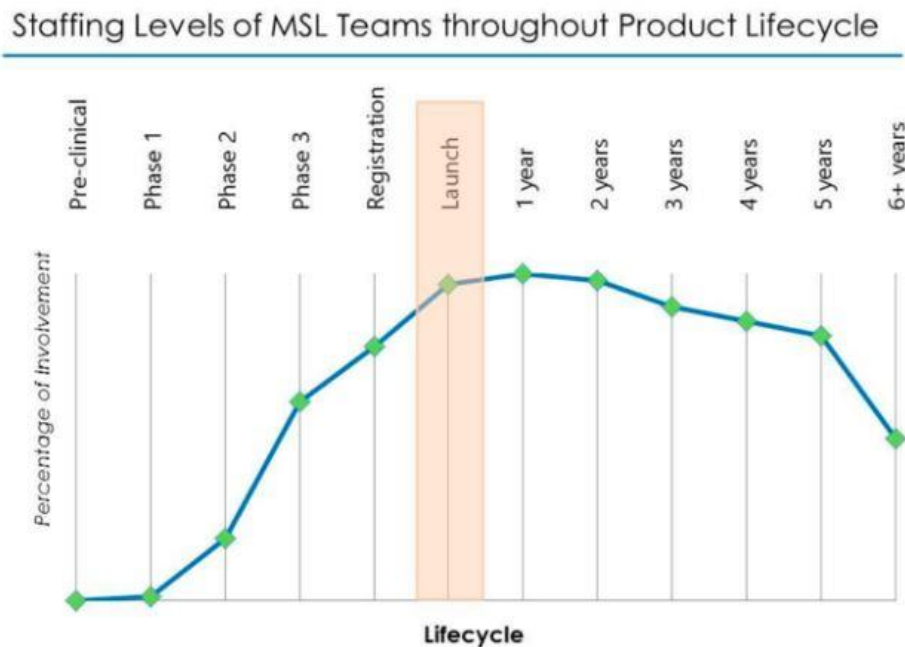
**Figure 2 :** A drug life cycle: there are classically three phases of a drug' development, in recent years new path emerged, but this illustration help to understand the journey of a molecule.

KOLs find themselves in a jungle of information about new studies, new molecules, etc. MSL knows their field and the latest scientific developments, and therefore their role in the first phases of a drug life cycle is essential. They can generate interest in the scientific mechanism of action or the potentiality of a new drug. MSL can also have a role in new clinical site initiations. Historically, MSLs have been more active in the early development and pre-launch phase. They can discuss the science behind new molecules

being developed and explain a new possible mode of action or administration. In this way, they build awareness for new therapeutic approaches. They can also help the clinical development program with interactions with the clinical site. When the drug is close to the launch, MSLs can present data to scientific meetings building awareness of the new molecules and helping the opinion leaders to fully understand the scientific aspects. Data gaps can unveil from insights gathered during presentations or discussions and can be used to

implement the study. They can also develop product inquiries, review and approve promotional materials and manage scientific content. The most critical is the launch phase and medical and commercial plans should be aligned.

MSL's role is to ensure that KOLs are educated on the clinical evidence and the use of the new drug. The post-launch MSL role is more reactive and will consist of answering the prescriber's questions on drug use.



**Figure 3:** The graph show the staffing level of MSL teams throughout product Life. The launch phase is the most critical and requires a higher staffing level.

MSL can also be involved in Health economics and outcomes research (HEOR) studies as an expert on the drug.

As stated before, the MSL job historically focused on the pre-launch and launch phases, but the post-launch phase is becoming critical. Regulatory actors require more and more real data evidence, and the role of MSL can be to help determine the strategy for real-world data generation. They can help to establish registries or more observational studies. In this new environment and fast-moving research, the MSL role will become more central, but MSL needs to adapt to this new "time setting."

It is essential, speaking of the new drug life-cycle, to define in which directions clinical trials are going and which are the most important therapeutic areas. The years 2020 and 2021 shifted the focus of research, but oncology

remains the area with the most studies, followed by neurology, cardiovascular disease, and rare diseases.

According to a survey presented on the MSL society website, MSL is deployed for the vast majority in oncology (31%), with another 17% in neurology and 11% in Rare Diseases. This percentage retraces the complexity of the disease and treatments and the general directions of R&D globally. Usually, an MSL covers one therapeutic area, and only a minority covers two. The same survey covers two products, and the percentage was higher over the years, testifying to the major complexity of the drugs.<sup>(4)</sup>

**Compliance aspects**

To better understand the role, it is essential to stress the concept that an MSL is an independent

figure and that their role is not superimposable to a market position as a sales representative.

The International Federation of Pharmaceutical Manufacturers & Associations (IFMPA) stated that "the pharma industry is unlike any other. Its innovations can prolong and save lives." For this very reason, the industry needs to hold to higher standards of practice. There is a lack of specific guidelines for the position of MSL, but the vast majority of pharma companies adopt common guidelines. The IFPMA Code is a document that clearly states what is allowed and not allowed in the confined of medical information and distinguishes promotional communication from medical one. It can be applied to both traditional and digital interactions.

The main focus is integrity, applied to the whole industry and not only to the Medical Affairs department. Patient first, respect, and transparency can be seen as the motto of this document. <sup>(10-11)</sup> Briefly, its main concepts can be summarized as follows.

Sales representatives are part of the sales division and, therefore, can encourage brand utilization, but they can limit the discussion to label content. Promotion should be accurate and balanced and encourage proper use. There are strict rules on gadgets and items of value exchange.

Sales representatives are focused on sales, and their compensation is linked to the sales and prescriptions volume. They can offer samplings so that Health care professionals (HCPs) may familiarize themselves with the Medicinal Product. They cannot discuss off-label and need to redirect inquiries to the MSLs<sup>(9)</sup>.

MSLs are part of the Medical Affairs division; their salary is never related to an increase in sales, and they are not evaluated based on sales volume.

Communication is always scientific-based and never promotional, the material used is always pre-approved, and it is of high scientific value (peer-review articles, scientific congress/abstracts). It is discouraged the attendance of non-scientific meetings. Off-label

information can be shared only in specific cases and only if the purpose of the discussion is relevant for ongoing research, to manage the product's risk profile, or to prospective investigators. Usually, the majority of these settings require a written contract of confidentiality to take place.

Participation in Congresses is essential for an MSL to remain updated on the therapeutic field, but their interactions are strictly determined, and a written report is due after. If a meeting or an advisory board is organized, the MSL must ensure that KOLs and HCP that attend have a medical reason to attend. If a KOL is needed as a speaker, their payment needs to be published. MSLs can present material for Health Economics and Outcome Research (HEOR) but always in a scientific light. Everything should be considered, even the venue of the meetings, and everything needs to happen in compliance with the company policy.

There can be differences among countries in the percentage of a reactive or active role of the MSLs. In the U.S., the unsolicited engagement of KOLs is permitted, and MSLs can proactively conduct an introductory meeting. In these meetings, it can be allowed the presence of a sales representative even if limited to a brief introduction. The nature and content of the meeting should only focus on building a relationship and not on discussing off-label use or promotion<sup>(5)</sup>. In Italy, as the Law n 219 of 2006 and the Farmindustria code, it is not permitted to send unsolicited materials to KOLs <sup>(10-11-12- 5)</sup>.

These differences, although certainly important, do not affect the core of the meaning of the MSL functions. Since MSLs are the face of the pharma industry to the external stakeholders, the exchange of highly credible, unbiased, scientific, and clinical information is an advantage for the industry itself<sup>(13)</sup>. The Diovan case in Japan can be taken as a recent example. The case dates back to 2012, and since it involved retracted articles in an investigator-promoted clinical trial, it caused a



plummet in the image of the research in the country. Since further analysis of the case has shown a reduction in the number of Medical personnel and highlighted that MSLs were dependent on the Sales division, this can be considered proof of the need for independence from sales for the MSLs. It also demonstrates how the lack of guidelines is dangerous and a potential ground for inappropriate behavior<sup>(14)</sup>.

In response to this gap in 2021, the Australian Pharmaceutical Medical and Scientific Professionals Association (APPA), the International Federation of Associations of Pharmaceutical Physicians and Pharmaceutical Medicine (IFAPP), the Medical Affairs Professional Society (MAPS), and the Medical Science Liaison Society (MSLS) released a position paper with recommendations on critical practices of an MSL, where the main focus is the distinction from the sales department<sup>(13)</sup>.

Once the difference between sales and MSL roles is established, it is still necessary to talk about off-label dissemination and compliance practices.

What is off-label? Off-label, use is the use of a drug outside its approved indication in terms of doses, age group, and route of administration. Off-label use is common, especially in some therapeutic areas; it is an interest to the healthcare system to tackle these areas. If intense off-label use is in the act, an unmet medical need must be resolved. MSL's role includes the possibility of talking with health professionals about off-label use. It is considered a grey area, but the FDA released guidance for the use of the industry that is not binding and gives pieces of advice on the behavior to be held. The document distinguishes between unsolicited and solicited requests, public or non-public. An *unsolicited request* is a request made by a person by calling or emailing directly to the company with an off-label question or a request that can arise during a conference in the public domain<sup>(15)</sup>.

An off-label request can be considered unsolicited if they are prompt in any way. For example, if a salesperson mentions an off-label use or the MSL organizes a meeting only to start the discussion of the off-label use and then asks the doctor to send an email. In general, it is considered that this kind of information is not forbidden but should be governed by some principles. The FDA advises the company to have a standard operational procedure (SOP) to clarify what is allowed. SOPs are generally concise, and their scope is to inform on the correct procedure to follow. They are a practical tool in the hand of the MSL. Usually, they describe an event and what is to be done. Some examples can be: a sales representative cannot be present if off-label content is discussed; MSL can attend a budget meeting if their contribution is purely medical; MSL can be proactive in clinical center discovery etc. There are cases in that even an SOP is not sufficiently clear, and, usually, in these cases, a compliance advisor can help the MSL decisions. In general, everything should be well-documented and transparent.

Italy issued a specific law on advertisement and off-label use. The 648/96 law establishes that off-label use is only permitted if the drug is already commercialized and no alternatives are present or working or if the drug is at least at the phase II phase in a clinical trial.

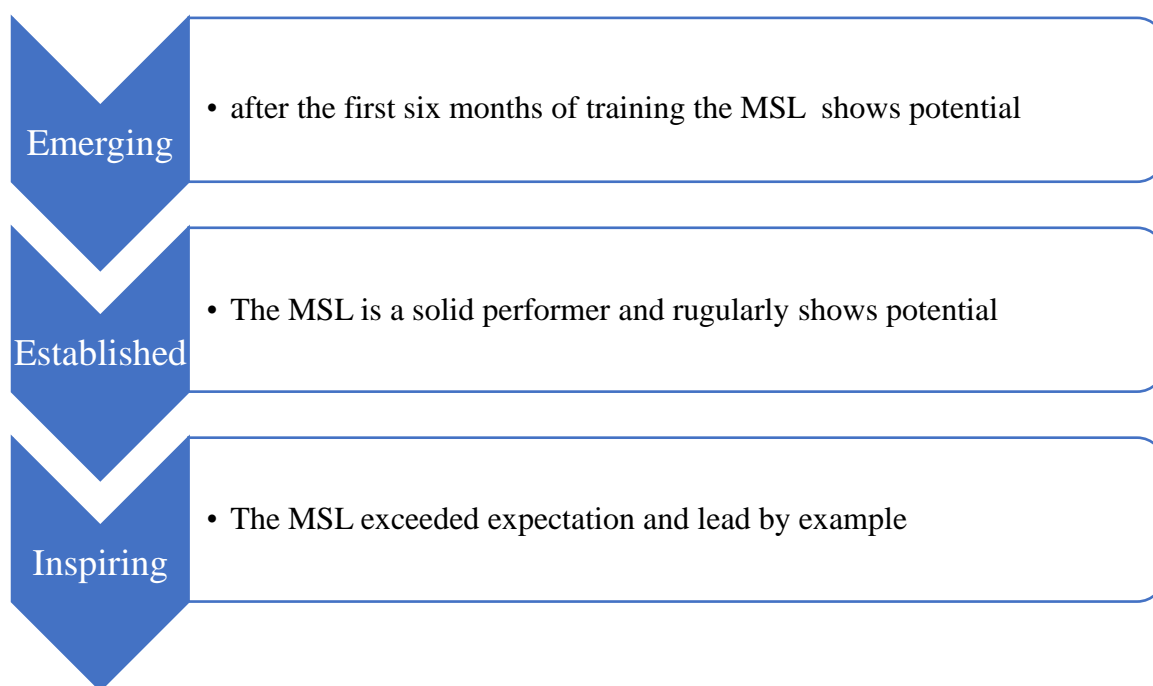
If no commercialized drug is available, there are compassionate use programs in case of a life-threatening, long-lasting, or seriously disabling disease. In this case, the doctor asks for authorization from the pharma company and the authority to use the drug on a patient. This is not equivalent to being part of a clinical study. Patients that obtain access to this kind of program are usually excluded by the gravity of their condition from any clinical study. Admission criteria are often very strict and taught to eliminate any confounding element. It is not possible to use data collected from compassionate programs because they are not controlled, there is

no placebo, etc. These are programs meant to give a last possibility to patients with no other resources. In this case, the role of the MSL is to facilitate the process and ensure that the proper medication is given to the right patient at the right moment.

**Training and development:**

MSLs are required to act as peers to doctors; therefore, they need to have advanced education in science and specialize in a therapeutic area (oncology, cardiovascular, neurodegenerative disorders, rare diseases, etc.). The vast majority are pharmacists, with most of them with a Ph.D., but even alternate advanced degrees are represented in good percentages, such as B pharm, M pharm, MDs, or nurses.

In any case, an MSL needs extensive training, and at the beginning, it is important to be flanked by an experienced MSL. Six months is necessary to understand the position and move the first steps, and only after one year is it possible to do all the activities. For managers, it is almost impossible to assess the value of an MSL when this young. Only after one year can MSLs be defined as "emerging," and their skills can be evaluated. After three years, an MSL will be defined as "Established," and enough shreds of evidence are harvested to support his career. The ultimate goal for an emerging MSL should be to become an "inspiring" MSL who is a point of reference for colleagues and exceeds expectations.



To achieve this potential is extremely important to keep studying. The best definition for an MSL is "lifelong learner." The first years in the field are going to be occupied mainly by studying and observing. Scientific knowledge alone is not sufficient to ace the position; an MSL needs to be prepared on the current regulations of the industry and Good Clinical Practices (GCPs).

Since communication is the most important part of the job, an MSL needs to be a good speaker, to have the ability to teach and pass along their knowledge, but also to be a good listener because one of the most important parts of the job is to be able of seizing the information provided by their interlocutors. Virtual communication is going to be part of the set of skills that an MSL needs to

cultivate. Critical thinking is essential, along with autonomy and flexibility.

The second step for most MSLs, in the U.S., can be to become board certified and, in particular, in the Board of Pharmaceutical Specialties, with pharmacotherapy and pharmacology being the most common. In recent years there have been other types of certifications, such as the one provided by the MSL society or MAPS.

### MSL key performance indicators (KPIs)

#### Metrics

MSL's role expanded with time, and the unique position of MSL in the pharma industry raises a question on how to measure MSL's performance and how to manage them and enable their work. The role is complex, yet there is no universal "way of working as an MSL." Historically MSL's best results have been in pre-launch rather than post-launch activities, but this tendency is set to change because there is growing attention to the post-launch phase, especially the phase IV study.<sup>(16)</sup> The main difficulty is still measuring these results and defining how MSLs create value for the pharma industry. Nowadays, their role is established, but the value brought into the industry is not always clear. Moreover, if there is no clear way to measure their performance, an MSL leader lacks the instrument to measure and improve their team efforts.

Historically, organizations use Key Performance Indicators (KPIs) to evaluate the reaching of specific targets. In the sales department of the industry, for example, a KPI can be selling a certain amount of a product in a month. If one sells half of the quantity on the 15th of the month, they can understand how far it is from reaching the goal. A KPI needs to be easy to measure, clear, and straightforward. The idea is to focus on the whole process and to understand what is important to achieve and how to arrive at the final target.

It can be useful to set an example: a person needs to lose weight, and I want to use KPIs to measure

the progress. The starting weight is the variable that needs to be changed. The calorie amount currently consumed per day is our baseline and represents what the person is currently doing. The desirable weight is the benchmark, or what "the market" is doing, the value we are testing our variable against. How far is this person from the desirable value? Considering this, we can set a goal that can be intermediate and can be then adjusted to the new situation with time<sup>(17)</sup>.

There are different types of KPIs, and before analyzing how they are used in the MSL field, it is better to mention some of them.

1. Quantitative: they are composed of a number that can be continuous or discrete. An example of a continuous number is "Time traveled" because it can be decimal (1,5 hours); an example of a discrete number is "number of interactions with a doctor," and it is represented by one number;
2. Qualitative: they measure a character of a business process. Usually, they are represented by surveys (customer satisfaction);
3. Lagging indicator: they are used when a novelty is applied to the process to see how the market reacts;
4. Leading indicator: they try to predict how the market will react to a change (amount of money that the health system can save if a drug is approved);
5. Input: they measure the costs of a production
6. Output: they measure the gain or the loss of a measure in the process
7. Process: they measure the efficiency of the process itself (how fast an issue is taken care of, the number of complaints, etc.)

The best way to extract information from KPIs is to analyze them together, in a metric system. The industry is more prone to acquire quantitative KPIs rather than qualitative KPIs because

qualitative ones are perceived as difficult to gather and standardize. KPIs are not static; they change with time and together with the team. A good KPI has to have

some characteristics, often summarized by the acronym SMART: Specific, Measurable, Attainable, Relevant, and Time-Bound.



**Figure 1** What are a good KPI's characteristic?

A KPI needs to be specific because who measures and who is being measured needs to know what is measured and how exactly. It is also important that a KPI is relevant because having a metric system is a tool to work better and improve, not an exercise. For this reason, KPIs need to be measurable and attainable or, in other words, obtainable because the teams must feel that the effort put into the task is rewarded with reaching the goals. Of course, a timeline is important to understand how the team is progressing.

In sales, KPIs are well established, and it is easy to build a metric system out of KPIs that represent the company's strategy well. When it comes to MSL's performance tough, the industry incurs the problem mentioned before. The best way to measure and describe an MSL work is using qualitative KPIs, often consisting of surveys and questionnaire, which are harder to standardize and gather. Plus, since the job itself is peculiar, even instruments like surveys are to be used carefully. Moreover, MSL action can be invisible, and benefits to the company can be hard to track with time and to be directly connected to the MSL work.<sup>(18)</sup> To summarize, it can be said that, for

MSL's KPIs, the struggle is in the "Measurable" and "Time-bound" parts of the SMART acronym.

Below I reported some of the most common KPIs used in the field as reported in an article by Khira Tryon, director of the Pangea group<sup>(19)</sup>.

**Quantitative:**

Number of KOL interactions/day or month, Days in the field, Duration of KOL interaction, Number of internal scientific presentations by MSLs, Number of external scientific presentations by MSLs

**Qualitative:**

Quality/depth of KOL interaction, Unsolicited/solicited KOL feedback, Customers' agreement with disease or product messages, KOL insights gathered (disease, product, competitors, medical strategy)

**Performance outcomes:**

Thought leader identification, Competitive Intelligence, Clinical site investigator identification/evaluation, assistance with clinical education, training, and advisory boards/number of advisory boards conducted.

Often quantitative KPIs represent the backbone of the metric system used by companies. It is possible to pinpoint the fact that some KPIs are aging fast. For example, the value: "days in the field" is not any more representative enough of the situation since most interactions are online-based. Another factor that needs to be considered is the changes that COVID-19 brought to the field.

### **The value of the MSL Role**

The metric problem has different aspects. First of all, while in the sales department is easy to benchmark performances, this is not the case with the MSL metric. There is no clarity on the metrics each company uses to evaluate MSL. Therefore the comparison is made difficult.

This situation generates discontent in the MSLs group since they perceive companies do not appreciate their work. The metric problem is a well-known aspect among MSLs themselves, as easily gathered from the literature.

Víctor Sastre and all conducted a 37-question survey on Survey Monkey© to assess the MSL situation in Spain. The survey was accessible from December 2018 to February 2019. Questions were various, but among them, particularly interesting were the ones on performance evaluation. Fifty-six percent of the 179 MSL participants stated they felt the current metrics deployed did not reflect their true value (21). Quantitative metrics were used in 94% of the evaluated MSL companies, while only 59% had a mixed qualitative/quantitative metrics system in place. Only 5% of participants had a system based only on qualitative data.

Saleem and all studied the MSL metric situation in Canada in 2020 and obtained similar results with a questionnaire for MSL leaders<sup>(22)</sup>. The survey was open for three weeks starting on June 16th, and 42 answers were analyzed. While 69% of MSL leaders strongly claimed the importance of metrics, 98% had used quantitative metrics, with the most common KPI being "number of Health professional interactions." The first survey that

can be found in the literature was held in 2015 by the MSL society with 756 participants. MSLs and MSL leaders participated in the study, and results showed a clear discrepancy between what is believed should be measured and what is. For example, the quality and depth of the relationship with KOLs were considered essential to be measured by the vast majority of the participants, but in the end, it wasn't. Not only the relationship with KOLs but also the internal stakeholder appreciation was not perceived as accurately measured, along with the special project participation.

Building an efficient system of evaluation means to bust productivity too. S. Ibrahim and al; demonstrated that in 2020 with a study conducted in the Middle East and North Africa (MENA) regions. They did exploratory research with the clear intent of testing the following hypothesis: There is a direct positive relation between the correct usage of correct metrics for pharmaceutical companies' MSLs and MSL motivation. They used a questionnaire to collect data and tested some secondary hypotheses, such as using electronic tools and the frequency of the reports. The results backed the original hypothesis, and 75% of the participants agreed on the fact that the correct metric would improve productivity. The survey's participants were all MSL of international companies. Companies already had a metric system, generally based on quantitative and qualitative aspects.

Usually, MSLs use an electronic tool to keep track of and manage their activities. These tools are known as Customer Relationship Management or CRM. CRM software helps track what an MSL is doing and is a tool to share notions across the industry. All the participants agreed that it could be possible to obtain more productivity using a track system, but that another important aspect was the reporting system. MSLs should write their reports and share them on the CRM as soon as possible, and these reports should be discussed more frequently, ideally quarterly and not only



monthly, how it is usually done. This article is important because it is one of the few that only states a problem but tries to find a solution to the metric problem. This is a great challenge to the industry since the role of MSL is expanding, and it is crucial to the pharmaceutical industry.

In 2021, Castillo and al; analyzed the role of MSL as perceived by Health Care professionals (HCP) (20). They demonstrated that for HCPs, especially KOLs, the value of MSL is not under discussion and that they believe their role will expand due to the rise of personalized medicine and access i the market of more complicated therapies. The results were positive, but 26% of the respondents were unaware of the MSL role, especially if HCP, and this shows room for improvement.

The fact, though, that KOLs ad HCPs rated MSL with high credibility and judged their role as essential should be a reason to try to include this in the evaluation of an MSL work and to drive the internal stakeholders too. One of the main unresolved aspects of the metric problem is precisely the communication between the sales and medical affairs departments. Sales representative fail to understand the importance of the MSL role, and MSLs feels they are undervalued in the industry. A good metric should help MSL to prove its point and to gain new consideration.

An ideal set of metrics should be "defensible" this means that an ideal metric system would have enough quantitative aspects to satisfy internal stakeholders. However, on the other end, it should have essential qualitative KPIs to satisfy the MSLs themselves. The literature on MSLs metrics focuses on the qualitative vs. quantitative metric problem but fails to provide clear examples of what to measure and how to overcome the problem. Therefore, my research focused on how KPIs are currently set and what could be a practical solution. What is missing in the MSL world is a "gold standard." Possibly, the reason why a clear metric is lacking is due to the importance that MSLs have for the industry.

Having well-defined metrics is an advantage a company has no interest in sharing. In my opinion, though, standardizing the procedures would mean reaching an even higher profile and deepening the role of the MSL in the industry itself because internal stakeholders would probably be able to work in synergy with the Medical Affairs department.

I started interviewing Angelo Romagnolo, the regional supervisor for STEM Italy. STEM is a part of Inizio Advisory, a trusted advisor for health and life science companies. STEM observes and evaluates the quality of interactions between field-based teams, healthcare providers, and patients for pharmaceutical, biotech, and medical device companies. STEM started in the field 15 years ago, and it is now working in forty-nine countries and is part of more than six thousand projects with twenty-nine out of thirty major pharmaceutical companies.

STEM helps their client set up a metric well suited for a specific team, analyzing how it works and comparing it to what the "market" is doing. It provides insight into the strengths and liabilities of a team, and it gives advice and a starting point to work.

In our little interview, Dr. Angelo Romagnolo helped me understand how STEM works.

The first step is a briefing with the company and the medical team to understand the overall strategy. After the briefing, a survey is delivered to the internal stakeholders, the MSLs managers, and the field MSL. This survey has three aims:

1. it measures the level of knowledge of MSL's role;
2. it measures the performance and satisfaction with the metrics in use;
3. it measures the alignment between what is expected from the MSL and what the MSL does;

After the survey, there is a period of observation of the team in the real world. This means that STEM agents are working side to side with MSLs. They take part in KOLs meetings, for example. A

report is filed, and usually, interactions are analyzed on different aspects. Not only the content of the meeting is analyzed, but even the form and how questions are presented, what kind of questions the MSL asks, and which one can answer. Why a certain therapy is used is, for example, an important question to be asked by the MSL. In general, "why" questions are carefully evaluated. It is evaluated even the capability to answer a specific question by the MSL and if a follow-up is scheduled.

The level of engagement of the MSL is then compared to the model of engagement of the company.

The survey and the observational period data are collected and compared in a benchmark database. The database is composed of more or less one hundred KPIs, and usually, they are 80% the same for all companies, and 20% is based on specific demands from the company. The results are always aggregated. The final report is a picture of what the team is doing. Usually, one or two areas are pinpointed to work on, but strengths are analyzed too.

Since he is in a very strategic position, I asked Dr. Angelo Romagnolo if the main problem of the metric is, as perceived, a communication problem. According to him though there is enough alignment on MSL priority, the difference lies in what the companies expect to gather from KOLs. The role of MSLs is changing, and it is not a mere transfer of data; the companies want MSLs to gather data and help perfect the company strategy. Another clear thing from the survey is that MSLs and the sales department have the same perception of each other: MSL feels that sales departments use them only for support, and the same can be said for the sales department. One way that this can be overcome is to work on communication. In Italy, there are strict laws on how economic and medical info can be communicated, which may create some problems in the synergy of the two branches of the company itself.

The interview with Dr. Angelo Romagnolo was very interesting and gave a perspective on how the team put all the theories behind the KPIs into practice. The main problem is that STEM is an industry, and its method is patented, so the information on the KPIs' specifics was impossible to discuss. Moreover, the STEM method is based on metrics currently used by the industry; therefore, it is a picture of the situation at present, with the well-known problem. My research aimed to find a possible solution to the problem and new approaches.

I found then the article "A "Slugging Percentage" Model to Cover All Bases of Medical Science Liaison (MSL) Performance Metrics!" that seemed to exactly do what the others articles, seminars, and discussions failed to do: provide a method. The author is Tim Mikhelashvili, the head, and co-founder of Amedea Pharma, an analytics and organizational change consulting agency that uses a data science approach combining customer and employee experience that allows life science companies to demonstrate their direct impact on the business of their organization and healthcare community using numbers rather than pictures that other stakeholders will translate to their benefit. Throughout his career, Dr. Mikhelashvili was both an MSL and Medical Science Director. I contacted him after reading other articles he wrote, such as "Fly More Often and Farther with Medical Insights," and watched some of his interviews.

When I interviewed him, I asked why he thought it was important to share the method he came up with. He believes there is a lack of clarity, which represents an obstacle to the growth of the Medical area because there is no objective way to quantify the business impact of Medical Affairs (MA) teams or justify their funding, leading them to be undervalued and misunderstood within the organization.

As a result, the Medical Affairs department is most often left feeling disconnected from other

functions across the industry. The scientific validity and all the compliance aspects cannot escape the fact that Medical is still a business, and denying it can ultimately , promote further emergence of grey areas. An MSL cannot be evaluated on the number of sales, but the insights they generate based on their advanced healthcare training has repeatedly shown transformation of product launches, clinical development, far beyond Medical Affairs alone.. Therefore, insights rather than interactions with healthcare professionals alone represent the true currency of MSL's. .During our discussion, Dr. Mikhelashvili, who is a good communicator, used a very interesting baseball metaphor to explain why current metrics in Medical Affairs do not distinguish the important differences between the various different types of MSL activities and their contributions, some of which may be “home runs” and others just “hits”. He also notes that MSLs and their leaders are often left wondering about the connection of the metrics to the final outcomes. . The current metric system evaluates MSLs based on the number of KOLs reached, meeting duration, and sometimes metrics which are merely statistics that a coach can choose to measure their baseball team. However, the current system only uses a batting average statistic which reflects the percentage of hits per attempts, while Dr. Mikhelashvili argues that a slugging percentage model used in baseball should be considered instead because it calculates the total bases covered per an attempt, or a healthcare interaction. In Italy, it may be easier to use soccer examples, but the idea is that the KPIs currently measured do not tell if the team is a winning team or a losing one. Statistics can look good, but at the end of the day, what is important is the final score. Therefore, Tim is proposing a way to calculate a final score that reflects different aspects of the job. He has developed a Medical Productivity Index (MPI) which collects quantitative data on a wide range of activities such as interactions or insights adjusting them by weight, and also qualitative

data on both performance and behaviors from both internal colleagues and external healthcare audiences. Importantly, this approach weighs performance and behavior equally at 50 percent each, and also distributes accountability evenly between colleagues up (e.g. manager), down (e.g. direct reports), and across (e.g. cross-functional partners in Commercial, R & D) the organization as well as external healthcare community by collecting direct feedback via internal and external one minute surveys without any open ended text. Drawing on his previous experience in both large and rare disease, small startup companies which either featured or avoided measuring and communicating MSL metrics, Amedea Pharma is aiming at the most objective and direct approach to quantify MSL contributions and communicating them transparently and regularly. Therefore, Tim is proposing a way to calculate a final score that reflects different aspects of the job. It could seem that 50 percent of the score reserved for behavior is too much, but this will, in the end, ensure that the team works according to the industry values and that the single MSLs feel motivated and appreciated in a more accurate picture of themselves.

Before explaining his method, Dr. Mikhelashvili fiercely criticizes the fact that the evaluation process is often held only once a year. This means that during the year in question, there is no chance of improving and acting on issues that may come over. Moreover, the evaluation gives back only an episodic view of the MSL. As it was stated earlier, a good KPI is an actionable one. Dr. Mikhelashvili then proceeds to analyze the way the current metric system is lacking a future perspective of the relationship between metrics and patients' health outcomes and the motivation to change it.. Many companies use Customer Relationship Management or CRM to track their MSLs' work. However, those instruments are not always accurate, used to their full potential or appropriately, and every activity that is logged appears to have the same value for the company.

For example, an MSL can record a routine meeting with a KOL. On another day, he/she can log another meeting which results in a new physician thought leader or investigator participant in an important clinical study for the company after previous history of rejection of collaboration. Which of the two activities added more value? The mere act of logging the activity does not distinguish the differences.

Thus, the “final score” is the MPI, which is obtained by calculating the average of total MSL activities that are weighed accordingly, quarterly survey feedback on both MSL performance and behavior from colleagues and KOLs.

The first step is to list all the different MSL activities in a table and assign each an arbitrary numeric value that corresponds to their frequency and alignment with company goals. Mostly quantitative KPIs are used. An MSL activity would receive a different value if he/she met a KOL, participated in a seminar or an internal project, etc. -a routine one-on-one meeting is assigned 1 point, an actionable insight 2 points, while a presentation to a board meeting 4 points, etc. As a result, the activity component of the MPI final score could more accurately represent the dynamic role and diversity of a single MSL's contributions to the success of the organization.

A secondary metric can be added as a side calculation, where the activities are compared to what is expected. At the beginning of the quarter, the MSL manager generally sets up some targets. For example: how many KOLs is an MSL expected to see in a given period of time? How many discussions the MSL had in a single interaction with a KOL? How many KOLs were already targeted at the beginning of the period of the evaluation? These secondary metrics can be used to explore in more detail a single MSL's activities and conduct post hoc analyses or case studies by an analytics or operations team or a consulting agency such that in the following quarter some of the secondary metrics can be assigned a greater value per interaction. In the

articles, the total score should be normalized to 50. The author uses a scale with a maximum score of 50 for each half (performance vs. behavior) of the total MPI score accordingly.

The proposed surveys include 10 questions each for internal colleagues on both performance and behavior, and 5 questions each for external audiences. It is important that a neutral third-party distributes them to the most appropriate and relevant individuals who directly interact with the MSL that are not limited to the manager alone but cross-functional colleagues in other departments as well. One particular strategy can distribute the survey to the same physician thought leader over time to directly illustrate the progress in the scientific relationship.

Communicating the results of the MPI openly with the team can stimulate higher accountability as well as sense of belonging to a team and significantly cut down the subjective and time-consuming nature of performance reviews. The model is operational application of the delicate real world balance between internal collaboration and competition to achieve the best results. Because of its structure and weights, the highest performing MSL with the worst behavior in the first quarter could conceivably be ranked lower than an average performing MSL with the best behavior or collaboration. Such a scenario has been envisioned in the MPI design, and is thought to inspire the MSLs or Medical Affairs professionals to self-reflect and simply improve in the following quarters ahead. The Behavioral score is easier to obtain because it is the average of two questions on behavior, one from the MSL manager and one from the KOLs.

This method allows a discussion when data are presented because we can imagine a situation where an MSL can get higher performance points but not behavior or vice versa. However, the best MSL would be the one that has a more balanced score.

I found this article very interesting for two reasons: the openness because it was the first one

to make examples and discuss the actual metric. A lot of articles stated that more qualitative data should be used, but not how to integrate them with the quantitative aspects and how to produce objective qualitative data. The problem with qualitative data is the difficulty of gathering them and a subjective component. In this case, subjectivity is contained because the first part of the score is deeply quantitative and objective. I think that it is also interesting to consider the behavior in the metric system because it improves collaboration among the team. Examples of the question are: how likely is the MSL to spend time helping a team-mate? One problem that is often overlooked in this kind of job is the possibility of loneliness. If the metric system pushes for collaboration, even the MSLs that are usually more solitary can be driven to have a more collaborative approach. The behavioral component opens up an interesting possibility of internal surveys between the Sales and the Medicals areas to be taken to strengthen their collaboration too. One of the problems that MSL lamented was being contacted only for support of the Sales department, for example. If an internal survey is delivered to both medical and Sales department areas and is included in their evaluations, it can be a source of improvement.

Analyzing further the proposed system, though, I have some concerns because in Italy and I think in general in Europe, to have a KOLs survey could be considered as borderline behavior. Plus, outsourcing to have a third party handle the questionnaire can cost a lot more. I asked Dr. Romagnolo, for example, and he confirmed that currently, in Italy external KOL surveys present a regulatory challenge in implementation and he did not think they would be used. However, he thought that even without the survey of the KOLs, the MPI model of Dr. Mikhelashvili merits attention because of its balanced structure.

I think Dr. Mikhelashvili's approach is the right one because it clearly defines responsibilities and what the company and the manager expects from

their MSL. The biggest problem, reading the literature, is the missed communication, combined with the lack of definition of the role, especially outside the U.S. Having a table with a list of activities can help an MSL to focus on what is required and to have a mission. The metric also would stimulate the MSL to engage in different activities and to vary. The surveys are also precious if combined with numbers, and they could offer a better understanding of the MSL's overall activities.

The ideal metric, in my view, is still yet to come, and maybe it is impossible to build a standard. However, in both Dr. Angelo Romagnolo's and Dr. Mikhelashvili's interviews, I found that a systematic approach is the best one. MSL's job needs to be considered in pieces, and each piece should be analyzed and put in perspective with the company mission. Medical affairs need to be integrated into the bigger picture, and it is important to stress that information is going to represent the most important asset for the industry. MSLs are also producing value, and they should be evaluated on the number of insights they bring, as Dr. Mikhelashvili suggests.

Why dissatisfaction on the job and the metric system should be deeply considered? In the book, *The medical science liaison: an A to Z guide*, it is stated that statistically, after five years on the job, most MSL jumps to another position, and the reason behind it is the lack of perspective. Companies that have more established pathways can potentially retain MSLs longer. A thing to consider since, as stated before, three years is the minimum time required to become an established MSL.

The MSL position is thriving and expanding, and it will be more and more central in the pharma industry. Motivation, satisfaction, and consistency are going to matter.

### **Future and Evolution**

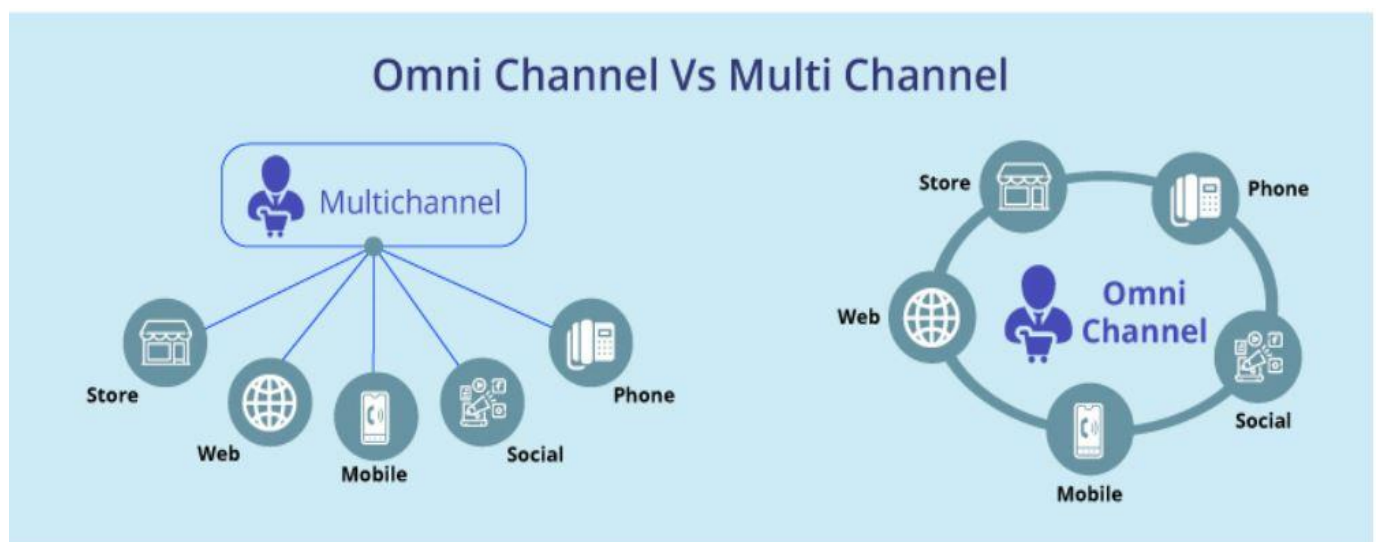
The MSL role witnessed a big change with the COVID-19 pandemic. Face-to-face meetings were



the preferred type of interaction, and still, according to the article, *The MSL Role in The Post-Pandemic Scenario: Lessons Learned and Future Prospects*<sup>(23)</sup>, fifty-three percent of KOLs would prefer in-person meetings. Online platforms like Zoom and Skype helped build and maintain previous relationships during the pandemic phase. The pandemic was a challenge, but it pushed hospitals and HCPs to change as well, and now there is more access to online resources. MSLs can take advantage of this situation by adopting a hybrid model involving online and in-person meetings. This means though that digital skills are going to be more and more important to be a good MSL. Brevity and clarity are the most important things to remember in an online setting. Implementing digital engagement will also mean cutting expenses and traveling time, even though an in-person meeting could never be completely replaced. Having more availability from doctors using digital tools can also mean that new approaches can be used. Flexibility is always going to be necessary. A high-profile doctor can be facilitated by using a Zoom meeting, for example. However, a doctor in a more rural area can still need a face-to-face

meeting or have difficulties being always connected.

The pandemic shifted the attention to the applications of the digital in a broader sense. Medical affairs and, therefore MSLs are involved too. As for the KPIs, some concepts are first developed for marketing and then adjusted for the Medical Affairs area. The same is happening for a particular strategy, known as "omnichannel engagement," which means the possibility of reaching the right person at the right time with the right tool. The final goal is to keep the clients interested and engaged in a product by soliciting them via different channels. At the same time this approach allows industries to map customer behavior to deliver consistent customer service. In Italy, only twenty percent of companies currently employ this kind of program because even if it is well-theorized, it is difficult to apply. The idea is to put the client at the center of everything. The focus is on the customer experience and on repeating the same experience with different touchpoints (website, store, social media, etc.). The idea is to keep the customer connected and engaged with the product and the company and give each customer a personalized experience.



**Figure 4** The picture underlines the differences between what is now the normal and what shift is needed to build an omnichannel engagement.

I spoke with Guido di Fraia, professor at The University Institute for Modern Languages (IULM) in Milan and CEO of the Artificial Intelligence Laboratory at IULM, and he confirmed the companies' difficulty. In his opinion, this does not happen for lack of understanding of the concept but because it means changing the whole organization. On top of that, when it comes to MSL and Medical Affairs, there is a concrete risk of breaching the line of compliance. The "customer" in this case are KOLs, HCPs, etc. The "experience" a pharmaceutical company can sell is integrity, solidity, and scientific accuracy. According to Professor Di Fraia, the problem lies in the lack of integration of MSL in the companies more than in a compliance problem. Since there is a net line between Sales Department and the Medical Affairs, the experience appears still fragmented, and the near-seamless transition between channels is difficult to achieve.

These new strategies are currently being discussed, and there is an attempt to deploy an omnichannel engagement approach. However, Professor Di Fraia confirmed my impression when he stated that there is also practically no literature and no research on the topic.

The impression is that from every front, the call for the pharmaceutical company is to improve the integration of the MSL to build a solid metric system but to adapt to the newest approach towards the customer.

MSL's role will be indispensable for Medical Affairs, especially because the most important signs of progress are now concentrated on rare diseases and personalized medicine. The ability of the MSL to bring the right medicine to the right person through the right doctor is going to make a difference. Companies are investing more and more in their medical area, with cuts in the sales department. Therefore, the companies' future must clarify the MSL role and their evaluation. New profiles are rising, like the clinical trial liaison (CTL). CTLs are different from MSL tough

because they are trained on the GCPs, they support CRAs and monitors, and they are focused on enrollment, one of the most delicate phases in a clinical study. They do not need the same training as MSL, nor need to be specialized or peer to the doctors. This is only a reminder of how important it is to standardize the role of MSLs since the panorama is changing and shifting towards more complexity. The cost of therapies is going to be more and more scrutinized. The challenge for an MSL is to be able to present the scientific need for a therapy.

### Conclusions

In this thesis, I tried to underline the importance of the role, the complexity, and what still needs to be discussed. I considered it a tool that can stimulate conversation and give an impulse to start standardization.

MSLs are facing a new era because their job will become more and more central since the complexity of the new treatments is rising, and doctors are especially becoming more and more demanding in terms of practical information. Being clear and brief will be an advantage, and for sure, the ability to use the right tool at the right moment will make the difference. Since the pandemic, the scenario is changed and shifted towards a digital approach. Online interactions are a resource, but they present challenges. For example, the ability to focus varies if the meeting is in-person or online. Doctors, especially in certain industrialized areas, prefer the flexibility of an online meeting, but different surveys showed that in-person meetings were still better appreciated. During the pandemic, the web-based method was forced by the events, but now there is the possibility to use the potential behind it. Usually, MSLs cover long distances and large territories, and the number of KOL per MSL is high. A hybrid strategy with face-to-face and web-based meetings can improve the relationship with the single KOL because it can be more constant during the time. Since MSL are in the field, they

must be fast to answer to new dynamics and move accordingly.

The changes that the job is facing are facilitating the conversation on KPIs and how well they represent MSLs' work. As underlined in Professor Di Frea's interview, if it is not clear how performance is measured and how MSL can create value, it is quite difficult to integrate them in this fast pacing environment.

The challenge is to integrate qualitative KPIs into the metric system preserving objectivity. The recourse to third parties' questionnaires will probably be employed in the U.S., but the auspice is to find a solution that can fit any regulations. I am not thinking of different companies but of the fact that most pharmaceutical companies work globally. MSLs employed in the same company cannot have a different metric system in different countries, especially if the final goal is to create synergy. Of course, regional differences are always going to be present, even in terms of strategy but standardization, in my opinion, is going to be needed in a world that is more and more connected. I think it is possible to extrapolate another important concept from this work. Companies need to better understand and enhance MSLs' work, but MSLs need to be prepared and ready to tackle the job. The complexity of the role and the skills required to be a good MSL are increasing. A good MSL today needs technical skills, adaptive leadership, learning agility, and business acumen.

The position is often considered for the "solo" part. However, I think it is important to underline that a good MSL is not an island but part of a team and needs to collaborate and be able to outsource with different internal departments. For example, to better present and understand the data, the statistic department can train the MSL on understanding the clinical trial data analysis.

In conclusion, the keyword in this thesis is **communication**. The role is not well understood from other departments and this is a problem for the work flow. Communication will be the key to

reach a metric that satisfy both MSLs and the industry, too. Finally, communication is the key to apply new strategies, as the omni-channel engagement, since the industry needs to be "inter-connected" in the first place in order to turn upside down their starting point.

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