CRO and CDMO Business Dynamics 2026-30: A.I., Automation & Performance

No.1: The Lab Bottleneck

A joint article by CodePhusion and Pharmagro Ltd.

The problem

A.I. is promising to revolutionize the development of pharmaceuticals, in particular to reduce the duration or time required. The evidence, however, shows that this is not happening yet.

A.I. is certainly speeding up in silico discovery and characterization of candidates. But these candidates still need to be tested in the lab and with patients. It is here that bottlenecks are occurring and humans are still very much “in the loop”.

Timelines Getting Longer, Not Shorter

Overall clinical timelines have increased by around 10% or 7 months.

Table 1: Clinical Trial Durations in Months

Phase	~ 2005-07	~ 2010-13	~ 2019-21	Change
Phase 1	~ 27-31	~ 27	~ 30-32	+1
Phase 2	~ 33	~ 36	~ 39	+6
Phase 3	~ 33	~ 40-42	~ 39 - 40	+7
Total Clinical	**~ 83**		**~ 90**	**+7**

Source: MIT Wong, Siah, Lo (2019), Tufts Center for Study of Drug Developments, Pharmagro Analysis

Why Timelines Are Increasing

The reasons for this increase are several:

Greater Complexity: an increase in the number of trial objectives or end points.

Shift Towards Biologics & Other Modalities: Biologics are taking a greater share of drugs approved, up
from 29% in 2010 to 38% in 2024 (see table 2). Biologics take inherently longer than small molecules. As newer, more complex modalities come in — Cell Gene, ADCs, tri-specifics — this trend is likely to be sustained.

Harder Disease Targets: pipeline shifts towards oncology, rare diseases and complex chronic conditions make for longer trial durations. Recruitment for rare diseases can be challenging.

FDA Approvals Are Up

Although duration has increased, the good news is that more drugs are being approved. The three-year moving average has gone from 30 drugs per year in 2012 to 47 by 2024, although the number of clinical trials has doubled during that time.

Table 2: FDA Approvals 2010-2024

Year	Chemical	Biologic	Total	Biologic %
2010	15	6	21	29%
2011	24	6	30	20%
2012	33	6	39	15%
2013	25	2	27	7%
2014	30	11	41	27%

Table 2: FDA Approvals 2010-2024

Year	Chemical	Biologic	Total	Biologic %
2015	33	12	45	27%
2016	15	7	22	32%
2017	34	12	26	26%
2018	42	17	59	29%
2019	38	10	48	21%
2020	40	13	53	25%
2021	36	14	50	28%
2022	22	15	37	41%
2023	38	17	55	31%
2024	31	19	50	38%

Why Timelines Are Increasing

Globalisation of Trials: trials have become more globalized as pharma companies seek to open up markets outside the USA. Site initiation and patient recruitment and collation of data all take longer.

Shortage of Principal Investigators (PIs): Citeline data shows that the number of trials in operation has increased from 13,255 in 2013 to 22,041 by 2023 but the number of PIs has not kept pace.

The Lab Challenge

The increase in clinical trials and number of candidate drugs puts pressure on laboratories and manufacturing facilities alike.

The challenge is that laboratory infrastructure was built for slower-moving pipelines. As candidate volumes increase, several problems become apparent:

Off-the-Shelf Limitations: LIMS and ELN systems cover general use cases but rarely match the specific workflows a lab actually runs. They handle compliance and documentation well, but throughput and process speed were never the priority.

The Lab Challenge

The result is workarounds, parallel spreadsheets and processes that exist outside the system. In CodePhusion's *Lab Management Pain Points Survey*, Q4 2025 of 100+ biotech professionals, 55% said their current tools do not match actual workflows.

One respondent put it simply: "**systems or tools do not match real workflows**" and "**too much happening in Excel or Sheets.**"

Excel Dependency

73% of respondents in the same survey rely heavily on Excel or Google Sheets for data management. This is not surprising. When tools do not fit the workflow, teams default to spreadsheets. But spreadsheets were not designed for laboratory data at scale and they create problems around version control, audit trails and data integrity.

Deloitte's 2025 *R&D Lab of the Future* survey of 104 biopharma executives found that 31% of labs remain "digitally siloed" with limited integration across systems.

Excel Dependency

These problems cascade. When tools do not fit workflows, teams move to Excel. When Excel becomes overwhelming, time management suffers. 45% of respondents in the CodePhusion survey struggle with time to keep data organised and 27% checked every pain point on the list. This pattern appeared most frequently among smaller preclinical labs where teams juggle multiple roles with limited resources.

Rigidity

When a lab needs to adapt a workflow or integrate a new instrument, off-the-shelf tools offer limited customisation. Changes require the vendor, take months and cost more than expected. The software gets in the way.

A study in *SLAS Technology: Laboratory Informatics Tools Integration Strategies for Drug Discovery (2022)* found that when data flows automatically between ELN, LIMS and other systems, analysts can focus on their actual work instead of managing separate information systems, reducing entry errors and increasing productivity.

Custom Software as the Solution

Custom laboratory software is built around the actual workflow. The lab does not have to bend its processes to fit the tool. When instrument data feeds directly into the management system, when sample tracking is automated and when teams can see progress in one place, a lab can handle a higher volume of candidates without adding proportional headcount or time.

The A.I. Temptation

With AI becoming more accessible, there is a temptation to skip straight from spreadsheets to AI-driven solutions. But AI is only as good as the data it works with. If lab data is scattered across Excel files, disconnected instruments and separate systems, AI will inherit those problems.

Labs need a solid data infrastructure first, something that connects instruments, tracks samples and keeps data consistent, before AI can add value on top of it.

Portfolio Impact

For CROs and CDMOs, the result of increasing timescales is the common frustration “our timelines have shifted to the right” or “business development is so slow!”

At a higher, portfolio level, there is a need to manage the interplay between duration, probability of success and scale. Particularly early stage CDMOs need to balance out the resources required to manage many smaller, less valuable contracts with the likelihood that these will scale later. Efficient lab management and automation is one part of the solution.

Summary

Clinical Trial Numbers and Duration have been rising.

Rapid A.I. driven discovery can result in bottlenecks at the laboratory stage.

Faster laboratory time needs more than just A.I.: it requires integration to automation, service reliability and software built around actual lab workflows.

CROs and CDMOs need to understand the effect of longer duration on the valuation of their portfolios of molecules.

About Us

CodePhusion builds custom laboratory software for biotech and life sciences companies. This includes LIMS, ELN and internal workflow tools designed around the way each lab operates.

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Pharmagro provides software and services to intensify business development and manage portfolios for life science companies.

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Sources

- MIT Wong, Siah, Lo (2019), Tufts Center for Study of Drug Developments, Pharmagro Analysis
- CodePhusion Lab Management Pain Points Survey, Q4 2025 (100+ biotech professionals)
- Deloitte: Pharma’s R&D Lab of the Future (2025)
- SLAS Technology: Laboratory Informatics Tools Integration Strategies for Drug Discovery (2022)